Draft FitzPatrick Written Exam With Facility Comments

SRO / RO Common Questions

· · ·

ES-401		Sample Written Examination Question Worksheet	Form ES-401-6 (R8, S1
Examination (Dutline Cross-referend	ce: Level Tier # Group # K/A # Importance Rating	RO SRO 11 _21 295003 AA1.03 _4.44.4_
Proposed Que	estion: 1 / 16		
A station blac	out has occurred. W	hat action is necessary to ensure	the plant can be safely shutdown.
A.	The high pressure of the rector core isola flow rate.	coolant injection (HPCI) system s tion cooling (RCIC) system for R	hould be used preferentially over PV make up because of the higher
B.	The RCIC system s RCIC is less likely t	hould be used preferentially over o cycle on and off due to RPV wa	HPCI for RPV makeup because iter level.
C.	Align the RCIC suct to the CST.	ion to the Torus since there is no	power available for make up water
D.	Verify that all fire do break will not result	ors in the HPCI and RCIC room a in the loss redundant systems single the loss redundant systems and the loss redundant systems are similar to the loss redundant systems are similar to the loss reduced and the loss reduc	are closed so that a steam line multaneously.
Proposed Ans	wer: B. The pre cyc	reactor core isolation cooling (R erentially over HPCI for RPV ma e on and off due to RPV water le	CIC) system should be used keup because RCIC is less likely to vel.
Explanation (C	Dptional): A. HP res C. RC wat D. The bec cou sea	CI has a larger capacity and will out in less battery operational time C low CST level should be bypas er at elevated temperatures will n doors are required to be opened ause of Steam leakage from HPC id be encountered. The leakage of suction or higher than normal tu	cycle more than RCIC. This will be assed because operation with torus educe the RCIC reliability. I to reduce local area temperatures CI and RCIC turbine shaft seals that could be caused by a lack of gland rbine exhaust pressures.
Technical Ref	erence(s):AOP-49, St	ation Blackout	
Proposed refe	rences to be provided	to applicants during examination	: None
Learning Obje	ctive: Ability to op COMPLETE necessary te	erate and/or monitor the following LOSS OF A.C. POWER: (CFR: assure safe plant shutdown 4.4	as they apply to PARTIAL OR 41.7 / 45.6) AA1.03 Systems */ 4.4
Question Sour	ce: Ban Moo Nev	k # lified Bank # (Note	changes or attach parent)
Question Histo Optional - Que he NRC; failui	ry: Las estions validated at th e to provide the inforr	NRC Exam e facility since 10/95 will generally nation will necessitate a detailed	 y undergo less rigorous review by review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge _ Comprehension or Analysis _

55.41 <u>7</u> 55.43 <u>----</u> _X__

10 CFR Part 55 Content:

	ES-401	Sample Que	Written Examination	Form	1 ES-401-6 (R8, S1)
\smile					······································
	Examination Outline Cross	-reference: Leve	l Tier # Group # K/A # Importance Rating	RO 1 295006 AA2 _4.3_	SRO 1 1 .02 4.4
	Proposed Question: 2 / 1				
end did not illy insort	The unit has just experience to open: The unit supervise indication on the full core d A. Control roo B. Control roo C. Control roo D. Control roo	ed an ATWS, seven or orders that contr isplay, which one of 27-27 As the BLU 27-22 has the BLU 35-22 has a positi 31-18 dual light di 39-26 dual light di	eral control rods had thei ol rods be manually inse of the following control ro JE coram light ON on indication of 00 on th splay has the RED light splay has the GREEN lig	r scram inlet an erted. Based on ds must you se wet this e four rod displa ON ght ON	d outlet valves fail using the following lect and insert. criteria
	Proposed Answer: C.	Control rod S	1-18 dual light display ha	is the RED light	ON
	Explanation (Optional): A. B. D. C.	BLUE light lit mear Reactor will be shu GREEN light ON m RED indication is fi	is that both scram valves tdown under all condition neans rod is full inserted ull withdrawn.	s opened + હિા ns if rods at 00 લ	'm. or 02,00 isfull in
	Technical Reference(s):SD Ins	LP-03F, Reactor N ertion	lanual Control; EP-3, Ba	ckup Manual Co	ontrol Rod
	Proposed references to be	provided to applica	ints during examination:	None	
	Learning Objective:	Ability to dete SCRAM: (CFF 4.4*	rmine and/or interpret the R: 41.10 / 43.5 / 45.13) /	e following as th AA2.02 Control	ney apply to rod position 4.3*/
	Question Source:	Bank # Modified Bank New	(#(Not	te changes or a	ttach parent)
1	Question History: (Optional - Questions valida the NRC; failure to provide	Last NRC Exa Ited at the facility since the information will	ince 10/95 will generally necessitate a detailed re	undergo less rigeview of every of	gorous review by uestion.)
	Question Cognitive Level:	Memory or Fu Comprehensio	ndamental Knowledge on or Analysis	X_	
	10 CFR Part 55 Content:	55.4110_ 55.43			
	Comments:				

/

ES-401		Sample Written Examinati Question Worksheet	on Form ES-401-6 (R8, S1
Examination O	utline Cross-reference	: Level Tier # Group # K/A # Importance Rati	RO SRO 11 11 295007 2.3.4 ng _2.53.1_
Proposed Que	stion: 3 / 2		
A large break le systems started pumps that we	oss of coolant acciden d and functioned as de re out of service with th	t (LOCA) occurred fifteen m sign with the exception of the exception of the sign with the exception of the sign of the second second second	inutes ago. All emergency core cooling ne "A" & "C" residual heat removal for planned maintenance.
Even though ad need to be retu has determined has a volunteer maximum time exposure must	dequate core cooling is rned to service to ensu I that the dose rate by r that will open the disc the individual has to o be approved by the	met, the shift manager det ure that redundant RHR put the pump discharge valves charge valves. To meet the pen the discharge valves is (b)	ermined that the "A" & "C" RHR pumps mps are available. Radiation protection is 60 Rem / hr and the shift manager emergency exposure guideline the (a) minutes and his emergency
Α.	(a) 10 (b) Emergency Direct	or	change to have Zap /
В.	(a) 15 (b) Radiological Supp	ort Coordinator	
C.	(a) 20 (b) Emergency Mainte	enance Coordinator	
D.	(a) 30 (b) TSC Manager		
Proposed Answ	ver: A (a) 10 (b) Emergenc	y Director	
Explanation (Op	otional): EAP-15, Eme maximum dos approved by t	rgency Radiation Exposure se to protect equipment to 1 he emergency director.	Criteria and Control limits the 0 Rem and this exposure must be
Technical Refer	ence(s): EAP-	15, Emergency Radiation Ex	posure Criteria and Control
Proposed refere	ences to be provided to	applicants during examina	tion: None
Learning Object	ive: 2.3.4 Knowlec including pern RO 2.5 / SRO	lge of radiation exposure lin nissible levels in excess of t 3.1	nits and contamination control / hose authorized. (CFR: 43.4 / 45.10)
Question Source	e: Bank Modifi New	# ed Bank #X	(Note changes or attach parent)

 \checkmark

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

55.41 ____ 55.43 __4___

ES-401	Sample Que	Written Examination stion Worksheet	Form ES-401-6 (R8, S1)		
Examination Outline Cross-reference	: Level	Tier # Group # K/A # Importance Rating	RO 1 95009 AA2. 2.9_	SRO 1 1 03 2.9_	

Proposed Question: 4 / 3

The reactor is critical at 160 psig. The feedwater level control system has been removed from service. Reactor water level has been stable and is being controlled via the "A" CRD pump and reactor water clean up (RWCU) blowdown with a blowdown rate of 60 gpm. Several minutes ago the "A" CRD pump tripped. There are no CRD accumulators alarms are present. The operator must (1) RWCU blowdown rate to prevent (2) .

- (1)-Docrease Reduce Α. (2) a HPCI / RCIC injection signal
- (1) Decrease Reduce Β. (2) a reactor scram
- (1) Increase Raise C. (2) a HPCI / RCIC trip signal
- (1)-Increase Raise D. (2) a reactor scram
- Proposed Answer: B. (1) Decrease (2) a reactor scram

Explanation (Optional): A.

- This condition will never occur. The water level reduction will be terminated when level reaches 177 and RWCU isolates. This is above the 126.5 level for RCIC and HPCI start.
- Β. Correct - if the operator does not decrease the blowdown then a reactor scram / GP II / RWCU isolation will occur.
- This condition will not occur. raised the level will C. declease, not increase.
- If the blowdown is increased the low level scram / isolations will occur. D. raised

Technical Reference(s):SDLP-12, RWCU, OP-23, OP-65, AOP-1

Proposed references to be provided to applicants during examination: None

Learning Objective:

AA2. Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL: (CFR: 41.10 / 43.5 / 45.13) AA2.03 Reactor water cleanup blowdown rate 2.9 / 2.9

Question Source:

Bank #		
Modified Bank #		(Note changes or attach parent)
New	X	, ,

Question History:

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

Х

10 CFR Part 55 Content:

55.41 __5___ 55.43 ____

ES-401	Sample V Ques	Written Examination stion Worksheet	Form ES-401-6 (R8,		
Examination Outline Cross-reference:	Level	Tier # Group # K/A #	RO 1 1 295010	SRO 1 1 AA1.01	

Proposed Question: 5 / 4

The unit is operating at 100% power when an operator mistakenly isolates the reactor building closed loop cooling (RBCLC) to the "A" Drywell Cooler. The operator notifies the control room of the mistake and states that he can not reestablish any flow to the "A" Drywell Cooler. What effect does this have on the containment and what operator actions would have to be taken.

Α. Drywell temperature and pressure will remain steady because the redundant "B" drywell cooler is in service. No operator action will be required.

Importance Rating

3.4

3.5

- Rise Drywell temperature and pressure will increase. Operator action will be required to Β. maintain drywell pressure below 2.7 psig.in accordance with EOP-4, "Primary-Containment Control."
- C. Drywell temperature and pressure will remain steady due to the stored heat capacity in the cooling water of the "A" drywell cooler. No operator action is required.
- Rise Drywell temperature and pressure will-increase. Operator action is required to manually D. start the forth fan on the "B" drywell cooler which will then be able to maintain drywell temperature below 135°F.

Rise Proposed Answer: В. Drywell temperature and pressure will increase, Operator action may be required to maintain drywell pressure below 2.7 psig-in accordance with -EOP-4, "Primary Containment Control-"

Explanation (Optional):

- Α. A loss of 50% cooling in the drywell at 100% power will result in a rapid heat up and pressure increase (minutes).
- В. A loss of 50% cooling in the drywell at 100% power will result in a rapid heat up and pressure increase (minutes). The operator will enter EOP-4 on high drywell temperature and be required to maintain drywell pressure below 2.7 psig.
- There is not sufficient heat capacity to maintain drywell temperature less than 135 by starting the C. forth fan on the "B" drywell cooler.
- D. Starting the forth fan on the "B" cooler will not be able to maintain temperature below 135.

Technical Reference(s): EOP-4, OP-53, "DRYWELL VENTILATION AND COOLING."

Proposed references to be provided to applicants during examination: None

Learning Objective:	AA1. Ability to operate and/or monitor the following as they apply to HIGH DRYWELL PRESSURE: (CFR: 41.7 / 45.6) AA1.01 Drywell ventilation/cooling 3.4 / 3.5
Question Source:	Bank # Modified Bank # (Note changes or attach parent) Newx
Question History: (Optional - Questions va the NRC; failure to prov	Last NRC Exam alidated at the facility since 10/95 will generally undergo less rigorous review by ide the information will necessitate a detailed review of every question.)
Question Cognitive Lev	el: Memory or Fundamental Knowledge Comprehension or AnalysisX
10 CFR Part 55 Conten	t: 55.417 55.43
Comments:	

~~~~

I

-

| Examination Outline Cross-reference:       Level       RO       SRO         Tier #       _11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ES-401                                                                                 |                                                                                                         | Sa                                                             | umple V<br>Ques                                             | Vritten Examination<br>tion Worksheet                                                                               |                                                      | Form E                                          | ES-401-6 (R8, S1)                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------|------------------------------------------------------------------|
| Proposed Question: 8 / 7         The unit has just experienced a reactor scram. All control rods fully inserted with the exception of control 47-26; which inserting to position 24. Subsequent attempts to insert the cogtrol rod were not successful. The shift manager orders a cool down to begin a fractmestance will remain shutdown during the cool down.         A.       Control rod 47-20 must be fully inserted prior to beginning the cool down.         B.       Standby liquid control must be injected prior to beginning the cool down.         C.       Reactor engineering must perform calculations to prove the reactor will remain shutdown prior to beginning the cool down.         D.       No actions are necessary, the reactor will remain shutdown during the cool down.         D.       No actions are necessary, the reactor will remain shutdown during the cool down.         Explanation (Optional): shutdown margin requires that the reactor will remain shutdown under all conditions without boron injection with one control rod fully withdrawn (or any other position), provided all other control rods are inserted to or beyond positio 02.         Proposed reference(s):EP-6, Backup control rod insertion         Proposed reference(s):EP-6, Backup control rod insertion | Examination O                                                                          | utline Cross-refe                                                                                       | erence:                                                        | Level                                                       | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                     | RO<br>1<br>29501<br>3.6_                             | 5 AK1.0                                         | SRO<br>1<br>1<br>3.9                                             |
| The unit has just experienced a reactor scram. All control rods fully inserted with the exception of control rod #7-26; which inserted to position 24. Subsequent attempts to insert the control rod were not successful. The shift manager orders a cool down to begin \$5 maintenance 2003 get. What actions are required, prior to the cool down to ensure that the reactor will remain shutdown during the cool down.         A.       Control rod #7-20 must be fully inserted prior to beginning the cool down.         B.       Standby liquid control must be injected prior to beginning the cool down.         C.       Reactor engineering must perform calculations to prove the reactor will remain shutdown prior to beginning the cool down.         D.       No actions are necessary, the reactor will remain shutdown during the cool down.         Proposed Answer:       D.       No actions are necessary, the reactor will remain shutdown during the cool down.         Explanation (Optional): shutdown margin requires that the reactor will remain shutdown during the cool down.       Proposed reference(s):EP-6, Backup control rod insertion         Proposed references to be provided to applicants during examination:       None         Proposed reference(s):EP-6, Backup control rod insertion       Proposed reference(s):EP-6, Backup control rod insertion         Proposed reference(s):EP-6, Backup control rod insertion       None         Proposed reference(s):EP-6, Backup control rod insertion       None         Proposed reference(s):EP-6, Backup control rod insertion       None         Proposed refe  | Proposed Ques                                                                          | stion: 8 / 7                                                                                            |                                                                |                                                             |                                                                                                                     |                                                      |                                                 |                                                                  |
| A.       Control rod 27-20 must be fully inserted prior to beginning the cool down.         B.       Standby liquid control must be injected prior to beginning the cool down.         C.       Reactor engineering must perform calculations to prove the reactor will remain shutdown prior to beginning the cool down.         D.       No actions are necessary, the reactor will remain shutdown during the cool down.         Proposed Answer:       D.       No actions are necessary, the reactor will remain shutdown during the cool down.         Explanation (Optional):       shutdown margin requires that the reactor will remain shutdown under all conditions without boron injection with one control rod fully withdrawn (or any other position), provided all other control rods are inserted to or beyond positio 02.         Fechnical Reference(s):EP-6, Backup control rod insertion       Proposed references to be provided to applicants during examination: None         .earning Objective:       AK1. Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM: (CFR: 41.8 to 41.10 AK1.01 Shutdown margin 3.6* / 3.9*         Question Source:       Bank #                                                                                                                                                                                                                                                                                                                                                                                                                       | The unit has just<br>rod <del>27-26,</del> whic<br>successful. Th<br>required, prior t | st experienced a<br>h inserted to pos<br>e <del>shift manago</del> r<br>o the cool down                 | reactor s<br>sition 24.<br>orders a c<br>to ensure             | cram.<br>Subsection<br>cool dove<br>that th                 | All control rods fully ir<br>quent attempts to inse<br>wn- <del>to begin a maintef</del><br>e reactor will remain   | nserted wi<br>ert the cor<br>hance out<br>shutdown   | th the ex<br>trol rod<br>ge. Wh<br>during th    | ception of contro<br>were not<br>at actions are<br>ne cool down. |
| Proposed Answer:       D.       No actions are necessary, the reactor will remain shutdown during the cool down.         Explanation (Optional):       shutdown margin requires that the reactor will remain shutdown under all conditions without boron injection with one control rod fully withdrawn (or any other position), provided all other control rods are inserted to or beyond positio 02.         Fechnical Reference(s):EP-6, Backup control rod insertion       Proposed references to be provided to applicants during examination:       None         earning Objective:       AK1. Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM: (CFR: 41.8 to 41.10 AK1.01 Shutdown margin 3.6* / 3.9*         Question Source:       Bank #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | А.<br>В.<br>С.<br>D.                                                                   | Control rod <del>27-2</del><br>Standby liquid o<br>Reactor engine<br>shutdown prior<br>No actions are r | 20 must b<br>control mu<br>ering mus<br>to beginn<br>necessary | e fully i<br>ust be ir<br>st perfor<br>ing the<br>y, the re | nserted prior to begin<br>njected prior to beginr<br>rm calculations to pro<br>cool down.<br>eactor will remain shu | ning the c<br>ning the co<br>ve the rea<br>tdown dur | cool down<br>col down<br>ctor will<br>ing the c | n.<br>remain<br>ool down.                                        |
| Explanation (Optional): shutdown margin requires that the reactor will remain shutdown under all conditions without boron injection with one control rod fully withdrawn (or any other position), provided all other control rods are inserted to or beyond positio 02.         Fechnical Reference(s):EP-6, Backup control rod insertion         Proposed references to be provided to applicants during examination: None         earning Objective:       AK1. Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM: (CFR: 41.8 to 41.1( AK1.01 Shutdown margin 3.6* / 3.9*         Question Source:       Bank #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Proposed Answ                                                                          | ver: D.                                                                                                 | No actior<br>cool dow                                          | ns are r<br>m.                                              | ecessary, the reactor                                                                                               | r will rema                                          | in shutdo                                       | own during the                                                   |
| Technical Reference(s):EP-6, Backup control rod insertion         Proposed references to be provided to applicants during examination:       None         Learning Objective:       AK1. Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM: (CFR: 41.8 to 41.10)         Question Source:       Bank #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Explanation (Op                                                                        | otional): shutdov<br>conditio<br>other po<br>02.                                                        | vn margin<br>ns withou<br>osition), p                          | i require<br>it boron<br>rovided                            | es that the reactor wil<br>injection with one co<br>all other control rods                                          | l remain s<br>ntrol rod f<br>are inser               | hutdown<br>ully witho<br>red to or              | under all<br>drawn (or any<br>beyond position                    |
| Proposed references to be provided to applicants during examination:       None         _earning Objective:       AK1. Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM: (CFR: 41.8 to 41.10 AK1.01 Shutdown margin 3.6* / 3.9*         Question Source:       Bank #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Technical Refer                                                                        | ence(s):EP-6, B                                                                                         | ackup co                                                       | ntrol roo                                                   | d insertion                                                                                                         |                                                      |                                                 |                                                                  |
| Learning Objective:       AK1. Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM: (CFR: 41.8 to 41.10 AK1.01 Shutdown margin 3.6* / 3.9*         Question Source:       Bank #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Proposed refere                                                                        | ences to be provi                                                                                       | ided to ap                                                     | plicant                                                     | s during examination:                                                                                               | None                                                 |                                                 |                                                                  |
| Question Source:       Bank #                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Learning Object                                                                        | ive:                                                                                                    | AK1. Kno<br>concepts<br>AK1.01 S                               | wledge<br>as they<br>Shutdow                                | e of the operational im<br>apply to INCOMPLE<br>m margin 3.6* / 3.9*                                                | plications<br>TE SCRA                                | of the fo<br>M: (CFF                            | llowing<br>R: 41.8 to 41.10)                                     |
| Question History:       Last NRC Exam         Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)         Question Cognitive Level:       Memory or Fundamental Knowledge         Question Cognitive Level:       Memory or Fundamental Knowledge         0 CFR Part 55 Content:       55.418                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Question Source                                                                        | 9:                                                                                                      | Bank #<br>Modified<br>New                                      | Bank #                                                      | (No                                                                                                                 | te change                                            | s or atta                                       | ch parent)                                                       |
| Question Cognitive Level:       Memory or Fundamental Knowledgex         Comprehension or Analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Question Histon<br>(Optional - Ques<br>he NRC; failure                                 | /:<br>stions validated a<br>to provide the ir                                                           | Last NRC<br>at the faci<br>ofrmatior                           | Exam<br>lity sinc<br>n will ne                              | e 10/95 will generally<br>cessitate a detailed r                                                                    | undergo l<br>eview of e                              | ess rigo<br>very que                            | rous review by<br>estion.)                                       |
| 0 CFR Part 55 Content: 55.418<br>55.43                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Question Cognit                                                                        | ive Level:                                                                                              | Memory o<br>Compreh                                            | or Fund<br>ension                                           | amental Knowledge<br>or Analysis                                                                                    | X                                                    |                                                 |                                                                  |
| comments:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0 CFR Part 55                                                                          | Content:                                                                                                | 55.41<br>55.43                                                 | 8                                                           |                                                                                                                     |                                                      |                                                 |                                                                  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Comments:                                                                              |                                                                                                         |                                                                |                                                             |                                                                                                                     |                                                      |                                                 |                                                                  |

| ES-401                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sample Written Examination<br>Question Worksheet                                                                                                                                       | Form ES-401-6 (R8, S1                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Examination Outline Cross-                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | reference: Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                    | RO SRO<br>11<br>21<br>295017 AK3.02<br>3.33.2_                                                                     |
| Proposed Question: 10 / 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                        |                                                                                                                    |
| A loss of coolant accident h                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | as occurred. The following conditions are                                                                                                                                              | e present:                                                                                                         |
| Reactor Building Ventilation<br>Reactor Building Exhaust R<br>"A" Standby Gas Train<br>Reactor Building to Atmosp<br>Differential Pressure<br>Turbine Building Ventilation<br>Offsite Release<br>$T_{0}$ (b) (b) (b) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Venhlation<br>ISOLATED<br>adiation 1 x 10E5<br>OPERATING<br>here<br>ISOLATED<br>Above the ALERT Level<br>Above the ALERT Level<br>Above the ALERT Level<br>Above the ALERT Level       | )                                                                                                                  |
| A. Reestablish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | the turbine building ventilation to preven                                                                                                                                             | t an unmonitored ground level                                                                                      |
| release of range of range of range of range of range of the second secon | adioactivity.                                                                                                                                                                          | the turbine building and and                                                                                       |
| <del>equipment t</del><br>C. Reestablish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | emporatures.<br>the reactor building ventilation to preven                                                                                                                             | t an unmonitored ground level                                                                                      |
| release of ra<br>D. Reestablish<br>equipment t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | adioactivity.<br>the reactor building ventilation to reduce<br>emperatures.                                                                                                            | the reactor building area and                                                                                      |
| Proposed Answer: A.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Reestablish the Turbine building ven<br>ground level release of radioactivity.                                                                                                         | tilation to prevent an unmonitored                                                                                 |
| Explanation (Optional): The<br>ven<br>In a<br>1E4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | turbine building is not a leak tight building<br>will result in an elevated release point fo<br>ddition, EOP-4 states that if reactor building<br>then isolate reactor building vents. | g. Restarting the turbine building<br>r any radioactivity in the building.<br>ng exhaust radiation is greater than |
| Technical Reference(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | GE EOP manual page 6-2. There wa FitzPatrick must very this answer.                                                                                                                    | as no basis document for EOP-6.                                                                                    |
| Proposed references to be p                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | rovided to applicants during examination:                                                                                                                                              | : None                                                                                                             |
| Learning Objective: AK3<br>HIG<br>3.3 /                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | . Knowledge of the reasons for the follow<br>H OFF-SITE RELEASE RATE: (CFR: 41<br>3.5                                                                                                  | ing responses as they apply to<br>.5 / 45.6) AK3.02 Plant ventilation                                              |
| Question Source:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Bank # INPO 6578                                                                                                                                                                       |                                                                                                                    |
| Which of the following explai<br>restart the Turbine Building \<br>o prevent an unmonitored g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ns why DEOP 300-2, Radioactive Releas<br>/entilation, if it is shutdown?<br>round level release of radioactivity                                                                       | e Control, directs the operator to                                                                                 |

to maintain a positive pressure inside the turbine building.

~.\_.~

~, -· '

to reduce the turbine building area and equipment temperatures.

to filter the air in the turbine building before release to the environment. Reference: ...295017.K3.02

 Question History:
 Last NRC Exam

 (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | X |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.415<br>55.43                                              |   |

Comments:

FitzPatrick must verify this answer. There was no reference material provided on this subject. (MIT for EOP-6)

| ES-401                                                             |                                                                              | San                                                                                                                 | nple Written Examinatio<br>Question Worksheet                                                                                                                                                                                 | on<br>                                                                                                      | Form ES-401-6 (R8, S1)                                                                                                                   |
|--------------------------------------------------------------------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Examination (                                                      | Dutline Cross                                                                | -reference: Lo                                                                                                      | evel<br>Tier #<br>Group #<br>K/A #<br>Importance Ratir                                                                                                                                                                        | RO<br>1<br>3<br>295023<br>ng2.9_                                                                            | SRO<br>1<br>3 AA1.02<br>3.1_                                                                                                             |
| Proposed Que                                                       | estion:11 / 34                                                               |                                                                                                                     |                                                                                                                                                                                                                               |                                                                                                             |                                                                                                                                          |
| The unit is sh<br>1-9 FUEL PC<br>├ fuel pool leve<br>the following | utdown for<br>OL COOL a<br>I is <del>dôcroas</del><br>methods <del>/sy</del> | a refueling ou<br>& CLN UP TR<br>Mg and the ru<br>stems is avail                                                    | tage with the fuel poo<br>OUBLE alarms. The<br>nning fuel pool coolin<br>able to <del>rofill</del> the fuel <b>s</b>                                                                                                          | l gates instal<br><del>equipment of</del><br>g pump has t<br>torage pool.                                   | led. Annunciator 09-3-<br>Serator reports that the<br>ripped. Which one of                                                               |
| A.<br>B.<br>C.<br>D.                                               | Align and<br>Start the s<br>Align conc<br>Start a see                        | inject core spr<br>econd fuel po<br>lensate transf<br>cond control re                                               | ray infto the reactor ca<br>ol cooling <u>pump to re</u><br>er to <del>refilf</del> the skimme<br>od drive pump to injec                                                                                                      | avity.<br>fill the pool.<br>r surge tanks<br>t into the rea                                                 | _ makeup to<br>ctor cavity.                                                                                                              |
| Proposed Ans                                                       | wer: C.                                                                      | Align con                                                                                                           | densate transfer to Fe                                                                                                                                                                                                        | fill the skimn                                                                                              | ner surge tank <b>s</b>                                                                                                                  |
| Explanation (C                                                     | ptional): A.<br>무<br>B.<br>D.                                                | The fuel p<br>will base r<br>Fuel pool I<br>in the skim<br>start becar<br>low low lev<br>The contro<br>effect the I | ool gates are installed a<br>to effect on the fuel pool<br>level has decreased an<br>timer surge tanks are th<br>use the level in the skin<br>vel in the skimmer surg<br>of rod drive pump will in<br>level in the fuel pool. | and because o<br>I level.<br>d has resulted<br>e same. The<br>mmer surge tar<br>e tank.<br>ject into the re | f this addition of water ++ +<br>in the alarm. The level<br>second pump will not<br>ak has fallen below the<br>actor vessel and will not |
| Technical Refe                                                     | erence(s):SD                                                                 | LP-19, AOP-53                                                                                                       |                                                                                                                                                                                                                               |                                                                                                             |                                                                                                                                          |
| Proposed refer                                                     | ences to be                                                                  | provided to app                                                                                                     | licants during examinat                                                                                                                                                                                                       | ion: None                                                                                                   |                                                                                                                                          |
| Learning Objec                                                     | ctive: AA<br>REI<br>clea                                                     | 1. Ability to ope<br>FUELING ACC<br>anup system 2.                                                                  | rate and/or monitor the<br>IDENTS: (CFR: 41.7 / 4<br>9 / 3.1                                                                                                                                                                  | following as th<br>5.6) AA1.02                                                                              | ey apply to<br>Fuel pool cooling and                                                                                                     |
| Question Source                                                    | ce:                                                                          | Bank # I                                                                                                            | NPO 6671                                                                                                                                                                                                                      |                                                                                                             |                                                                                                                                          |
| Which of the<br>From the "A"<br>tank(s).                           | ollowing me<br>CST via the                                                   | ethods/system<br>condensate ti                                                                                      | s is normally used to<br>ransfer pumps and re                                                                                                                                                                                 | refill the fuel<br>fill through th                                                                          | storage pool?<br>e skimmer surge                                                                                                         |
| Align Shutdov<br>Start the secc<br>Cross connec                    | n Cooling and FPCC pr<br>t with Unit 3                                       | and refill via th<br>ump and refill<br>FPCC and re                                                                  | e spent fuel pool diffu<br>via the spent fuel poo<br>fill via the spent fuel r                                                                                                                                                | sers.<br>I diffusers<br>bool diffusers                                                                      |                                                                                                                                          |
| Poforonoci                                                         | 205022                                                                       | A1 02                                                                                                               | ·                                                                                                                                                                                                                             |                                                                                                             | -                                                                                                                                        |

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | x |
|---------------------------|--------------------------------------------------------------|---|
|                           | Comprehension or Analysis                                    | X |

10 CFR Part 55 Content:

55.41 <u>7</u> 55.43 \_\_\_\_

Comments:

| ES-401                                             |                                                                                                  | Sample Written Examination<br>Question Worksheet                                                                                                          | Form ES-401-6 (R8                                                                                                                         |
|----------------------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Examination (                                      | Dutline Cross-re                                                                                 | ference: Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                         | RO SRO<br>11<br>11<br>295024 EA2.01<br>_4.24.4_                                                                                           |
| Proposed Que                                       | estion: 12 / 8                                                                                   | All And march                                                                                                                                             |                                                                                                                                           |
| A major transi<br>exist:                           | ent has just occ                                                                                 | urred, no operator actions have been t                                                                                                                    | aken. The following plant condi                                                                                                           |
| Torus<br>Torus<br>DW P<br>DW To<br>RPV v<br>Reacte | pressure<br>water level<br>water temperat<br>ressure<br>emperature<br>vater level<br>or pressure | 28 psig<br>16 feet<br>ure 155 °F<br>30 psig<br>290 <del>320 °F - وہ محک</del> کت طعتوں<br>100 inches<br>500 psig and <del>decreasing</del>                | emp /250°F pray                                                                                                                           |
| Considering th                                     | ie above conditi                                                                                 | ons, <u>(1)</u> to prevent the <u>(2)</u> from be                                                                                                         | eing exceeded.                                                                                                                            |
| А.                                                 | (1) Start Toru<br>(2) Pressure S                                                                 | s venting through SBGT<br>Suppression Pressure Limit                                                                                                      |                                                                                                                                           |
| B.                                                 | (1) Start dryw<br>(2) Primary C                                                                  | ell venting through SBGT<br>ontainment Pressure Limit                                                                                                     |                                                                                                                                           |
| C.                                                 | (1) Start Dryw<br>(2) <del>Drywell Sp</del>                                                      | ell sprays<br><del>ray Initiating Limit</del> Drywell design                                                                                              | temp.                                                                                                                                     |
| ø                                                  | (1) Start Torus<br>(2) SRV Tail F                                                                | s sprays<br>Pipe Limit                                                                                                                                    |                                                                                                                                           |
| Proposed Ans                                       | wer: C.                                                                                          | (1) Start Drywell sprays<br>(2) <del>Drywell Spray Initiating Limi</del> t                                                                                |                                                                                                                                           |
| Explanation (C                                     | ptional): A & B                                                                                  | These methods should be used durir<br>containment pressure below the dryv<br>accident when conditions in EOP-4 a<br>conditions are not met to perform pos | ng normal operation to maintain<br>vell pressure set point or post<br>re met. Drywell / Torus pressur<br>st accident containment venting. |
|                                                    | C.                                                                                               | DW Sprays must be initiated before t                                                                                                                      | he initiating limits is reached.                                                                                                          |
|                                                    | D.                                                                                               | Initiating torus spray will only move th                                                                                                                  | ne plant closer to the limit.                                                                                                             |
| Technical Refe                                     | erence(s):                                                                                       | EOP-4, Primary Containment Contro                                                                                                                         | ; EP-6, Post Accident Containm                                                                                                            |

×\_\_\_ <

 $\checkmark$ 

| Learning Objective: * EA2.<br>DRY<br>4.2*/                                            | Ability to determine and/or interpret the following as they apply to HIGH<br>WELL PRESSURE: (CFR: 41.10 / 43.5 / 45.13) EA2.01 Drywell pressure<br>4.4*                                                                                                                                     |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MIT-<br>LO 1                                                                          | 301.11E, EOP-4<br>.03, Identify situations where it is appropriate to enter other                                                                                                                                                                                                           |
| LO 1<br>LO 1                                                                          | <ul> <li>procedure concurrently - Task 344169, Spray DW</li> <li>Explain basis for any step in the EOP - Task 344169, Spray DW</li> <li>Explain the basis and demonstrate the use of all figures<br/>associated with EOP-4, Task 344132, Monitor and control DW<br/>temperature.</li> </ul> |
| Question Source:                                                                      | Bank #<br>Modified Bank # (Note changes or attach parent)<br>NewX                                                                                                                                                                                                                           |
| Question History:<br>(Optional - Questions validate<br>the NRC; failure to provide th | Last NRC Exam<br>d at the facility since 10/95 will generally undergo less rigorous review by<br>e information will necessitate a detailed review of every question.)                                                                                                                       |
| Question Cognitive Level:                                                             | Memory or Fundamental Knowledge<br>Comprehension or AnalysisX                                                                                                                                                                                                                               |
| 10 CFR Part 55 Content:                                                               | 55.4110<br>55.435                                                                                                                                                                                                                                                                           |
| <b>A</b>                                                                              |                                                                                                                                                                                                                                                                                             |

Comments:

The learning objectives do not distinguish between SRO and RO for EOPs. The Objectives state "The operator should be able to ... "

| ES-401                               | Sample<br>Que | Written Examination<br>stion Worksheet          | Fo                                | rm ES-401-6 (R8, S1)          |
|--------------------------------------|---------------|-------------------------------------------------|-----------------------------------|-------------------------------|
| Examination Outline Cross-reference: | Level         | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>1<br>_2<br>295026 E/<br>4.1 | SRO<br>1<br>1<br>A2.01<br>4 2 |

Proposed Question: 14 / 26

allerge multideby EP-3

ATWS A major transient has just occurred, all control rods have been inserted by actuation of the alternate rod -insertion (ARI) system: The following plant conditions exist:

Torus pressure 5 psig Torus water level 14 feet Torus water temperature 180 176 °F **DW Pressure** 5 psig DW Temperature 145 °F RPV water level 100 inches Reactor pressure 1000-1145-psig Reactor Power 0%

Considering the above conditions, you must (1) because the (2) has been exceeded.

- Α. (1) Perform an Emergency Depressurization (2) SRV Tail Pipe Limit
- Β. (1) Perform an Emergency Depressurization (2) Heat Capacity Temperature Limit
- C. (1) Perform RPV Flooding (2) RPV Saturation Temperature Curve
- (1) Start Standby Liquid Control D. (2) Boron Injection Initiation Temperature

| Proposed Answer: | В. | (1) Perform an Emergency Depressurization |
|------------------|----|-------------------------------------------|
|                  |    | (2) Heat Capacity Temperature Limit       |

Explanation (Optional): A The SRV tail pipe limit has not been exceeded.

- C. The RPV saturation temperature has not been exceeded.
- All rods have been inserted reactor power is 0. There is no need to start D. standby liquid control.
- Technical Reference(s): EOP-4, Primary Containment Control
- Proposed references to be provided to applicants during examination: EOP-4, EOP-3, Failure to Scram

Learning Objective: EA2. Ability to determine and/or interpret the following as they apply to SUPPRESSION POOL HIGH WATER TEMPERATURE: (CFR: 41.10 / 43.5 / 45.13) EA2.01 Suppression pool water temperature 4.1\* / 4.2\*

|                                                                           | MIT-30<br>LO 1.03<br>LO 1.09<br>LO 1.07 | 1.11E, E<br>3,<br>7              | OP-4<br>Identify situation<br>procedure concu<br>Explain basis fo<br>Explain the basi<br>associated with | s where it i<br>urrently<br>r any step i<br>s and demo<br>EOP-4 | is appropriate to enter other<br>n the EOP<br>onstrate the use of all figures |
|---------------------------------------------------------------------------|-----------------------------------------|----------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------|
| Question Source:                                                          |                                         | Bank #<br>Modifie<br>New         | d Bank #                                                                                                 | -<br>(<br>X                                                     | Note changes or attach parent)                                                |
| Question History:<br>(Optional - Questions va<br>the NRC; failure to prov | alidated<br>ide the i                   | Last NF<br>at the fa<br>nformati | RC Exam<br>cility since 10/95<br>on will necessitat                                                      | will genera<br>e a detaile                                      | Ily undergo less rigorous review by d review of every question.)              |
| Question Cognitive Leve                                                   | el:                                     | Memory<br>Compre                 | y or Fundamental<br>chension or Analy                                                                    | Knowledg<br>⁄sis                                                | e                                                                             |
| 10 CFR Part 55 Conten                                                     | t:                                      | 55.41<br>55.43                   | 10<br>5                                                                                                  |                                                                 |                                                                               |

Comments:

| ES-401<br>                                                                                          |                                                                                                |                                                                         |                                                                                    | Sample<br>Que:                                                                  | written Exam<br>stion Worksho                                                                      | ination<br>eet                                                                                                    | Fo                                                                              | rm ES-401-6 (F                                                                              | R8, S1)                                                |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------|
| Examination                                                                                         | Outline C                                                                                      | ross-re                                                                 | ference:                                                                           | Level                                                                           | Tier #<br>Group #<br>K/A #<br>Importance                                                           | Rating                                                                                                            | RO<br>1<br>1<br>_295031 E.<br>_4.4_                                             | SRO<br>1<br>1<br><u>A1.06</u><br>4.4                                                        |                                                        |
| Proposed Q                                                                                          | uestion: 15                                                                                    | 5/10                                                                    |                                                                                    |                                                                                 | 1 - 1( )                                                                                           | •••                                                                                                               | Ecce Out                                                                        | havestarled                                                                                 | Com high D<br>erapt B                                  |
| A small brea<br>RCIC is inject<br>and all residu<br>minimum flow<br>water level is<br>describes the | k LOCA h<br>pting into ti<br>ual heat re<br><del>w:</del> One hu<br>5 75 inches<br>e operation | as occu<br>he reac<br><del>omoval</del><br>ndred<br>s and e<br>n of the | urred and<br>tor vesse<br><del>pumps ha</del><br>seconds a<br>ontinuing<br>Automat | no oper<br>t <del>at rated</del><br>we start<br>go the r<br>to decre<br>c Depre | ator action ha<br>d flow with we<br>ed because c<br>eactor water<br>ase. If no op<br>ssurerization | as been take<br>ter level de<br>fi <del>high dryw</del><br>level <del>reache</del><br>erator action<br>System (Al | en, HPCI is<br>ereasing<br>oll pressure<br>od-177 inche<br>n is taken W<br>DS)? | out of service a<br>he "A" oore spr<br>and are runnin<br>es, current reac<br>hich statement | and<br>and<br><del>ay<br/>gon</del><br>for drap<br>for |
| A.                                                                                                  | All 7 A                                                                                        | DS valv                                                                 | ves will op                                                                        | pen in 34                                                                       | 4 seconds.                                                                                         |                                                                                                                   |                                                                                 |                                                                                             |                                                        |
| В.<br>С.<br>D.                                                                                      | All 7 A<br>inches<br>All 7 A<br>All 7 A                                                        | DS valv<br>DS valv<br>DS valv                                           | ves will op<br>ves will op<br>ves will op                                          | en in 13<br>en in 13<br>en imm                                                  | 34 seconds at<br>34 seconds at<br>ediately after                                                   | fter reactor<br>fter the "B" o<br>the "B" core                                                                    | water level<br>core spray p<br>e spray pum                                      | decreases to 59<br>المصنيعير<br>ump is started.<br>p is started.                            | ∂.5<br>≁                                               |
| Proposed An<br>Explanation (                                                                        | swer:<br>(Optional):                                                                           | В.                                                                      | All 7 Al<br>decrea                                                                 | DS valve<br>ses to 5                                                            | es will open in<br>9.5 inches.                                                                     | 134 secon                                                                                                         | ds after rea                                                                    | معمدہ الح<br>ctor water level                                                               |                                                        |
| The t<br>press<br>timer                                                                             | following c<br>sure ECCS<br>times out                                                          | conditio<br>S pump                                                      | n are requ<br>running,                                                             | uired for<br>reactor                                                            | ADS to autor<br>low 177 <u>and</u> I                                                               | matically op<br>ow low low                                                                                        | en all 7 valv<br>level 59.5 a                                                   | res. Any low<br>fter 134 second                                                             | j                                                      |
| Technical Re                                                                                        | ference(s)                                                                                     | ):                                                                      | SDLP-(                                                                             | )2J, AD                                                                         | S                                                                                                  |                                                                                                                   |                                                                                 |                                                                                             |                                                        |
| Proposed ref                                                                                        | erences to                                                                                     | be pro                                                                  | ovided to a                                                                        | applican                                                                        | ts during exa                                                                                      | mination:                                                                                                         | NONE                                                                            |                                                                                             |                                                        |
| Learning Obj                                                                                        | ective:                                                                                        | EA1. /<br>LOW <sup>1</sup><br>syster                                    | Ability to c<br>WATER I<br>n 4.4* / 4                                              | perate a<br>EVEL: (<br>.4*                                                      | and/or monito<br>(CFR: 41.7 / 4                                                                    | or the followi<br>15.6) EA1.0                                                                                     | ing as they a<br>6 Automation                                                   | apply to REAC<br>depressurizat                                                              | FOR<br>ion                                             |
| Question Sou                                                                                        | Irce:                                                                                          |                                                                         | Bank #<br>Modifie<br>New                                                           | d Bank a                                                                        | #>                                                                                                 | (Note                                                                                                             | changes or                                                                      | attach parent)                                                                              |                                                        |
| Question Hist                                                                                       | tory:<br>uestions v                                                                            | alidateo<br>vide the                                                    | Last NF<br>d at the fa<br>informati                                                | RC Exan<br>cility sin<br>on will n                                              | n<br>ce 10/95 will<br>iecessitate a d                                                              | generally ur<br>detailed rev                                                                                      | ndergo less<br>iew of every                                                     | rigorous review<br>question.)                                                               | / by                                                   |
| (Optional - Quinter NRC; failu                                                                      |                                                                                                |                                                                         |                                                                                    |                                                                                 |                                                                                                    |                                                                                                                   |                                                                                 |                                                                                             |                                                        |
| (Optional - Qu<br>he NRC; failu<br>Question Cog                                                     | nitive Lev                                                                                     | el:                                                                     | Memory<br>Compre                                                                   | or Fun<br>hensior                                                               | damental Kno<br>1 or Analysis                                                                      | wiedge                                                                                                            | x                                                                               |                                                                                             |                                                        |

Comments: Licensee to validate the technical accuracy of the question.

| ES-401                                                                 |                                                       |                                                                         | Sample<br>Que                                  | written Examination<br>stion Worksheet                                                                        |                                                                         | Form ES-401-6 (R8, S                                                       |
|------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Examination C                                                          | Outline Cr                                            | oss-reference:                                                          | Level                                          | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                               | RO<br>1<br>_2<br>_3.6                                                   | SRO<br>1<br>1<br>EK3.03<br>3.7_                                            |
| Proposed Que                                                           | stion: 16                                             | / 29                                                                    |                                                |                                                                                                               |                                                                         |                                                                            |
| An event has o<br>being maintain<br>depressurizatio<br>with torus leve | occurred<br>led at 5 fe<br>on is in pi<br>I at 5 feet | which resulted<br>eet. A manual<br>rogress using g<br>t, which of the f | n torus v<br>reactor s<br>roup 2 p<br>pllowing | dr<br>water level rapidly deer<br>cram has been initiate<br>ressure control system<br>statements is a valid F | copping<br>cased to 5 f<br>d and an err<br>is. Under th<br>RCIC operati | feet. Torus level is<br>nergency<br>ese plant conditions<br>ional concern. |
| Α.                                                                     | The RC                                                | C pump suction                                                          | n logic t                                      | hat transfers the RCIC                                                                                        | suction to the                                                          | he CST on low Torus                                                        |
| B.                                                                     | The RC                                                | IC system can                                                           | not be o                                       | perated in the RPV pre                                                                                        | essure contr                                                            | ol mode because it wi                                                      |
| C.                                                                     | The RC                                                | IC suction mus                                                          | on of tor<br>t remain                          | us level.<br>aligned to the CST to                                                                            | prevent pun                                                             | np suction vortexing.                                                      |
| D.                                                                     | The RC                                                | IC system mus                                                           | t be tripp                                     | bed to prevent over pre                                                                                       | essurizing th                                                           | e containment.                                                             |
| Proposed Ans                                                           | wer:                                                  | C. The Results                                                          | CIC suct<br>vortexi                            | ion must remain aligne<br>ng. (OP-19 pp. 13)                                                                  | ed to the CS                                                            | T to prevent pump                                                          |
| Explanation (O                                                         | ptional):                                             | A. The Re                                                               | CIC pum                                        | p suction logic will not                                                                                      | transfer on                                                             | torus low level. This                                                      |
|                                                                        |                                                       | B. RCIC of the CS                                                       | peration<br>T. OP-1                            | in pressure control m<br>9 requires that the pur                                                              | ode pumps<br>np suction b                                               | water from the CST to<br>be aligned to the CST                             |
|                                                                        |                                                       | D. Contai<br>contair<br>301.11                                          | nment ca<br>iment ve<br>E PP 11                | an not be over pressure con<br>ent will be able to "keep<br>)                                                 | ized by RCI<br>b up" with the                                           | C turbine exhaust. Th<br>e pressurization. (MIT                            |
| Technical Refe                                                         | rence(s):                                             | OP-19                                                                   |                                                |                                                                                                               |                                                                         |                                                                            |
| Proposed refer                                                         | ences to                                              | be provided to                                                          | applican                                       | ts during examination:                                                                                        | None                                                                    |                                                                            |
| Learning Objec                                                         | tive:                                                 | EK3. Knowledg<br>LOW SUPPRE<br>operation: Plan                          | e of the<br>SSION I<br>t-Specifi               | reasons for the followi<br>POOL WATER LEVEL<br>c 3.6 / 3.7                                                    | ng response<br>: (CFR: 41.5                                             | es as they apply to<br>5 / 45.6) EK3.03 RCIC                               |
| Question Sourc                                                         | e:                                                    | Bank #<br>Modifie<br>New                                                | d Bank :                                       | # (No                                                                                                         | te changes                                                              | or attach parent)                                                          |
| Question Histor<br>(Optional - Que<br>the NRC; failure                 | ry:<br>estions va<br>e to provi                       | Last NI<br>lidated at the fa<br>de the informat                         | RC Exan<br>cility sin<br>ion will r            | n<br>ce 10/95 will generally<br>iecessitate a detailed r                                                      | <br>undergo les<br>eview of eve                                         | ss rigorous review by<br>ery question.)                                    |
| Question Cogn                                                          | itive Leve                                            | el: Memor                                                               | y or Fun                                       | damental Knowledge                                                                                            | x                                                                       |                                                                            |

10 CFR Part 55 Content:

55.41 <u>5</u>. 55.43 <u>55.43</u>

.

| ES-401                                                                                                                | Sample<br>Que                      | Written Examination<br>stion Worksheet                                      | For                                                      | m ES-401-6 (R8, S1)                                        |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------|
| Examination Outline Cross-reference:                                                                                  | Level                              | Tier #<br>Group #<br>K/A #<br>Importance Rating                             | RO<br>1<br>1<br>295031 EK<br>_4.0_                       | SRO<br>1<br>2.04<br>4.1_                                   |
| Proposed Question: 17 / 11                                                                                            |                                    |                                                                             |                                                          |                                                            |
| A spurious main steam isolation has o<br>and RPV pressure is being controlled<br>reached 126.5 inches. Which one of t | ccurred,<br>900 to 1(<br>he follow | all MSIV's have closed<br>000 psig using safety /<br>ving actions would you | l. All control ro<br>relief valves. F<br>expect to occur | ds have inserted<br>RPV level has just<br>r at this level. |

- Α. A & B Reactor Recirculation Pump Trips.
- Β. Core Spray System auto start.
- C. Reactor Core Isolation Cooling auto start.
- D. Standby Gas Treatment System auto start.

**Proposed Answer:** C. Reactor Core Isolation Cooling auto start.

Explanation (Optional): A.

- RR pump will trip at RPV level of 105.4 inches or may already be tripped due to the high pressure from the initial MSIV closure.
- Β. Core Spray starts at 59.5 inches.
- D. SBGT starts at 177 inches.

Technical Reference(s):SDLP-02B, RR and SDLP-02H, RPV Level Instrumentation.

Proposed references to be provided to applicants during examination: None

EK2. Knowledge of the interrelations between REACTOR LOW WATER LEVEL Learning Objective: and the following: (CFR: 41.7 / 45.8) EK2.04 Reactor core isolation cooling: Plant-Specific. 4.0 / 4.1

| Question Source:  | Bank #<br>Modified Bank #<br>New | (Note changes or attach parent) |
|-------------------|----------------------------------|---------------------------------|
| Question History: | Last NBC Exam                    |                                 |

Last NRC Exam

55.43

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory<br>Compreh | or Fundamental Knowledge<br>ension or Analysis | X |
|---------------------------|-------------------|------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.41             | 7                                              |   |

|         | ES-401                                                               |                                                                                                                               | Sample Written Examination<br>Question Worksheet                                                                                                                                                       | Form ES-401-6 (R8, S1)                                                                                                                            |
|---------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
|         | Examination                                                          | Outline Cross-refere                                                                                                          | ence: Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                         | RO SRO<br>11<br>11<br>295037 EK1.03<br>_4.24.4_                                                                                                   |
|         | Proposed Qu                                                          | estion: 18 / 12                                                                                                               |                                                                                                                                                                                                        |                                                                                                                                                   |
|         | The reactor fa                                                       | iled to scram and th                                                                                                          | ne following conditions exist:                                                                                                                                                                         |                                                                                                                                                   |
|         | RPV<br>React<br>Torus<br>Torus<br>RPV I<br>Safety<br>React<br>All en | water level<br>or Power<br>Level<br>water temperature<br>Pressure<br>/ Relief Valves<br>or Recirculation punergency and norma | 195 inches<br>18%<br>16 ft<br>115 °F<br>1000 psig<br>Cycling to control Reactor pre<br>imps Tripped<br>al sources of reactor makeup water a                                                            | essure.                                                                                                                                           |
| ccorda. | ۲۰ ۲۰ ۲۰ کم محمد<br>Standby Liqui<br>must be injeet                  | - 3,<br>d Control (SBLC) w<br>ed to ensure that th                                                                            | ill be initiated based on exceeding th<br>e reactor will stay shut down under a                                                                                                                        | ne <u>(1)</u> . A minimum-of- <u>(2)</u><br>all conditions.                                                                                       |
|         | А.                                                                   | (1) Heat Capacity<br>(2) 27% SBLC tai<br>22                                                                                   | r Temperature Limit<br>nk level                                                                                                                                                                        | what is the win. allow                                                                                                                            |
|         | В.                                                                   | (1) Heat Capacity<br>(2) <del>50</del> % SBLC tai<br>46                                                                       | r Temperature Limit<br>nk level                                                                                                                                                                        | SBLC tank larel must                                                                                                                              |
|         | C.                                                                   | (1) Boron Injectio<br>(2) 37% SBLC tai<br>22                                                                                  | n Initiation Temperature<br>nk level                                                                                                                                                                   |                                                                                                                                                   |
|         | D.                                                                   | (1) Boron Injection<br>(2) 50% SBLC tar<br>46                                                                                 | n Initiation Temperature<br>nk level                                                                                                                                                                   |                                                                                                                                                   |
|         | Proposed Ans                                                         | wer: D. (1<br>(2                                                                                                              | <ol> <li>Boron Injection Initiation Temperat</li> <li>50% SBLC tank level</li> </ol>                                                                                                                   | ture                                                                                                                                              |
|         | Explanation (C                                                       | Optional): The Boro<br>this corre<br>not ensur<br>that a hot<br>for the eff                                                   | n Injection Initiation Temperature has<br>lates to a torus water temperature of<br>e that the reactor will stay shutdown<br>/ 100% Xenon reactor will be shutdo<br>ects of cool down and decay of Xeno | s been exceeded. At 18% power<br>110 °F. 37% SBLC tank level will<br>under all conditions. 50% ensures<br>own. 50% tank level will account<br>on. |
|         |                                                                      | The heat<br>16 feet, R<br>temperatu                                                                                           | capacity temperature limit has not be<br>PV pressure of 1000 psig the HCTL<br>ure.                                                                                                                     | een exceeded. At a torus level of<br>is 180 °F Torus water                                                                                        |
|         | Technical Refe                                                       | erence(s): E                                                                                                                  | OP-3, "Failure to scram," MIT 301.11                                                                                                                                                                   | 1d, "Failure to Scram"                                                                                                                            |
| _       | Proposed refe                                                        | rences to be provide                                                                                                          | ed to applicants during examination:                                                                                                                                                                   | EOP-3, "Failure to scram                                                                                                                          |

In

``

| Learning Objective:                                                      | EK1. h<br>they a<br>ABOV<br>Boron | Knowledge of the operational implications of the following concepts as<br>pply to SCRAM CONDITION PRESENT AND REACTOR POWER<br>E APRM DOWNSCALE OR UNKNOWN: (CFR: 41.8 to 41.10) EK1.03<br>effects on reactor power (SBLC) 4.2 / 4.4*                                |
|--------------------------------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                          | MIT 30<br>1.06,                   | <ul> <li>D1.11d, EOP-3, "Failure to scram</li> <li>Explain the basis of and demonstrate the use of all figures associated with EOP-3</li> <li>Task 344058, Monitor and control reactor power</li> <li>Task 344228, Monitor and control torus temperature.</li> </ul> |
|                                                                          | 2.04                              | Explain the reason or purpose for any step in Emergency RPV Depressurization                                                                                                                                                                                         |
| Question Source:                                                         |                                   | Bank #<br>Modified Bank # (Note changes or attach parent)<br>NewX                                                                                                                                                                                                    |
| Question History:<br>(Optional - Questions v<br>the NRC; failure to prov | alidated<br>vide the              | Last NRC Exam<br>at the facility since 10/95 will generally undergo less rigorous review by<br>information will necessitate a detailed review of every question.)                                                                                                    |
| Question Cognitive Lev                                                   | el:                               | Memory or Fundamental Knowledge<br>Comprehension or AnalysisX                                                                                                                                                                                                        |
| 10 CFR Part 55 Conter                                                    | nt:                               | 55.41 _8-10_<br>55.43                                                                                                                                                                                                                                                |
| Comments:                                                                |                                   |                                                                                                                                                                                                                                                                      |

There is a discrepancy between EOPs and the MIT. However, 50% covers both documents.

|                                                                            |                                                 | Sample Writter<br>Question W                        | Examination                         | Fo                                | orm ES-401-6 (R8,                 |
|----------------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------|-------------------------------------|-----------------------------------|-----------------------------------|
| Examination Outline Cro                                                    | oss-reference:                                  | Level<br>Tier :<br>Grou<br>K/A <del>/</del><br>Impo | #<br>p #<br>#<br>rtance Rating      | RO<br>1<br>2<br>295038 EH<br>3.7_ | SRO<br>1<br>1<br><2.05<br>_4.7_   |
| Proposed Question: 19                                                      | / 31                                            |                                                     |                                     |                                   |                                   |
| Which one of the followi<br>the Radioactivity Releas<br>EPIC SPAS ber      | ng statements<br>se Control (RRC                | correctly descr<br>३ <del>)</del> Display.          | ibes the color o                    | ode of the "OF                    | FSITE RAD" box (                  |
| A. GRAY<br>B. GREEN                                                        | There<br>There                                  | are 3 or more i<br>is an off site re                | nvalid inputs in<br>lease at the AL | to the OFFSIT<br>ERT level or lo  | E RAD" box.                       |
| C. <del>_ RED</del> M⁄2                                                    | action<br>FAI                                   | level (EAL).<br>is an off site re                   | lease at the UN                     | IUSUAL EVEN                       | IT level or higher                |
| D. RED                                                                     | There                                           | is an off site re                                   | lease at the AL                     | ERT level or h                    | igher EAL.                        |
| Proposed Answer:                                                           | D. RED                                          | There is an o                                       | ff site release a                   | it the ALERT le                   | evel or higher EAL                |
| Explanation (Optional):                                                    | This box is colo<br>lower.                      | or coded red o                                      | green. Red if                       | Alert or higher                   | and Green is UE                   |
| Technical Reference(s):                                                    | SDLP-                                           | 66A, pp 61, EF                                      | Plan                                |                                   |                                   |
| Proposed references to                                                     | be provided to                                  | applicants duri                                     | ng examinatior                      | n: None                           |                                   |
| Learning Objective:                                                        | EK2. Knowledo<br>RATE and the<br>4.7*           | ge of the interre<br>following: (CFF                | elations betwee<br>R: 41.7 / 45.8)  | n HIGH OFF-S<br>EK2.05 †Site (    | SITE RELEASE<br>emergency plan 3  |
| Question Source:                                                           | Bank #<br>Modifie<br>New                        | ed Bank #                                           | (N                                  | ote changes o                     | r attach parent)                  |
| Question History:<br>(Optional - Questions va<br>the NRC; failure to provi | Last Ni<br>lidated at the fa<br>de the informat | RC Exam<br>acility since 10/<br>ion will necess     | 95 will general<br>itate a detailed | y undergo less<br>review of ever  | rigorous review b<br>y question.) |
| Question Cognitive Leve                                                    | el: Memor<br>Compr                              | y or Fundamer<br>ehension or Ar                     | ntal Knowledge<br>alysis            | X                                 |                                   |
|                                                                            | . 55.41                                         | 7                                                   |                                     |                                   |                                   |
| 10 CFR Part 55 Content:                                                    | 55.43                                           |                                                     |                                     |                                   |                                   |

| Examination Outline Cross-reference: Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating<br>Proposed Question: 20 / 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | RO     SRO $\_1\_$ $\_1\_$ $\_1\_$ $\_1\_$ $50000 \text{ EK3.07}$ $\_3.7\_$ $bullehz$                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Proposed Question: 20 / 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | bullehz                                                                                                                                                                                                                                                                                                                                                                        |
| •                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                |
| <ul> <li>The unit has experienced a large break loss of coolant accident which pressure emergency core cooling system pumps are operating. Drywed drywell Oxygen concentration is 7% and the torus Hydrogen concentration arate will exceed the general emergency release rate. The shift manage vented through the torus. Based on the Hydrogen &amp; Oxygen concentration why or why not?</li> <li>and pump of the torus. Based on the Hydrogen &amp; Oxygen concentration is 7%. A. No, adequate core cooling is betweed, no venting is redigreater than or equal to 6%.</li> <li>B. No, the drywell can not be vented if the release rate exceleases rate.</li> <li>C. Yes, the drywell must be vented to prevent a deflagration will minimize the radioactive release.</li> <li>D. Yes, venting the drywell will allow cooler nitrogen to put the Zirconium-water reaction which will reduce the hydrogen to prevent a deflagration.</li> </ul> | depressurized the reactor. All low<br>ell Hydrogen concentration is 7%,<br>ation is 5%. The offsite release<br>of orders that the drywell be<br>ations is the action correct and<br>$To ros O_2 = 3\%$<br>quired until torus Hydrogen is<br>exceeds the general emergency<br>ion and venting through the torus<br>urge the drywell thus slowing down<br>brogen in the drywell. |
| Proposed Answer: C. Yes, the drywell must be vented to pre<br>through the torus will minimize the radi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | event a deflagration and venting ioactive release.                                                                                                                                                                                                                                                                                                                             |
| Explanation (Optional): A & B Based on the Hydrogen and Oxygen or vent to prevent a deflagration.<br>D. Purging the drywell will not have a sign water reaction.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | oncentration the drywell must be                                                                                                                                                                                                                                                                                                                                               |
| Technical Reference(s): EOP-4, 4a, EP-6, and MIT-301.11e                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                |
| Proposed references to be provided to applicants during examination:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | EOP-4, 4a                                                                                                                                                                                                                                                                                                                                                                      |
| Learning Objective: EK3. Knowledge of the reasons for the followin<br>HIGH PRIMARY CONTAINMENT HYDROGEN<br>41.5 / 45.6) EK3.07 Operation of drywell vent 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ng responses as they apply to<br>N CONCENTRATIONS: (CFR:<br>3.1/ 3.7                                                                                                                                                                                                                                                                                                           |
| MIT-301.11E, EOP-4, Primary Containment Co<br>1.03, Identify situations where it is appropriat<br>concurrently.<br>1.05, Explain the basis or purpose for any ste                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ontrol<br>te to enter other procedures<br>ep in EOP-4.                                                                                                                                                                                                                                                                                                                         |
| Question Source: Bank # (Note<br>NewX                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | e changes or attach parent)                                                                                                                                                                                                                                                                                                                                                    |
| Question History: Last NRC Exam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -                                                                                                                                                                                                                                                                                                                                                                              |

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

**Question Cognitive Level:** 

Memory or Fundamental Knowledge Comprehension or Analysis

\_\_X\_\_

10 CFR Part 55 Content:

55.41 <u>5</u> 55.43 <u>5</u>

| ES-4                                |                                                     |                                               |                                                         | Sample<br>Que                                                         | Written Examination<br>stion Worksheet                                             | Fo                                                         | rm ES-401-6 (R8, S1)                                                  |
|-------------------------------------|-----------------------------------------------------|-----------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------|-----------------------------------------------------------------------|
| Exar                                | nination C                                          | Dutline C                                     | ross-referenc                                           | e: Level                                                              | Tier #<br>Group #<br>K/A #<br>Importance Rating                                    | RO<br>1<br>2<br>295013 AA<br>3.2                           | SRO<br>1<br>1<br>A2.02<br>3.5_                                        |
| Prop                                | osed Que                                            | estion: 21                                    | / 20                                                    |                                                                       |                                                                                    |                                                            |                                                                       |
| AL<br>Nucl<br>and<br>closi<br>the b | lear cont<br>1000 psi<br>ing the "/<br>easis for th | rol opera<br>g using<br>A" SRV t<br>nis opera | ator #2-(NCC<br>safety relief<br>o maintain pr<br>tion? | 9¥2)-has b<br>valves (Si<br>essure. Is                                | been directed to main<br>RVg). You observe No<br>this an acceptable met            | tain RPV pre<br>CO#2 continu<br>hod of cycling             | essure between 800<br>Jously opening and<br>the SRV and what is       |
|                                     | A.                                                  | NO.                                           | The operato<br>D, C, F, H, L                            | r should cy<br>, B to prev                                            | cle through the SRVs rent high local pool tem                                      | in the followin<br>peratures that                          | ig order A, J, K, G, E,<br>could result in                            |
|                                     | В.                                                  | NO.                                           | The operato                                             | r should cy                                                           | cle through the SRVs                                                               | in the followin                                            | g order A, J, K, G, E,                                                |
|                                     | C.                                                  | NO.                                           | D, C, F, H, L<br>The operato<br>F, G, H, J, K           | , B to <del>prev</del><br>r should cy<br>, L to unifc                 | ent-large thermal stres<br>/cle through the SRVs i<br>/rmly distribute the total   | ses on the <b>t</b> ol<br>in the following<br>number of SF | rus. egoolly deplote<br>g order A, B, C, D, E, G<br>V actuation among |
|                                     | D.                                                  | YES.                                          | Cycling only<br>other SRVs<br>during the n              | "A" SRV v<br>and minim<br>ext refuelir                                | vill prevent limit the nun<br>ize the dose and cost r<br>ig outage.                | nber of SRV a<br>equired to rep                            | ctuations on the<br>lace the valve(s)                                 |
| Prop                                | osed Ans                                            | wer:                                          | A. NO.                                                  | The op<br>order A<br>temper                                           | perator should cycle thr<br>A, J, K, G, E, D, C, F, H<br>ratures that could result | ough the SR\<br>, L, B to preve<br>t in inefficient        | /s in the following<br>nt high local pool<br>pool cooling.            |
| Expla                               | anation (C                                          | Optional):                                    | B. MIT<br>torus<br>be n                                 | 301-11C c<br>5. The the<br>nuch greate                                | loes not have any limits<br>rmal stresses associate<br>er than one SRV opene       | s on the therm<br>ed with a react<br>ed and the res        | al stress on the<br>or blow down should<br>ultant blow down of        |
|                                     |                                                     |                                               | C. This<br>D. Cycl<br>coul                              | is not the<br>ing only or<br>d result in i                            | correct order as specifi<br>le SRV could result in h<br>inefficient pool cooling.  | ed on EOP-2,<br>nigh local pool                            | "RPV Control"<br>temperatures that                                    |
| Tech                                | nical Refe                                          | erence(s)                                     | : MIT                                                   | 301. <b>11</b> C                                                      |                                                                                    |                                                            |                                                                       |
| Prop                                | osed refei                                          | rences to                                     | be provided                                             | o applicar                                                            | ts during examination:                                                             | EOP-2, "RF                                                 | V Control"                                                            |
| Learning Objective: AA<br>SL<br>Lo  |                                                     | AA2. Ability to SUPPRESS Localized he         | o determir<br>ON POOL<br>ating/strati                   | ne and/or interpret the for<br>TEMPERATURE: (CF<br>fication 3.2 / 3.5 | ollowing as the<br>R: 41.10 / 43.                                                  | ey apply to HIGH<br>5 / 45.13) AA2.02                      |                                                                       |
|                                     |                                                     |                                               | MIT 301.11C                                             | LO EO-1.                                                              | 06                                                                                 |                                                            |                                                                       |
|                                     |                                                     |                                               | David                                                   |                                                                       |                                                                                    |                                                            |                                                                       |

 $\Delta$ 

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | X |
|---------------------------|--------------------------------------------------------------|---|
|                           |                                                              |   |

10 CFR Part 55 Content:

55.41 <u>10</u> 55.43 <u>----</u>

|                                                                                                                                                                                     |                                                                                                 | Ques                                                                                                            | tion Worksheet                                                                                                                                                                                                        | FU                                                                                                                       | ПП ES-401-6 (Н                                                                                                             | 8, 51)<br>                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| Examination Outline C                                                                                                                                                               | oss-reference:                                                                                  | Level                                                                                                           | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                       | RO<br>1<br>1<br>295014 AA<br>_4.0_                                                                                       | SRO<br>1<br>1<br>\1.01<br>4.1_                                                                                             |                                           |
| Proposed Question: 22                                                                                                                                                               | /6                                                                                              |                                                                                                                 |                                                                                                                                                                                                                       |                                                                                                                          |                                                                                                                            |                                           |
| <del>ها: او علم العر</del><br>The reactor <del>is above th</del><br>Several minutes ago th<br><del>were not successful in</del><br>monitors (ARPM) are,s<br>statement correctly ass | e 100% flew of<br>e Teedwatel he<br>preventing the i<br>teady at 101%<br>esses the plant        | ater <del>33E</del><br>solation o<br>power an<br>conditior                                                      | (FOL) operating at 85 <sup>r</sup><br>1A high level annuncia<br>of the "A" foodwater sta<br>d all ARPM rod block a<br>n and gives the correct                                                                         | % power and<br>ator alarmed<br><del>ring</del> . All avera<br>alarms are ala<br>operator actio                           | 62% drive flow.<br>Operator action<br>age power range<br>irming. Which<br>on?                                              | the r                                     |
| A. A loss                                                                                                                                                                           | of feedwater he                                                                                 | ating has                                                                                                       | occurred and power r                                                                                                                                                                                                  | nust be rapidl                                                                                                           | y <del>jec</del> reduced to                                                                                                | 85%                                       |
| B. A loss                                                                                                                                                                           | of feedwater he                                                                                 | ating has                                                                                                       | occurred and control                                                                                                                                                                                                  | rods must be                                                                                                             | inserted to redu                                                                                                           | ce                                        |
| reactor<br>C. The AF                                                                                                                                                                | power to 85%<br>RMs did not ini                                                                 | power.<br>tiate an a                                                                                            | utomatic reactor scrar                                                                                                                                                                                                | n, a manual re                                                                                                           | eactor scram is                                                                                                            |                                           |
| require<br>D. The AF<br>require                                                                                                                                                     | d.<br>'RMs indicate tl<br>d.                                                                    | nat core i                                                                                                      | nstabilities are present                                                                                                                                                                                              | t, a manual rea                                                                                                          | actor scram is                                                                                                             |                                           |
| Proposed Answer:                                                                                                                                                                    | C. The A<br>reacto                                                                              | PRMs fai<br>r scram is                                                                                          | led to generator an au<br>s required. (EOP-2, er                                                                                                                                                                      | tomatic reactontry condition)                                                                                            | or scram, a man<br>* <b>see comment</b>                                                                                    | ual                                       |
| Explanation (Optional):                                                                                                                                                             | A. AOP-6<br>power<br>B. AOP-6<br>contro<br>C. EOP-2<br>is requ<br>(.58(6)<br>D. The A<br>stable | 2 require<br>level. Re<br>2 requires<br>rods to 8<br>requires<br>ired. The<br>2))+62= 9<br>PRMs are<br>not expe | es power to be rapidly i<br>educe power to 65%.<br>is rod insertion until be<br>35% power will not dec<br>that if reactor has not<br>e APRM scram set poi<br>8<br>e not exhibiting indicati<br>riencing 10% peak-to-j | reduced to 20<br>flow the 100%<br>crease power l<br>scrammed the<br>nt is 0.58*Wd<br>on of instabilit<br>peak oscillatio | % below the init<br>FCL. Inserting<br>below <del>100% FC</del><br>en a manual so<br>+ 62. This is<br>ty. ARPMs are<br>ons. | ial<br><u>E.</u><br>ram<br><u>200</u> J 1 |
| Technical Reference(s)                                                                                                                                                              | :AOP-62, EOP                                                                                    | 2                                                                                                               |                                                                                                                                                                                                                       |                                                                                                                          |                                                                                                                            |                                           |
| Proposed references to                                                                                                                                                              | be provided to                                                                                  | applicant                                                                                                       | ts during examination:                                                                                                                                                                                                | None                                                                                                                     | 7                                                                                                                          |                                           |
| Learning Objective:                                                                                                                                                                 | AA1. Ability to<br>INADVERTEN<br>4.0/4.1                                                        | operate a<br>T REACI                                                                                            | and/or monitor the follo<br>IVITY ADDITION: (CF                                                                                                                                                                       | wing as they a<br>R: 41.7 / 45.6                                                                                         | apply to<br>b) AA1.01 RPS                                                                                                  |                                           |
|                                                                                                                                                                                     | SDLP-07C, Po<br>1.07, TS setpo                                                                  | wer Rang<br>ints for (o                                                                                         | ge Monitors<br>) APRMs                                                                                                                                                                                                |                                                                                                                          |                                                                                                                            |                                           |
| Question Source:                                                                                                                                                                    | Bank #                                                                                          | ŧ                                                                                                               |                                                                                                                                                                                                                       |                                                                                                                          |                                                                                                                            |                                           |

 Question History:
 Last NRC Exam

 (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | X |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.417<br>55.43                                              |   |

Comments:

\* This question could be improved if the licensee provided number that have been used for the class on 100% Drive flow and 100% core flow in gpm and MIbm/hr respectively.

AOP

n's

| ES-401                                                                                                                                                                                                                       | Sample Written Examination<br>Question Worksheet                                                                                                                                                        | Form ES-401-6 (R8, S1)                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examination Outline Cross-referer                                                                                                                                                                                            | nce: Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                           | RO SRO<br>11_<br>21_<br>295016 AK3.03<br>3.53.7_                                                                                                                                  |
| Proposed Question: 23 / 21                                                                                                                                                                                                   |                                                                                                                                                                                                         |                                                                                                                                                                                   |
| The shift manager has just ordered<br>Shutdown From Outside the Contr<br>you place the isolation switch for 1<br>pressure is 700 psig. Reactor wat<br>in LOCAL which statement below of<br>and reactor water level decrease. | d a control room evacuation in accord<br>ol Room." When you arrive at the<br>0MOV-25B in LOCAL. Reactor wa<br>er level and reactor pressure are d<br>describes the operation of the 10M                 | ordance with AOP-43, "Plant<br>auxiliary shutdown panel 25 RSP<br>ater level is 50 inches and reactor<br>ecreasing. With the isolation switch<br>OV-25B valve as reactor pressure |
| <ul> <li>A. Will automatically</li> <li>B. Will automatically</li> <li>C. Must be manually</li> <li>D. The valve logic will than 450 psig.</li> </ul>                                                                        | open when reactor pressure is less<br>open when the " <b>B</b> " residual heat re<br>opened from the auxiliary shutdow<br><del>I provent the value from being open<br/>ust be manually openated 1</del> | s than 450 psig.<br>moval (RHR) pump is started.<br>n panel.<br><del>ned until reactor pressure is lose</del><br>ocally.                                                          |
| Proposed Answer: C. Mi                                                                                                                                                                                                       | ust be manually opened from the a                                                                                                                                                                       | uxiliary shutdown panel.                                                                                                                                                          |
| Explanation (Optional): When the<br>all interloc<br>shutdown<br>the interloc                                                                                                                                                 | isolation switch for the 10MOV-25E<br>ks and will only allow operation of t<br>panel. In addition, the valve will no<br>k is bases on an ECCS signal and                                                | B is placed in LOCAL this disables<br>this valve from the auxiliary<br>of open when the pump is started,<br>I pressure.                                                           |
| Technical Reference(s):AOP-43, S                                                                                                                                                                                             | DLP-10 RHR                                                                                                                                                                                              |                                                                                                                                                                                   |
| Proposed references to be provide                                                                                                                                                                                            | d to applicants during examination                                                                                                                                                                      | : None                                                                                                                                                                            |
| Learning Objective: AK2. Know<br>ABANDON<br>room contr                                                                                                                                                                       | rledge of the interrelations betweer<br>IMENT and the following: (CFR: 41<br>ols: 3.5 / 3.7                                                                                                             | n CONTROL ROOM<br>I.5 / 45.6) AK3.03 Disabling control                                                                                                                            |
| Question Source: Ba<br>Mo<br>Ne                                                                                                                                                                                              | nk #<br>dified Bank # (No<br>wX                                                                                                                                                                         | ote changes or attach parent)                                                                                                                                                     |
| Question History: La:<br>(Optional - Questions validated at t<br>the NRC; failure to provide the info                                                                                                                        | st NRC Exam<br>ne facility since 10/95 will generally<br>mation will necessitate a detailed i                                                                                                           | —<br>/ undergo less rigorous review by<br>review of every question.)                                                                                                              |
| Question Cognitive Level: Me                                                                                                                                                                                                 | mory or Fundamental Knowledge<br>mprehension or Analysis                                                                                                                                                | X                                                                                                                                                                                 |
| 10 CFR Part 55 Content: 55.<br>55.                                                                                                                                                                                           | 41 <u>5</u>                                                                                                                                                                                             |                                                                                                                                                                                   |
| Comments:                                                                                                                                                                                                                    |                                                                                                                                                                                                         |                                                                                                                                                                                   |

I

FitzPatrick to verify that valve logic, wherein LOCAL will bypass the interlock that will prevent the valve from opening above 450 psig. I believe/this is correct based on the procedure caution that states the valve should not be opened above 450 psig.

| ES-401                                                 |                                                                       | Sample Written Examination<br>Question Worksheet                                                                                                                   | Form ES-401-6 (R8, S1)                                                                                                                           |
|--------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Examination O                                          | utline Cross-refer                                                    | ence: Level<br>Tier#                                                                                                                                               | RO SRO                                                                                                                                           |
|                                                        | • • • •                                                               | Group #<br>K/A #<br>Importance Rating                                                                                                                              | 11<br>295025 K1.04<br>_3.63.9_                                                                                                                   |
| Proposed Que                                           | stion: 25 / 9                                                         |                                                                                                                                                                    | OVEN                                                                                                                                             |
| The unit has be<br>and condenser<br>describes how      | een operating con<br>vacuum is <del>deored</del><br>RPV pressure will | tinuously for 350 days. A full power<br>and will be below 8 inches 10<br>I trend for the next 20 minutes?                                                          | reactor scram has just occurred minutes. Which one of the following                                                                              |
| Α.                                                     | will decrease from                                                    | m present value <del>as decay heat decr</del>                                                                                                                      | <del>eases</del>                                                                                                                                 |
| В.                                                     | will remain at-or-                                                    | below-970 psig <del>during the 20 minute</del>                                                                                                                     | e period                                                                                                                                         |
| C.                                                     | will_r <del>omain at or  </del><br>_psig                              | below 970 psig for 10 minutes, then                                                                                                                                | increase and hold constant at 1135                                                                                                               |
| D.                                                     | will increase to 1                                                    | моче Не<br>135 psig <del>and remain constant.</del>                                                                                                                | 1145 ~ phielik                                                                                                                                   |
| Proposed Ansv                                          | ver: C. v                                                             | vill remain at or below 970 psig for 1<br>constant at 1135 psig                                                                                                    | 10 minutes, then increase and hold                                                                                                               |
| Explanation (O                                         | ptional): RPV pres<br>valves u<br>will rise t<br>more SR<br>psig.     | ssure will be controlled at or below p<br>ntil turbine bypass valve closure occ<br>o the lowest relief valve setting (109<br>Vs will cycle to control RPV pressure | pressure setpoint by the bypass<br>curs (8" Hg). At this point pressure<br>00 psig - changed to 1135). One or<br>re at approximately 1090 (1135) |
| Technical Refe                                         | rence(s):SDLP 02                                                      | J pp 23 and SDLP-94C figure 8                                                                                                                                      |                                                                                                                                                  |
| Proposed refer                                         | ences to be provid                                                    | led to applicants during examination                                                                                                                               | n: None                                                                                                                                          |
| Learning Objec                                         | tive: EK1. Kno<br>they appl<br>Decay he                               | owledge of the operational implicatio<br>by to HIGH REACTOR PRESSURE:<br>eat generation 3.6 / 3.9                                                                  | ons of the following concepts as (CFR: 41.8 to 41.10) EK1.04                                                                                     |
| Question Sourc                                         | e: E                                                                  | Bank # FitzPatrick Requalification 75                                                                                                                              | 53                                                                                                                                               |
| Question Histor<br>(Optional - Que<br>the NRC; failure | y: L<br>stions validated at<br>to provide the inf                     | ast NRC Exam<br>the facility since 10/95 will generall<br>formation will necessitate a detailed                                                                    | y undergo less rigorous review by review of every question.)                                                                                     |
| Question Cogni                                         | tive Level: N<br>C                                                    | lemory or Fundamental Knowledge<br>Comprehension or Analysis                                                                                                       | x                                                                                                                                                |
|                                                        |                                                                       |                                                                                                                                                                    |                                                                                                                                                  |

 $\bigtriangleup$
| ES-401                                                                                        | Samp<br>Q                                                                                                    | le Written Examination<br>Juestion Worksheet                                        | Form ES-401-6 (R8, S                                                                           |
|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Examination Outline Cros                                                                      | ss-reference: Lev                                                                                            | rel<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                              | RO SRO<br>1<br>2<br>2950001 AK1.01<br>3.53.6_                                                  |
| Proposed Question: 27 /                                                                       | 14 RIA                                                                                                       |                                                                                     |                                                                                                |
| The unit is operating at 10<br>pumps while working on t<br>on the Power-Flow Map a            | していたいでした。<br>しの % when <del>mainted</del><br>he <del>ATWS</del> r <del>eactor w</del><br>ind what actions ar | nance inadvertently trips t<br>water recirculation pump t<br>re required.           | both reactor water recirculation<br>t <del>rip</del> logic. Where will the reactor be          |
| A. The react                                                                                  | or will be in the Po                                                                                         | wer-flow Map BUFFER Z                                                               | ONE. Monitor nuclear                                                                           |
| B. The react<br>C. The react<br>rods to ex                                                    | or will be in the Po<br>or will be in the Po<br>cit the exclusion zo                                         | wer-flow Map BUFFER Z<br>wer-flow Map EXCLUSIC<br>ne.                               | Notability.<br>ONE. Manually scram the reactor<br>N ZONE. Manually insert control              |
| D. The react<br>(reactor.                                                                     | or will be in the Po                                                                                         | wer-flow Map EXCLUSIO                                                               | N ZONE. Manually scram the                                                                     |
| Proposed Answer: D                                                                            | . Th <u>e reactor</u><br>th <del>e reactor</del> .                                                           | will be in the stability EXC                                                        | CLUSION ZONE. Manually scram                                                                   |
| Explanation (Optional): D                                                                     | . The trip of b power on the requires a m                                                                    | oth RWR pumps will resu<br>e natural circulation line o<br>nanual scram when both F | It in the plant being at about 50%<br>f the power to flow map. AOP-8<br>RWR pumps are tripped. |
| A. The reactor who be<br>B. The reactor will no<br>C. The actions listed<br>in AOP-8 requires | e in the buffer zone<br>ot be in the buffer z<br>in C are correct if i<br>a manual scram if                  | e.<br>cone.<br>both RWR pumps have n<br>both RWR pumps trip.                        | ot tripped. However, the first step                                                            |
| Technical Reference(s): <del>T{</del>                                                         | S Basis 3.5.J Ad                                                                                             | 2-8                                                                                 |                                                                                                |
| Proposed references to be                                                                     | e provided to applic                                                                                         | cants during examination:                                                           | None                                                                                           |
| _earning Objective: Al<br>th<br>Cl                                                            | K1. Knowledge of t<br>ey apply to PARTI<br>RCULATION: (CF                                                    | he operational implicatior<br>AL OR COMPLETE LOSS<br>R: 41.8 to 41.10) AK1.01       | ns of the following concepts as<br>S OF FORCED CORE FLOW<br>Natural circulation 3.5 / 3.6      |
| Question Source:                                                                              | Bank #<br>Modified Bar<br>New                                                                                | nk # (No<br>X                                                                       | te changes or attach parent)                                                                   |
| Question History:<br>Optional - Questions valid<br>he NRC; failure to provide                 | Last NRC Ex<br>lated at the facility<br>the information wi                                                   | am<br>since 10/95 will generally<br>ill necessitate a detailed n                    | undergo less rigorous review by eview of every question.)                                      |
| Question Cognitive Level:                                                                     | Memory or F                                                                                                  | undamental Knowledge                                                                |                                                                                                |

 $\bigtriangleup$ 

10 CFR Part 55 Content:

| 55.41 | 8 |
|-------|---|
| 55.43 | 5 |

Comments:

Comprehension because the candidate will need to know that the plant will end up in natural circulation.

| ES-401                                                                                              |                                                                                                                              | Sample<br>Que                                                                                                         | Written Examination<br>estion Worksheet                                                                                                                        | Fo                                                                                                              | rm ES-401-6 (R8, S                                                                                        |
|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Examination                                                                                         | Outline Cross-refer                                                                                                          | ence: Level                                                                                                           | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                | RO<br>1<br>2<br>295002 Ak<br>3.1_                                                                               | SRO<br>1<br>2<br>{2.07<br>3.1_                                                                            |
| Proposed Que                                                                                        | estion: 28 / 15                                                                                                              |                                                                                                                       |                                                                                                                                                                |                                                                                                                 |                                                                                                           |
| The unit is op<br>vacuum has s<br><del>equipment op</del><br>hood <b>≰</b> . How l<br>power reducti | erating at 100 % po<br>lowly decreased to<br><del>erator</del> identified a s<br>has the offgas flow<br>on, will the operato | wer when an<br>25 inches of<br>mall tear in th<br>changed (pric<br>r take in respo                                    | nunciator 09-6-1-29 Cl<br>Hg and generator outp<br>ne expansion boot betw<br>or to any operator actio<br>onse to this event.                                   | NDSR VAC LO<br>but has decreas<br>veen the conde<br>n) and what ac                                              | alarms. Condense<br>ed by 3 MWe. An<br>enser and LP turbine<br>tions, in addition to                      |
| А.                                                                                                  | Offgas flow has                                                                                                              | Dropped<br>DECREASED                                                                                                  | , trip hydrogen additio                                                                                                                                        | n and start the                                                                                                 | condenser air                                                                                             |
| B.                                                                                                  | removal pumps.<br>Offgas flow has l                                                                                          | DECREASED                                                                                                             | ), trip the turbine, scran                                                                                                                                     | n the reactor ar                                                                                                | nd close the main                                                                                         |
| C.                                                                                                  | offgas flow has l                                                                                                            | on valves.<br>NGREASED,                                                                                               | - trip hydrogen additior                                                                                                                                       | and start the o                                                                                                 | condenser air                                                                                             |
| . <b>D.</b>                                                                                         | removal pumps.<br>Offgas flow has l                                                                                          | NGREASED,                                                                                                             | place the spare steam                                                                                                                                          | i jet air ejectors                                                                                              | in service.                                                                                               |
| Proposed Ans                                                                                        | wer: D. C                                                                                                                    | Off gas flow his ervice.                                                                                              | as INCREASED, place                                                                                                                                            | the spare stea                                                                                                  | ım jet air ejector in                                                                                     |
| Explanation (C                                                                                      | Dptional):A. & B. 7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7<br>7                | The off gas flo<br>There is more<br>acuum decre<br>Condenser air<br>pipe, which is<br>peration of co<br>ower is great | w will increase not dee<br>non Condensible gas<br>ases.<br>removal pumps discha<br>not designed for explo-<br>ondenser air removal p<br>er than 5%. Power is g | ercase with a co<br>entering the co<br>arge to the 1.75<br>sion pressure.<br>sumps is not pe<br>greater than 5% | ondenser boot tear.<br>ndenser and the<br>5 minute holdup<br>For this reason,<br>rmitted if reactor<br>6. |
| Technical Ref                                                                                       | erence(s):AOP-31,                                                                                                            | loss of conde                                                                                                         | enser vacuum                                                                                                                                                   |                                                                                                                 |                                                                                                           |
| Proposed refe                                                                                       | rences to be provid                                                                                                          | ed to applica                                                                                                         | nts during examination                                                                                                                                         | : None                                                                                                          |                                                                                                           |
| Learning Obje                                                                                       | ctive: AK2. Kno<br>VACUUN                                                                                                    | wledge of the<br>I and the follo                                                                                      | e interrelations betweer<br>owing: (CFR: 41.7 / 45.8                                                                                                           | n LOSS OF MA<br>8)  AK2.07 Offg                                                                                 | NN CONDENSER<br>gas system 3.1 / 3.1                                                                      |
| Question Sour                                                                                       | ce: E<br>N<br>N                                                                                                              | ank #<br>lodified Bank<br>lew                                                                                         | # (No                                                                                                                                                          | ote changes or                                                                                                  | attach parent)                                                                                            |
| Question Histo<br>(Optional - Qu<br>the NRC; failu                                                  | ory: L<br>estions validated at<br>re to provide the inf                                                                      | ast NRC Exa<br>the facility sin<br>ormation will                                                                      | m<br>nce 10/95 will generally<br>necessitate a detailed                                                                                                        | v undergo less<br>review of every                                                                               | rigorous review by<br>v question.)                                                                        |
| Question Cogr                                                                                       | nitive Level: N                                                                                                              | lemory or Fur                                                                                                         | ndamental Knowledge                                                                                                                                            |                                                                                                                 |                                                                                                           |

10 CFR Part 55 Content:

55.41 \_\_7\_\_ 55.43 \_\_\_\_

| ES-401                                                                  |                                                                                                  | Sample<br>Que                                            | Written Examination<br>stion Worksheet                                                             | For                                                 | m ES-401-6 (R8,                                             |
|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------|-------------------------------------------------------------|
| Examination O                                                           | utline Cross-reference                                                                           | e: Level                                                 | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                    | RO<br>1<br>2<br>295004 Ak3<br>2.9_                  | SRO<br>1<br>2<br>3.02<br>3.3_                               |
| Proposed Que                                                            | stion: 29 / 17                                                                                   |                                                          |                                                                                                    |                                                     |                                                             |
| The plant is op<br>Isolation," due<br>10700 breaker<br>correctly descri | erating at 100% with o<br>to a ground on the "A<br>Control Power. Whe<br>be the effects or actio | operators  <br>" station b<br>n this brea<br>ns that thi | performing AOP-22, "D<br>attery. The next break<br>ker is OPENED, which<br>s will have on bus 1070 | C Power Syste<br>er to be opene<br>one of the follo | m A Ground<br>d is the supply fo<br>owing statements<br>s 구 |
| Α.                                                                      | All 10700 bus break<br>has automatically sw                                                      | er protection                                            | on trips will operate nor<br>t <del>he</del> "B" 125 VDC <del>batter</del>                         | mally because                                       | the bus logic pov                                           |
| B.                                                                      | All 10700 bus break<br>positions because th<br>- Dattery                                         | er position<br>e logic po                                | indication lights (red a wer has automatically s                                                   | nd green) will s<br>wapped to <del>the</del>        | till indicate break<br>"B" 125 VDC.                         |
| C.                                                                      | All 10700 bus break<br>125 VDC control pov                                                       | ers will ope<br>ver.                                     | en if originally closed by                                                                         | due to a<br>scause the bre<br>ron                   | loss of<br><del>akers have los</del> t ",<br>habb           |
| D.                                                                      | All 10700 bus breake<br><del>"A" 125 VDC control</del>                                           | ers <del>can be</del>                                    | opened locally if close                                                                            | because the                                         | breakers have lo                                            |
| Proposed Ansv                                                           | ver: ¢. D All 1<br>brea                                                                          | 0700 bus i<br>kers have                                  | breakers can be opene<br>lost "A" 125 VDC contr                                                    | d locally if clos<br>ol power.                      | ed because the                                              |
| Explanation (O                                                          | ptional): A. & B. Ther<br>and                                                                    | e is no au<br>the red an                                 | tomatic swap of 125 VI<br>d green lights will be lo                                                | DC control pow<br>st when 125 VI                    | er on bus 10700.<br>DC is lost.                             |
|                                                                         | C. The                                                                                           | breakers v                                               | vill not automatically op                                                                          | en on loss of E                                     | C control power                                             |
| Technical Refe                                                          | rence(s):SDLP-71B, A                                                                             | OP-22, O                                                 | P-43A                                                                                              |                                                     |                                                             |
| Proposed reference                                                      | ences to be provided t                                                                           | o applicar                                               | nts during examination:                                                                            | None                                                |                                                             |
| Learning Objec                                                          | tive: AK3. Knowle<br>PARTIAL OF<br>Ground isola                                                  | dge of the<br>COMPLE<br>tion/fault d                     | reasons for the followi<br>TE LOSS OF D.C. PO<br>letermination 2.9 / 3.3                           | ng responses a<br>WER: (CFR: 4                      | as they apply to<br>1.5 / 45.6) AK3.0                       |
| Question Sourc                                                          | e: Bank                                                                                          | :#                                                       | FitzPatrick Requalifica                                                                            | ation bank 0869                                     | ) ·                                                         |
| The plant is ope<br>ISOLATION due<br>10700 BKB Cou                      | erating at 100% with o<br>e to a ground on the "/                                                | perators p<br>A" station                                 | erforming AOP-22, DC<br>battery. The next brea                                                     | POWER SYS                                           | TEM A GROUNE<br>ed is the supply f                          |

----

.

a) All 10700 bus breaker protection trips will operate normally.

b) All 10700 bus breakers will open if originally closed.

c) All 10700 bus breakers can be tripped locally if closed.

d) All 10700 bus breaker position indication lights (red and green) will still indicate breaker positions.

Question History:

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental KnowledgeX<br>Comprehension or Analysis |
|---------------------------|---------------------------------------------------------------|
| 10 CFR Part 55 Content:   | 55.415<br>55.43                                               |

| ES-401                               | Sample V<br>Ques | Written Examination<br>stion Worksheet          | For                              | m ES-401-6 (R8, S1)          |
|--------------------------------------|------------------|-------------------------------------------------|----------------------------------|------------------------------|
| Examination Outline Cross-reference: | Level            | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>1<br>2<br>295008 AA<br>3.7 | SRO<br>1<br>2<br>1.01<br>3.7 |

## Proposed Question: 30 / 18

The reactor protection system initiated a scram, all blue scram lights are lit on the full core display. However, little rod motion occurred, power reduced to 95% and the plant remains stable with the following indication:

| Reactor Power           | 95%                 |
|-------------------------|---------------------|
| "A" RWR Pump Speed      | 90%                 |
| "B" RWR Pump Speed      | 91%                 |
| Mode Switch             | SHUTDOWN            |
| Alternate Rod Insertion | -ACTUATED. Inchated |
| Turbine status          | ON LINE             |
| Reactor Pressure        | 1005 psig           |
| Reactor Level           | 200 inches          |
| Drywell Temperature     | 130 °F              |
| Drywell Pressure        | 2.2 psig            |
| Torus Water Temperature | 75 °F               |
| Torus Pressure          | 0.3 psid            |
|                         |                     |

What operator actions must be taken and why?

| А.       | Inject standby Liquid Control because the Boro | n Injection te | emperature has beer    | ı     |
|----------|------------------------------------------------|----------------|------------------------|-------|
| المستعدا | exceeded.                                      | C C            | ok                     | Ň     |
| B.       | Trip/both, RWR pumps, from 98% 8291% spear     | to achieve     | a rapid power reduc    | tion. |
| C.Reduc  | Run the TWR pumps to minimum and trip then     | , to prevent   | the turbine from tripp | oina. |
| D.       | Vent the scram air header to open the scram in | let and outle  | t valves.              |       |

Proposed Answer: C. Run the RWR pumps to minimum and trip them to prevent a turbine trip.

Explanation (Optional): A.The Boron injection temperature has not been exceeded.B.In this case the RWR should be run to minimum speed to prevent a<br/>RPV high level transient from tripping the turbine and forcing all the heat<br/>load into containment.

D. All the scram inlet and outlet valves are open as indicated by the blue lights on the full core display. The rods have not moved and therefore, this is hydraulie lock:

Technical Reference(s): EOP-3, MIT 301.11d, page 5

Proposed references to be provided to applicants during examination: EOP-3

Learning Objective: AA1. Ability to operate and/or monitor the following as they apply to HIGH REACTOR WATER LEVEL: (CFR: 41.7 / 45.6) AA1.01 Reactor water level control: Plant-Specific 3.7 / 3.7

| MIT 3                                                                                  | 01.11d                                                                                                                                                              |
|----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1.07                                                                                   | Explain the basis or purpose for any step in EOP-3                                                                                                                  |
| Question Source:                                                                       | Bank #<br>Modified Bank # (Note changes or attach parent)<br>NewX                                                                                                   |
| Question History:<br>(Optional - Questions validate<br>the NRC; failure to provide the | Last NRC Exam<br>d at the facility since 10/95 will generally undergo less rigorous review by<br>information will necessitate a detailed review of every question.) |
| Question Cognitive Level:                                                              | Memory or Fundamental Knowledge<br>Comprehension or AnalysisX                                                                                                       |
| 10 CFR Part 55 Content:                                                                | 55.417<br>55.43                                                                                                                                                     |

Comments:

|          | ES-401                                                                                                                                                           | S                                                                                                                                                                   | Sample V<br>Ques                                                                                         | Written Examination<br>stion Worksheet                                                                                                                                                                                 | Form I                                                                                                                                                             | ES-401-6 (R8, S1)                                                                                          |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
|          | Examination Outline C                                                                                                                                            | ross-reference:                                                                                                                                                     | Level                                                                                                    | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                        | RO<br>1<br>2<br>295018 A2.01<br>_3.3_                                                                                                                              | SRO<br>1<br>2<br>_3.4                                                                                      |
| rising   | Proposed Question: 31<br>SH. The B, D<br>A loss of coolant accide<br>generators (EDG) are c<br>alarming St the local att<br>increasing. How will th<br>required? | /23 +259<br>EDG a 200<br>Ent and a loss of<br>operating and rea<br>arm Dagle 101<br>e "A" & "C" EDG                                                                 | offsite p<br>quired for<br>e "A" &<br>tespone                                                            | oower have just occurre<br>or core cooling. The ES<br><del>"G" E</del> DGs <del>and j</del> acket w<br>d to this condition and w                                                                                       | <b>۾ \$ ک</b><br>d. <del>All four en</del> nerg<br>W LOW FLOW a<br>ater temperature<br>vhat operator act                                                           | gency diesel<br>annunciator is<br>is at 190°F and<br>ions, if any are                                      |
|          | A. The "A'<br>205°F,<br>B. The "A'<br>reache<br>C. The "A'<br>the " <del>B"</del><br>D. The "A'<br>reachin<br>EDGs.                                              | ' & "C" EDGs wil<br>verify the emerg<br>' & "C" EDGs mu<br>s 205°F, have t<br>' & "C" EDGs wil<br><del>ESW pump or tl</del><br>' & "C" EDGs hig<br>g 205°F, install | l automa<br>gency se<br>ust be m<br>he contr<br>l continu<br><del>ne</del> fire p<br>h jacket<br>jumpers | atically trip when the jac<br>rvice water (ESW) valv<br>anually tripped before t<br>ol room shutdown the "<br>ue to run at jacket water<br>rotection system to sup<br>water temperature trip<br>to bypass the high tem | cket water tempe<br>re line up to the ",<br>he jacket water to<br>A" & "C" EDGs.<br>r temperatures at<br>ply the "A" & "C"<br>must be bypasse<br>perature trips on | rature reaches<br>A" & "C" EDGs.<br>emperature<br>pove 205°F, align<br>EDGs.<br>ed before<br>the "A" & "C" |
|          | Proposed Answer:                                                                                                                                                 | C. The "A"<br>above 2<br>supply                                                                                                                                     | ' & "C" E<br>205°F, a<br>the "A" &                                                                       | DGs will continue to ru<br>lign t <del>he "B" ESW pump</del><br>k "C" EDGs.                                                                                                                                            | n at jacket water<br><del>⊦er t</del> he fire protec                                                                                                               | temperatures<br>ction system to                                                                            |
|          | Explanation (Optional):                                                                                                                                          | A. If a LOC<br>tempera<br>B. The ED<br>In addit<br>reduced<br>C. Correct<br>D. The trip                                                                             | CA signa<br>ature.<br>G shoul<br>ion, at h<br>I load.<br>- ARP 9<br>is autor                             | al is present the EDG w<br>d not be shutdown if the<br>igher temperature the E<br>Son not مع SID for a<br>J3ECP-A-12 + OP-22<br>natically bypassed und                                                                 | ill not trip on high<br>ey are required fo<br>EDG will continue<br>C & / do not hew<br>er LOCA conditio                                                            | n jacket water<br>or core cooling.<br>to run but at<br>who se menually hip<br>ons.                         |
| 1        | Technical Reference(s)                                                                                                                                           | ARP 93                                                                                                                                                              | ECP-A-                                                                                                   | 12, OP-22                                                                                                                                                                                                              |                                                                                                                                                                    |                                                                                                            |
| ł        | Proposed references to                                                                                                                                           | be provided to a                                                                                                                                                    | applican                                                                                                 | ts during examination:                                                                                                                                                                                                 | None                                                                                                                                                               |                                                                                                            |
|          | Learning Objective:                                                                                                                                              | AA2. Ability to d<br>OR COMPLETE<br>43.5 / 45.13) AA                                                                                                                | etermin<br>E LOSS<br>2.01 Co                                                                             | e and/or interpret the fo<br>OF COMPONENT COC<br>omponent temperatures                                                                                                                                                 | llowing as they a<br>DLING WATER: (<br>3.3 / 3.4                                                                                                                   | pply to PARTIAL<br>(CFR: 41.10 /                                                                           |
|          | Question Source:                                                                                                                                                 | Bank #<br>Modified<br>New                                                                                                                                           | d Bank #                                                                                                 | (Note                                                                                                                                                                                                                  | e changes or atta                                                                                                                                                  | ach parent)                                                                                                |
| $\smile$ | Question History:<br>(Optional - Questions va<br>the NRC; failure to provi                                                                                       | Last NR<br>Ilidated at the fa<br>de the informatio                                                                                                                  | C Exam<br>cility sind<br>on will n                                                                       | ce 10/95 will generally u<br>ecessitate a detailed re                                                                                                                                                                  | undergo less rigo<br>view of every que                                                                                                                             | rous review by<br>estion.)                                                                                 |

 $\bigtriangledown$ 

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

55.41 \_10\_\_ 55.43 \_\_\_\_ \_x\_

10 CFR Part 55 Content:

| ES-401                               | Sample<br>Que | Written Examination<br>stion Worksheet          | Form I                               | ES-401-6 (R8, S1)          |
|--------------------------------------|---------------|-------------------------------------------------|--------------------------------------|----------------------------|
| Examination Outline Cross-reference: | Level         | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>1<br>2<br>295020 AA2.0<br>3.6_ | SRO<br>1<br>2<br>1<br>3.7_ |

Proposed Question: 33 / 24

The Unit is operating at 100% power when a spurious loss of RPS bus "A" occurs. The following conditions are present after the loss of the "A" RPS bus.

| Drywell Temperature      | 130°F              |
|--------------------------|--------------------|
| Drywell Pressure         | 2.1 psig           |
| Torus Water Temperature  | 72°F               |
| Torus Pressure           | 0.8 psig           |
| Torus Level              | 13.98 Feet         |
| Drywell and Torus Oxygen |                    |
| Concentration            | 0.5 volume percent |
|                          | 2.1                |

Based on these conditions what operator actions are required after the "A" RPS bus is restored. Per Ao?-59.

- Α. Reopen the reactor building closed loop cooling Drywell Cooler "A" Inlet and outlet valves to ensure that the drywell pressure remains below 2.7 psig.
- Vent the drywell though standby gas to ensure that the drywell pressure remains below ₿. 2.7 psig. Hrough establish Vent the Torus to maintain drywell to torus differential pressure within the Technical
- C. Specification required value.
- Start drywell makeup using CAD Train A to maintain the oxygen concentration within the D. Technical Specification required value.

Proposed Answer: C. Vent the Torus to maintain drywell to torus differential pressure within the Technical Specification required value.

## Explanation (Optional):

- Α. The Drywell Cooler valves do not go closed on a loss of RPS.
- Β. By venting the Drywell through SBGT the drywell to torus dP will be reduced further.
- C. Differential pressure is 1.3, TS requires > 1.7 psid.
- The Oxygen concentration is allowable by TS (less than 4.0 volume Percent) D.

Technical Reference(s):TS 3.7, OP-37, Containment Atmosphere Dilution System, AOP-59 Loss of RPS bus A Power

Proposed references to be provided to applicants during examination: None

Learning Objective: AA2. Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION: (CFR: 41.10 / 43.5 / 45.13) AA2.01 Drywell/containment pressure 3.6 / 3.7

**Question Source:** 

| Bank #        |   |                                 |
|---------------|---|---------------------------------|
| Modified Bank | # | (Note changes or attach parent) |
| New           | X | ,                               |

Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| ES-401                                                                                                                                                | Sa                                                                                                                                                                                                                                 | mple Written Examinatio<br>Question Worksheet                                                                                                                                                                        | n Fo                                                                                                                           | rm ES-401-6 (R8, S1)                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Examination Outline (                                                                                                                                 | Cross-reference: L                                                                                                                                                                                                                 | .evel<br>Tier #<br>Group #<br>K/A #<br>Importance Ratin                                                                                                                                                              | RO<br>1<br>3<br>295021<br>g3.5_                                                                                                | SRO<br>1<br>2<br>3.5                                                                       |
| Proposed Question: 3                                                                                                                                  | 4 / 33                                                                                                                                                                                                                             |                                                                                                                                                                                                                      |                                                                                                                                |                                                                                            |
| The unit is in shutdow<br>The following plant co                                                                                                      | n with the "B" reside                                                                                                                                                                                                              | ual heat removal system                                                                                                                                                                                              | operating in shuto                                                                                                             | down cooling mode.                                                                         |
| RPV pressure<br>RPV level<br>RPV head<br>Coolant temp<br>"A" & "B" Rea                                                                                | e 0 psig<br>270 inche<br>INSTALL<br>erature 100°F<br>ctor Water Recircul                                                                                                                                                           | es<br>ED<br>ation (RWR) pumps C                                                                                                                                                                                      | FF                                                                                                                             |                                                                                            |
| "B" RWR Pun<br>"B" RWR Pun                                                                                                                            | np Suction Valve (02<br>np Discharge Valve                                                                                                                                                                                         | 2MOV-43B)                                                                                                                                                                                                            | LOSED OPEN                                                                                                                     |                                                                                            |
| Maintenance is trouble<br>automatically opens.<br>in a cost feading<br>A. This w<br>the gr<br>B. This w<br>C. This w<br>bypas<br>D. This w<br>insuffi | eshooting the "B" R<br>What effect does th<br>vill create a large dr<br>oup II isolation occu<br>vill result in a loss of<br>vill result in a loss of<br>s the reactor core.<br>vill result in a loss of<br>cient, natural circula | WR Pump-Suction Valve<br>is have on shutdown coo<br>ain path to the torus and<br>irs on RPV low water lev<br>shutdown cooling and ir<br>shutdown cooling becau<br>veduction in<br>valid reactor coolant ten<br>tion. | (02MOV-43B) wh<br>ling.<br>will reduce the RF<br>el.<br>isufficient natural<br>ise the shutdown<br>مسمع<br>nperature indicatio | en the valve<br>PV water level until<br>circulation.<br>cooling flow will<br>on because of |
| Proposed Answer:                                                                                                                                      | C. This will r<br>cooling flo                                                                                                                                                                                                      | esult in a loss of shutdov<br>ow will bypass the reacto                                                                                                                                                              | n cooling becaus<br>r core.                                                                                                    | e the shutdown                                                                             |
| Explanation (Optional)                                                                                                                                | : Opening the RWF<br>to bypass the core<br>will ensure good r                                                                                                                                                                      | R pump <del>cuction</del> valve will<br>e. However, the RPV wa<br>natural circulation and ter                                                                                                                        | allow the RHR sh<br>ter level is greate<br>nperature indicati                                                                  | nutdown cooling flow<br>r than 234.5 which<br>on is available.                             |
| Technical Reference(s                                                                                                                                 | s): SDLP-02                                                                                                                                                                                                                        | H, SDLP-10                                                                                                                                                                                                           |                                                                                                                                |                                                                                            |
| Proposed references t                                                                                                                                 | o be provided to ap                                                                                                                                                                                                                | plicants during examinati                                                                                                                                                                                            | on: None                                                                                                                       |                                                                                            |
| Learning Objective:                                                                                                                                   | AA1. Abili<br>LOSS OF<br>RHR/shut                                                                                                                                                                                                  | ty to operate and/or mon<br>SHUTDOWN COOLING<br>down cooling 3.5 / 3.5                                                                                                                                               | itor the following a<br>: (CFR: 41.7 / 45                                                                                      | as they apply to<br>5.6) AA1.02                                                            |
| Question Source:                                                                                                                                      | Bank #<br>Modified I<br>New                                                                                                                                                                                                        | Bank #X                                                                                                                                                                                                              | (Note changes or                                                                                                               | attach parent)                                                                             |

Question History:

Last NRC Exam

劣

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

**Question Cognitive Level:** 

Memory or Fundamental Knowledge Comprehension or Analysis

Х

10 CFR Part 55 Content:

55.41 <u>7</u> 55.43 <u>----</u>

| ES-401                                             |                                |                                                      | Sampl<br>Qເ                         | e Written Examination<br>Jestion Worksheet                     |                                 | Form ES-401-6 (R8, S1                           |
|----------------------------------------------------|--------------------------------|------------------------------------------------------|-------------------------------------|----------------------------------------------------------------|---------------------------------|-------------------------------------------------|
| Examination                                        | Outline                        | Cross-referen                                        | e: Leve                             | el<br>Tier #<br>Group #<br>K/A #<br>Importance Rating          | RO<br>1<br>_2<br>29502<br>_2.9_ | SRO<br>1<br>2<br>2 Ak3.02<br>3.1_               |
| Proposed Qu                                        | estion: 3                      | 35 / 25                                              |                                     |                                                                |                                 |                                                 |
| Five minutes in <u>(2)</u> .                       | ago bot                        | h CRD pumps                                          | tripped.                            | This condition will result                                     | in a loss o                     | f <u>(1)</u> and may result                     |
| А.                                                 | (1)<br>(2)                     | Cooling wa<br>increased (<br>Da                      | er flow to<br>oram time             | o the CRD<br><del>e due to</del> Graphitar seal b              | oreakdown                       |                                                 |
| B.                                                 | (1)<br>(2)                     | Charging w<br><del>erratic with</del><br>tube and in | ater flow<br>Irawal tim<br>Iex tube | to the CRD<br>nes because of the reduc<br>Los, of scram ca     | ed toleran<br>Pability.         | rc <del>es between the inner</del> -            |
| C.                                                 | (1)<br>(2)                     | Drive water<br>failure of th<br>probe                | flow to th<br>e chrome              | ne CRD<br>I / alumel temperature se                            | ensor in the                    | e position indication                           |
| D.                                                 | (1)<br>(2)                     | Exhaust wa<br>failure of th                          | ter flow fr<br>e collet ho          | rom the CRD<br>pusing from inter-granula                       | ar stress co                    | prrosion cracking                               |
| Proposed Ans                                       | swer:                          | A. (1)<br>(2)                                        | Cooling w<br>n <del>creased</del>   | vater flow to the CRD<br><del>I scram time due t</del> o Grap  | ohitar seal l                   | breakdown                                       |
| Explanation (                                      | Optional                       | ): At elevated breakdown                             | temperat<br>and incre               | ures the Graphitar seals<br>ased scram times.                  | become b                        | rittle and can result in                        |
| Technical Ref                                      | ference(                       | s):SDLP-03A,                                         | AOP-69,                             | Control Rod Drive Trout                                        | ble                             |                                                 |
| Proposed refe                                      | erences                        | to be provided                                       | to applic                           | ants during examination                                        | : None                          |                                                 |
| Learning Obje                                      | ective:                        | AK3. Knowl<br>LOSS OF C<br>/ 3.1                     | edge of the<br>RD PUM               | ne reasons for the follow<br>PS: (CFR: 41.5 / 45.6) A          | ing respon<br>K3.02 CRI         | ses as they apply to<br>DM high temperature 2.9 |
| Question Sou                                       | rce:                           | Bar<br>Moo<br>Nev                                    | k #<br>ified Ban                    | k # (No                                                        | ote change                      | s or attach parent)                             |
| Question Histo<br>(Optional - Qu<br>the NRC; failu | ory:<br>lestions<br>lre to pro | Las<br>validated at th<br>ovide the inform           | NRC Exa<br>a facility station wil   | am<br>since 10/95 will generally<br>I necessitate a detailed i | undergo l<br>review of e        | ess rigorous review by<br>very question.)       |
| Question Cog                                       | nitive Le                      | evel: Mer<br>Cor                                     | iory or Fu<br>iprehensi             | undamental Knowledge<br>on or Analysis                         | X                               |                                                 |
| 10 CFR Part 5                                      | 5 Conte                        | ent: 55.4                                            | 15_                                 |                                                                |                                 |                                                 |

55.43 \_\_\_

|            | ES-401                                                                                                        | {                                                                                 | Sample<br>Que                                                                      | Written Examinat<br>stion Worksheet                                                                                                  | tion                                                    |                                                             | Form E                                      | S-401-6 (R8, S1)                                   |
|------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------|---------------------------------------------|----------------------------------------------------|
|            | Examination Outline Cross-ref                                                                                 | erence:                                                                           | Level                                                                              | Tier #<br>Group #<br>K/A #<br>Importance Rat                                                                                         | ting                                                    | RO<br>1<br>2<br>295020<br>3.2_                              | 8 EK2.02                                    | SRO<br>1<br>2<br>_3.3_                             |
|            | Proposed Question: 36 / 27                                                                                    |                                                                                   |                                                                                    |                                                                                                                                      |                                                         |                                                             |                                             |                                                    |
| instrument | A large break LOCA has just o following list of plant paramete                                                | ccurred<br>rs what i                                                              | and all p<br>reactor v                                                             | lant systems fun<br>vater level indicat                                                                                              | ctionec<br>tion ma                                      | l as desig<br>ly be use                                     | gned. Ba<br>d by the                        | ased on the<br>operator.                           |
| run        | Drywell Pressure 200<br>Drywell Temperatures<br>Torus Pressure<br>Torus Water Temperature<br>Reactor Pressure | • <del>-35</del> psig<br>230 °F<br>12 psig<br>150 ° F<br>0 psig                   | ]<br> <br>                                                                         |                                                                                                                                      |                                                         |                                                             |                                             |                                                    |
|            | A. Wide Range L<br>B. Narrow Range<br>C. Fuel Zone Lev<br>D. RPV water lev                                    | evel Indi<br>Level In<br>el Indica<br>el can no                                   | cating<br>dicating<br>ting<br>ot be det                                            | ermined                                                                                                                              | 44<br>164 <b>5</b><br>-100                              | inches<br>inches<br>inches                                  |                                             |                                                    |
|            | Proposed Answer: -D                                                                                           | - RPV w                                                                           | ater leve                                                                          | l can not be dete                                                                                                                    | ormino                                                  | ł                                                           |                                             |                                                    |
|            | Explanation (Optional): A.<br>B.<br>C.<br>D.                                                                  | Level is<br>above<br>Level is<br>above<br><del>DW Te</del><br>Water I<br>saturati | NOT a<br>RPV sat<br>NOT a<br>RPV sat<br>RPV sat<br>mp. is a<br>evel car<br>on temp | bove its minimun<br>uration temperation<br>bove its minimun<br>uration temperation<br>bove RPV satura<br>not be determin<br>perature | n usabl<br>ure<br>n usabl<br>ure<br>ition ter<br>ed bec | e indicati<br>e indicati<br><del>nperatu</del> r<br>ause DW | ion level<br>on level<br>e حه سم<br>/ Temp. | & DW Temp. is<br>& DW Temp. is<br><br>is above RPV |
|            | Technical Reference(s):                                                                                       | EOP-2,                                                                            | "RPV C                                                                             | ontrol"                                                                                                                              |                                                         |                                                             |                                             |                                                    |
|            | Proposed references to be prov                                                                                | vided to a                                                                        | applican                                                                           | ts during examin                                                                                                                     | ation:                                                  | EOP-2,                                                      | "RPV C                                      | ontrol"                                            |
| 1          | Learning Objective:                                                                                           | EK2. Ki<br>TEMPE<br>Compo                                                         | nowledg<br>RATUR<br>nents in                                                       | e of the interrelat<br>E and the followi<br>ternal to the dryw                                                                       | tions be<br>ng: (Cl<br>vell 3.2                         | etween H<br>FR: 41.7<br>/ 3.3                               | lIGH DR<br>/ 45.8) E                        | YWELL<br>K2.02                                     |
|            | Question Source:                                                                                              | Bank #<br>Modifie<br>New                                                          | d Bank (                                                                           | #X                                                                                                                                   | _ (Note                                                 | e change                                                    | s or atta                                   | ch parent)                                         |
|            | Question History:<br>(Optional - Questions validated<br>the NRC; failure to provide the                       | Last NF<br>at the fa<br>informati                                                 | RC Exan<br>cility sin<br>on will n                                                 | n<br>ce 10/95 will gen<br>ecessitate a deta                                                                                          | erally u<br>ailed re                                    | Indergo l<br>view of e                                      | ess rigoi<br>very que                       | rous review by<br>estion.)                         |
|            | Question Cognitive Level:                                                                                     | Memory<br>Compre                                                                  | or Funchension                                                                     | damental Knowle<br>or Analysis                                                                                                       | edge                                                    | x                                                           |                                             |                                                    |

10 CFR Part 55 Content:

| CO-401                                               |                              |                                                   | Sample V<br>Ques                                 | written Examination<br>stion Worksheet                                                                 | F                                                           | orm ES-401-6 (R8, S1                                                        |
|------------------------------------------------------|------------------------------|---------------------------------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------|
|                                                      |                              | ······································            |                                                  |                                                                                                        |                                                             | ·····                                                                       |
| Examination C                                        | Outline C                    | ross-reference:                                   | Level                                            | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                        | RO<br>1<br>2<br>295029 E<br>_3.4_                           | SRO<br>1<br>2<br>EK1.01<br>3.7_                                             |
| Proposed Que                                         | stion: 37                    | / 28                                              |                                                  |                                                                                                        | DEN BUTER                                                   | ,ve.                                                                        |
| The control roo<br>Tail Pipe Limit                   | om supe<br>.  Why is         | rvisor has deter<br>an emergency                  | mined th<br>depressi                             | مم<br>at torus water level car<br>urization required?                                                  | not be mail                                                 | ntained below the SR\                                                       |
| Level<br>A.                                          | The SF                       | RV vacuum bre                                     | akers will                                       | be submerged and wil                                                                                   | I not limit the                                             | e dynamic forces                                                            |
| В.                                                   | The hig                      | gh torus level w<br>non mode failu                | ill flood the re of eme                          | ne HPCI and RCIC turb<br>reency high pressure i                                                        | ine exhaust<br>niection.                                    | lines and resulting in                                                      |
| C.                                                   | SRV o                        | peration could r                                  | esult in fa                                      | ailure of the SRV tail pi                                                                              | pes and dire                                                | ct containment                                                              |
| D.                                                   | Contail<br>-reduce           | nzation.<br>nment overpres<br>d torus air spac    | surization<br>e during-                          | + tor<br>n could occur from n <del>on</del><br><del>a reactor blowdown,</del>                          | us to dryw<br>-condensible<br>being sub                     | ell vaccur m breal<br><del>Duildup in the</del><br>murged.                  |
| Proposed Ansv                                        | wer:                         | C. SRV c<br>contai                                | peration<br>nment pr                             | could result in failure c<br>essurization.                                                             | f the SRV ta                                                | il pipes and direct                                                         |
| Explanation (O                                       | ptional):                    | A The S                                           | RV vacuu                                         | um breakers are locate                                                                                 | d in the dryv                                               | vell and will not be                                                        |
|                                                      |                              | B. There                                          | are chec                                         | k valves in the HPCI a                                                                                 | nd RCIC turk                                                | oine exhaust lines that                                                     |
|                                                      |                              | D. Conta<br>conde<br>a LOC<br>able to             | inment ov<br>nsible is f<br>A not a b<br>keep up | ver pressure would not<br>the nitrogen and to disp<br>lowdown. In addition t<br>with the increased pre | occur. Mos<br>blace the niti<br>he containm<br>ssure during | t of the non<br>rogen you would need<br>lent vent would be<br>g a blowdown. |
| Technical Refe                                       | rence(s)                     | : EOP-4<br>Ventin                                 | , Primary<br>g.                                  | Containment Control;                                                                                   | EP-6, Post                                                  | Accident Containment                                                        |
| Proposed refer                                       | ences to                     | be provided to                                    | applican                                         | ts during examination:                                                                                 | EOP-4                                                       |                                                                             |
| Learning Objec                                       | tive:                        | EK1. Knowledg<br>they apply to F<br>41.10) EK1.01 | ge of the<br>IIGH SUF<br>Containr                | operational implication<br>PRESSION POOL W/<br>nent integrity 3.4 / 3.7                                | s of the follo<br>ATER LEVE                                 | wing concepts as<br>L: (CFR: 41.8 to                                        |
| Question Sourc                                       | e:                           | Bank <del>I</del><br>Modifie<br>New               | ŧ<br>ed Bank <del>f</del>                        | # (Not                                                                                                 | e changes c                                                 | or attach parent)                                                           |
| Question Histor<br>Optional - Que<br>he NRC; failure | y:<br>stions va<br>e to prov | Last N<br>alidated at the fa<br>ide the informa   | RC Exarr<br>acility sin<br>tion will n           | n<br>ce 10/95 will generally<br>ecessitate a detailed re                                               | undergo les                                                 | s rigorous review by<br>ry question.)                                       |
| Question Cogni                                       | itive Lev                    | el: Memor<br>Compr                                | y or Fund<br>ehension                            | damental Knowledge<br>or Analysis                                                                      | X                                                           |                                                                             |
|                                                      |                              |                                                   |                                                  |                                                                                                        |                                                             |                                                                             |

10 CFR Part 55 Content:

55.41 <u>8</u> 55.43 \_\_\_\_

|          | ES-401                                                                                                                                                                                                      | Sar                                                                       | nple Written Examination<br>Question Worksheet                                                                                                                                     | Form ES-401-6 (R8, S1)                                                                                                                                                                               |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | Examination Outline Cross-refe                                                                                                                                                                              | rence: L                                                                  | evel<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                            | RO SRO<br>11<br>_22<br>295034 EA1.01<br>_3.83.8_                                                                                                                                                     |
|          | Proposed Question: 40 / 30                                                                                                                                                                                  |                                                                           |                                                                                                                                                                                    |                                                                                                                                                                                                      |
| r 154 mg | The "A" reactor water cleanup (F<br>pump room. All reactor building<br>except for the following. The RV<br>The reactor building vent exhaus<br>-increasing. In addition to monite<br>actions must be taken. | RWCU) pu<br>temperate<br>VCU pum<br>st radiation<br>oring the f           | Imp has a seal leak which resulure and radiation levels are-beken<br>p area radiation monitor is read<br>n monitors 17RM-452A & B are<br>RWCU pump area temperature                | lted in misting in the "A" RWCU<br><del>w the maximum</del> normal <del>-level</del><br>ling 75 mr/hr and <del>increasing. או איז א</del><br>reading 3 x 10E3 and<br>and radiation levels what other |
| Cusure   | A. Isolate the "A" R<br>SBCT slarts مسا isolate the react<br>B. Isolate the "A" R<br>-treatment syster                                                                                                      | WCU pun<br>or building<br>WCU pun                                         | np and if reactor building vent ra<br>y <del>vents:</del> has isslated<br>np, <del>reestablish reactor building</del><br>and imediate start Sbet                                   | adiation exceeds 1 x 10E4 then<br><del>vents and securo standby gas -</del><br>المسكر روياد و                                                                                                        |
|          | C. Immediately isol<br>D. Reestablish read<br>جرامج احدا                                                                                                                                                    | ate secon<br>ctor buildir<br>2PV Sanho                                    | dary containment and start the<br>ng ventilation and secure stand                                                                                                                  | standby gas treatment system.<br>by gas treatment system.                                                                                                                                            |
|          | Proposed Answer: A.                                                                                                                                                                                         | Isolate the<br>exceeds 1                                                  | • "A" RWCU pump and if reacto<br>x 10E4 then isolate the reacto                                                                                                                    | or building vent-radiation<br>r building vents.                                                                                                                                                      |
|          | Explanation (Optional):B.<br>C.<br>D.                                                                                                                                                                       | The reactorn<br>1x10E4.<br>EOP-5 do<br>and imme<br>because o<br>The secor | or building vents have not isolat<br>es not require the vents to be is<br>diately isolating the RB vents w<br>cooling to plant equipment will b<br>ndary containment vents are not | ted. The vents will isolate at solated until 1X10E4 is reached will degraded the plant further be further decreased.                                                                                 |
|          | Technical Reference(s):                                                                                                                                                                                     | EOP-5, SI                                                                 | DLP 12, 17, 01B                                                                                                                                                                    |                                                                                                                                                                                                      |
|          | Proposed references to be provid                                                                                                                                                                            | ded to app                                                                | blicants during examination: E                                                                                                                                                     | EOP-5                                                                                                                                                                                                |
|          | Learning Objective:                                                                                                                                                                                         | EA1. Abilit<br>SECOND/<br>(CFR: 41.7                                      | ty to operate and/or monitor the<br>ARY CONTAINMENT VENTILA<br>7 / 45.6) EA1.01 Area radiation                                                                                     | following as they apply to<br>TION HIGH RADIATION:<br>monitoring system 3.8 / 3.8                                                                                                                    |
|          | Question Source:                                                                                                                                                                                            | Bank #<br>Modified E<br>New                                               | Bank # (Note c                                                                                                                                                                     | hanges or attach parent)                                                                                                                                                                             |
|          | Question History: L<br>(Optional - Questions validated a<br>the NRC; failure to provide the in                                                                                                              | ast NRC<br>t the facili<br>formation                                      | Exam<br>ty since 10/95 will generally und<br>will necessitate a detailed revie                                                                                                     | dergo less rigorous review by<br>aw of every question.)                                                                                                                                              |
|          | Question Cognitive Level:                                                                                                                                                                                   | Memory or<br>Comprehe                                                     | r Fundamental Knowledge<br>nsion or Analysis                                                                                                                                       | _X                                                                                                                                                                                                   |

l

10 CFR Part 55 Content:

| ES-401                                                   |                                                           | Sa                                                | ample Writ<br>Question                     | ten Examinati<br>n Worksheet                          | on                                     | Form E                                         | ES-401-6 (R8, S                                     |
|----------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------|--------------------------------------------|-------------------------------------------------------|----------------------------------------|------------------------------------------------|-----------------------------------------------------|
| Examination C                                            | outline Cross-rei                                         | erence:                                           | Level<br>Ti<br>Gi<br>K/<br>Irr             | er #<br>roup #<br>A #<br>iportance Rati               | R<br>—<br>29<br>ng _3                  | O<br>_1<br>_3<br>95035 A2.01<br>3.8_           | SRO<br>1<br>_2<br>_3.9_                             |
| Proposed Que                                             | stion: 41 / 35                                            |                                                   |                                            |                                                       |                                        |                                                |                                                     |
| During alignme<br>differential pres<br>ventilation isola | ent of reactor bu<br>ssure is positive<br>ates and what o | ilding vent<br>and <del>inore</del><br>perator ac | tilation the<br>asing at w<br>tions will b | operator notic<br>hat differentia<br>be required to r | es that real<br>pressure<br>maintain s | actor building<br>will the Read<br>econdary co | to atmosphere<br>otor Bldg.<br>ntainment?<br>شانع:د |
| Α.                                                       | At + 1 inch of                                            | water the r                                       | eactor bui                                 | lding isolation                                       | occurs, ve                             | erify standby                                  | gas system has                                      |
| В.                                                       | At + 1 inch of                                            | started.<br>water the r                           | eactor bui                                 | lding isolation                                       | occurs, m                              | anually start                                  | standby gas                                         |
| C.                                                       | treatment syst<br>At + 4inches o                          | em.<br>If water the                               | e reactor b                                | uilding will iso                                      | lation occu                            | urs, verify sta                                | ndby gas syste                                      |
| D.                                                       | has started.<br>At + 4inches o<br>gas treatment           | f water the system.                               | e reactor b                                | uilding will isol                                     | lation occu                            | urs, manually                                  | start standby                                       |
| Proposed ansv                                            | ver: B.                                                   | At + 1 in<br>standby                              | ch of wate<br>gas treatn                   | r the reactor b<br>nent system.                       | uilding isc                            | lation occurs                                  | , manually star                                     |
| Explanation (O                                           | ptional): At +1<br>autom                                  | inch water<br>atically sta                        | the reacto<br>irt on this i                | r building isola solation so it r                     | ates. Stan<br>nust be ma               | ndby gas doe<br>anually starte                 | s not<br>ed.                                        |
| Technical Refe                                           | rence(s):OP-51<br>SDLP·                                   | A REACT<br>01B & 66                               | or Build                                   | NG VENTILA                                            | TION ANI                               | D COOLING                                      | SYSTEM* and                                         |
| Proposed refer                                           | ences to be pro                                           | vided to ap                                       | oplicants c                                | luring examina                                        | ation: No                              | one                                            |                                                     |
| Learning Objec                                           | tive: EA2. A<br>SECO<br>to 41.1                           | Ability to de<br>NDARY Co<br>0) EA2.01            | etermine a<br>ONTAINM<br>Seconda           | nd/or interpret<br>ENT HIGH DI<br>ry containmen       | the follow<br>FFERENT<br>t pressure    | ing as they a<br>IAL PRESSU<br>: 3.8 / 3.9     | pply to<br>JRE: (CFR: 41.8                          |
| Question Sourc                                           | e:                                                        | Bank #<br>Modified<br>New                         | Bank #                                     | X                                                     | _ (Note ch                             | anges or atta                                  | ich parent)                                         |
| Question Histor<br>(Optional - Que<br>the NRC; failure   | ry:<br>stions validated<br>e to provide the               | Last NRO<br>at the fac<br>informatio              | C Exam<br>ility since<br>n will nece       | 10/95 will gene<br>essitate a deta                    | erally unde                            | ergo less rigo<br>v of every qu                | rous review by<br>estion.)                          |
| Question Cogn                                            | itive Level:                                              | Memory<br>Compreh                                 | or Fundan<br>iension or                    | nental Knowle<br>Analysis                             | dge                                    | x                                              |                                                     |
| 10 CFR Part 55                                           | Content:                                                  | 55.41 _<br>55.43 _                                | _9                                         |                                                       |                                        |                                                |                                                     |

 $\nabla$ 

| ES-401                                                                                                                                                                                     | Sample Written Examination<br>Question Worksheet                                                  | Form ES-401-6 (R8, S1)                                                                                   |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|--|
| Examination Outline Cross-reference                                                                                                                                                        | : Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                        | RO SRO<br>11<br>32<br>295036 2.1.7<br>3.74.4_                                                            |  |
| Proposed Question: 42 / 36                                                                                                                                                                 |                                                                                                   |                                                                                                          |  |
| While the plant is operating at 100 in discharge into the east and wes and rising. Choose the statement                                                                                    | % power, a fault occurs in the<br>t crescent areas. Levels in b<br>below that describes the oper  | e fire protection system resulting<br>oth crescent areas are 20 inches<br>rator action that is required. |  |
| <ul> <li>A. Scram the reactor.</li> <li>B. Commence a reactor.</li> <li>C. Isolate sump dischar</li> <li>D. Perform an EMERG</li> </ul>                                                    | or shut down.<br>arge to radwaste storage tank<br>ENCY DEPRESSURIZATIO                            | s.<br>N in accordance with EOP-2.                                                                        |  |
| Proposed Answer: B. Commence                                                                                                                                                               | ce a reactor shut down.                                                                           |                                                                                                          |  |
| Explanation (Optional): The water lev<br>exceeded and<br>therefore a no                                                                                                                    | rels in EOP-5, "Secondary Conta<br>d there is NOT a primary system<br>prmal shutdown is directed. | ainment Control" have been<br>discharging into the area,                                                 |  |
| Technical Reference(s):EOP-5, MIT 3                                                                                                                                                        | 01.11F                                                                                            |                                                                                                          |  |
| Proposed references to be provided to                                                                                                                                                      | o applicants during examination                                                                   | EOP-5                                                                                                    |  |
| Learning Objective: 2.1.7 Ability to evaluate plant performance and make operational j based on operating characteristics / reactor behavior / and instrum interpretation - RO 3.7/SRO 4.4 |                                                                                                   |                                                                                                          |  |
| Question Source: Bank<br>Modii<br>New                                                                                                                                                      | # FitzPatrick Requalification Ba<br>fied Bank # (N                                                | nk 20005219B01C Rev.2<br>lote changes or attach parent)                                                  |  |
| Our attack that                                                                                                                                                                            |                                                                                                   |                                                                                                          |  |

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or AnalysisX |
|---------------------------|---------------------------------------------------------------|
| 10 CFR Part 55 Content:   | 55.4110_<br>55.43<br>LO MIT-301.11F, EO 5.07                  |

## Comments:

What is the learning objective? (MIT-301.11F, EO 5.07) I could not find this referenced in the material that was sent.

| ES-401                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Sample<br>Que                                                                                                                                                                                                                                                                           | Written Examination<br>estion Worksheet                                                                                                                                                                                                                                                                                                                                                                                                                  | Fc                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | orm ES-401-6 (R8, S                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examination Outline Cross-ref                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ference: Level                                                                                                                                                                                                                                                                          | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                                                                                                                                                                                                                                                          | RO<br>1<br>600000 A2<br>3.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | SRO<br>1<br>2.16<br>3.5_                                                                                                                                                                                                                       |
| Proposed Question: 43 / 32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | كمع                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                |
| The unit is operating at a 1009<br>that none of the required imme<br>outside the Control Room. Wi<br>result?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | When a fire in<br>ediate actions ca<br>hat actions mus                                                                                                                                                                                                                                  | the Control Room cause<br>an be taken. All operato<br>t be taken to scram the r                                                                                                                                                                                                                                                                                                                                                                          | es an immedi<br>or actions mus<br>reactor and w                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ate evacuation, sucl<br>st be taken from<br>rhat other actions wil                                                                                                                                                                             |
| A. <del>The</del> RPS MG<br>- <del>both the</del> A & E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | set output breal<br>BRPS systemste                                                                                                                                                                                                                                                      | ker AND RPS alternate t<br>hitiate a reactor scram المناه حيال المعني الم                                                                                                                                                                                                                                                                                                                                                                                | eeder breake                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | er must be open on<br>the occur.                                                                                                                                                                                                               |
| B. The A & B RP<br>other actions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | vS MG set outpu<br><del>will occur.</del> Th                                                                                                                                                                                                                                            | t breakers must be OPE<br>או או                                                                                                                                                                                                                                                                                                                                                                                               | NED to initia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | to the scram. No-                                                                                                                                                                                                                              |
| C. The A & B RP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 'S MG set outpu                                                                                                                                                                                                                                                                         | t breakers must be OPF                                                                                                                                                                                                                                                                                                                                                                                                                                   | NED to initia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | te the scram. The                                                                                                                                                                                                                              |
| -high-pressure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | coolant injectio                                                                                                                                                                                                                                                                        | n system will start and in                                                                                                                                                                                                                                                                                                                                                                                                                               | rject into the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <del>, lossel, l</del>                                                                                                                                                                                                                         |
| h <del>igh pressure.</del><br>Thus سرائا مع<br>D. The A & B RP<br>( will <del>also result</del><br>ستوريالي م                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | coolant injectio<br>عنال ۲۰ من جریم<br>S MG set outpu<br>البه a group I iso                                                                                                                                                                                                             | n system will start and in<br>مس عسط صبه د الامار<br>It breakers must be OPE<br>lation, and group II isola                                                                                                                                                                                                                                                                                                                                               | i <del>ject into the v</del><br>ແລະ ເອັດ<br>NED <del>to initia</del><br>tion.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <del>ressel</del><br><del>te the scram.</del> This                                                                                                                                                                                             |
| -high pressure<br>Thum 11 M<br>D. The A & B RP<br>(will also result<br>result in a<br>Proposed Answer: D.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | coolant injectio<br>sult in a score<br>S MG set outpu<br>tin a group I iso<br>score and<br>The A & B RF<br>scram. Thisu                                                                                                                                                                 | n system will start and in<br>and Goup ( Isole<br>to breakers must be OPE<br>lation, and group II isola<br>PS MG set output breake<br>will also result in a group                                                                                                                                                                                                                                                                                        | nject into the v<br>han only.<br>NED to initia<br>tion.<br>ers must be C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <del>rossel</del><br>t <del>o the scram</del> This<br>P <u>ENED to initiate</u> th<br>nd group II isolation.                                                                                                                                   |
| Proposed Answer: D.<br>Explanation (Optional):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | A. Only<br>S. A. Only<br>C. HPC<br>D. Corre                                                                                                                                                                                                                                             | the RPS MG Set break<br>n. Both breakers do r<br>lation, and group II isola<br>PS MG set output break<br>will also result in a group<br>the RPS MG Set brea<br>n. Both breakers do r<br>RPS system losses p<br>I will not start when Rf<br>ect.                                                                                                                                                                                                          | iject into the<br>hand only.<br>NED to initiation.<br>Tisolation, a<br>kers need b<br>hot need to b<br>ower PCIS<br>PS losses po                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | vessel<br>te the scram This<br>PENED to initiate the<br>nd group II isolation<br>e open to initiate a<br>be initiated.<br>will actuate as well<br>ower.                                                                                        |
| -high pressure         The mail Mail         D.       The A & B RP         (will also result         vesult mesult         Proposed Answer:       D.         Explanation (Optional):         Technical Reference(s):                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Coolant injectio<br>Sold in a Social<br>S MG set output<br>in a group I iso<br>Scram. This<br>A. Only<br>Scrar<br>B. If the<br>C. HPC<br>D. Correc<br>SDLP-16C, A<br>CONTROL F                                                                                                          | n system will start and in<br>n system will start and in<br>t breakers must be OPE<br>lation, and group II isola<br>PS MG set output breaker<br>will also result in a group<br>the RPS MG Set brea<br>n. Both breakers do r<br>RPS system losses p<br>I will not start when RI<br>sect.<br>AOP-43 PLANT SHUT<br>ROOM                                                                                                                                     | iject into the<br>hand only.<br>NED to initiation.<br>Tisolation, a<br>kers need b<br>to t need to b<br>ower PCIS to<br>PS losses po<br>DOWN FRO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | vessel<br>te the scram- This<br>PENED to initiate the<br>nd group II isolation<br>e open to initiate a<br>be initiated.<br>will actuate as well<br>ower.<br>DM OUTSIDE THE                                                                     |
| -high pressure         The will also result         D.       The A & B RP         (will also result         Proposed Answer:       D.         Explanation (Optional):         Technical Reference(s):         Proposed references to be proposed references to be proposed references.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | coolant injectio<br>solf in a score<br>S MG set output<br>in a group I iso<br>score and<br>The A & B RF<br>score This<br>A. Only<br>score<br>B. If the<br>C. HPC<br>D. Corre<br>SDLP-16C, A<br>CONTROL F<br>provided to ap                                                              | n system will start and in<br>m and G and the line<br>at breakers must be OPE<br>lation, and group II isola<br>PS MG set output breaker<br>will also result in a group<br>the RPS MG Set brea<br>m. Both breakers do r<br>RPS system losses p<br>I will not start when RI<br>ect.<br>AOP-43 PLANT SHUT<br>ROOM<br>plicants during examin                                                                                                                 | iject into the value of the only on by on both of the one one of the one one of the                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | PENED to initiate the scram. This<br>PENED to initiate the distribution of the scram. This<br>of group II isolation<br>will actuate as wellower.<br>DM OUTSIDE THE                                                                             |
| -high pressure         The mail Magnetic field of the mail Magnetic field of the mail field of the | coolant injectio<br>solf in a group I iso<br>Solf in a group I iso<br>scram and<br>The A & B RF<br>scram. This<br>A. Only<br>scrar<br>B. If the<br>C. HPC<br>D. Corre<br>SDLP-16C, A<br>CONTROL F<br>provided to app<br>AA2 Ability to<br>PLANT FIRE<br>zone 3.1 / 3.5<br>maintained ar | n system will start and in<br>n system will start and in<br>the reakers must be OPE<br>lation, and group II isola<br>PS MG set output breaker<br>will also result in a group<br>the RPS MG Set brea<br>n. Both breakers do r<br>RPS system losses p<br>I will not start when RF<br>ect.<br>AOP-43 PLANT SHUT<br>ROOM<br>plicants during examin<br>determine and interpret<br>ON SITE: AA2.12 Locat<br>A2.16 Vital equipment<br>nd operated during a fire | rject into the v<br>NED to initiation.<br>NED to initiation.<br>Tisolation, a<br>kers need b<br>to need to b<br>ower PCIS<br>Sover | vessel<br>te the scram This<br>PENED to initiate the<br>nd group II isolation<br>the open to initiate a<br>be initiated.<br>will actuate as well<br>ower.<br>DM OUTSIDE THE<br>DNE<br>as they apply to<br>puipment within fire<br>ystems to be |

A fire in the Control Room causes immediate evacuation, such that none of the required immediate actions can be taken. All actions must be taken from outside the Control Room. Which of the following statements is correct?

- A. In order to scram the reactor the RPS A and B MG set output breakers AND RPS alternate feeder breakers must be opened.
- B. De-energizing RPS A and B by opening both MG set output breakers will cause a scram ONLY.
- C. De-energizing RPS A and B by opening both MG set output breakers will cause a scram, Group I isolation, and Group II isolation.
- D. De-energizing RPS A and B by opening both MG set output breakers will cause a scram and Group I isolation ONLY.

Question History: Last NRC Exam \_\_\_\_\_\_ (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

 Question Cognitive Level:
 Memory or Fundamental Knowledge \_\_X\_\_

 Comprehension or Analysis
 \_\_\_\_

10 CFR Part 55 Content:

55.41 <u>8</u> 55.43 \_\_\_\_

| ES-401                              | Sample<br>Que | Written Examination<br>stion Worksheet          | Form I                                | ES-401-6 (R8, S1)      |
|-------------------------------------|---------------|-------------------------------------------------|---------------------------------------|------------------------|
| Examination Outline Cross-reference | Level         | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>2<br>1<br>203000 A1.04<br>_3.6_ | SRO<br>2<br>1<br>_3.6_ |
| Proposed Question: 46 / 41          |               |                                                 |                                       |                        |

Several minutes ago a medium break loss of coolant accident occurred simultaneously with a loss of offsite power. The reactor scrammed, core spray (CS) pumps, and the residual heat removal (RHR) pumps automatically started on a valid initiation signal. Reactor vessel level is at 125 inches and reactor pressure is at 500 psig, both level and pressure are decreasing slowly due to the leak. The "B" Loop of RHR was in a normal standby lineup before the event and currently has the following indications.

| "B" RHR pump                       |           | OPERATING         |
|------------------------------------|-----------|-------------------|
| "D" RHR pump                       |           | OPERATING         |
| "B" Loop RHR Flow 10FI-133 (09-3 p | anel)     | 0 gpm             |
| "B" & "D" RHR pump discharge press | ure       | 2 <b>6</b> 0 psig |
| "B" Loop RHR minimum flow valve    | (MOV-16B) | OPEN              |
| "B" Loop RHR injection valve       | (MOV-27B) | OPEN              |
| "B" Loop RHR injection valve       | (MOV-25B) | CLOSED            |
|                                    |           |                   |

Assuming that reactor level and pressure continue to deorease how will the "B" Loop of RHR respond.

- A. The "B" & "D" RHR pumps will not provide sufficient flow because they have been operating without minimum flow several minutes.
- B. The "B" Loop RHR injection valve (MOV-25B) has failed to OPEN which will prevent the "B" Loop of RHR from injecting unless the injection valve is opened locally.
- C. The RHR injection valve (MOV-25B) will OPEN when reactor pressure reaches 450 psig, and when reactor pressure decreases below 250 psig indicated flow will rapidly increase and the minimum flow valve will close.
- D. The "B" Loop RHR injection valve (MOV-25B) will OPEN and the minimum flow valve (MOV-16B) will CLOSE simultaneously when reactor pressure reaches 450 psig, indicated flow will increase as the minimum flow valve closes.

Proposed Answer:

The RHR injection valve (MOV-25B) will OPEN when reactor pressure reaches 450 psig, and when reactor pressure decreases below 250 psig indicated flow will increase and the minimum flow valve will close.

## Explanation (Optional):

- The shutoff head of the pumps are approximately 250 psig. The pumps are running on minimum flow. The only indication that the pumps are on minimum flow is the position of the minimum flow valve.
- The MOV-25B is normally closed and will open on an initiation signal and reactor pressure less than 450 psig.
- The MOV-27B is OPEN in the standby line up.

C.

• The minimum flow valve will close on flow of 1450 gpm, not a reactor pressure of 450 psig

Technical Reference(s): SDLP-10, RHR

Proposed references to be provided to applicants during examination: None

Learning Objective: A1. Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: INJECTION MODE (PLANT SPECIFIC) controls including: (CFR: 41.5 / 45.5) A1.04 System pressure 3.6 / 3.6

Question Source:

Bank # \_\_\_\_\_ (Note changes or attach parent) New \_\_\_\_\_X\_\_\_\_

Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | x |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.415<br>55.43                                              |   |

Comments:

Licensee to verify that 250 psig is a good shutoff head for the pump when on minium flow. This data was obtained from the NRC data sheet for FitzPatric.

| ES-401                                                   |                                           | Samp<br>C                                                                                                                                                                        | Question Worksheet                                                        | n Form ES-40                                                                                        | 1-6 (R8, S1)<br>                      |  |
|----------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|---------------------------------------|--|
| Examination O                                            | utline Cross-re                           | ference: Lev                                                                                                                                                                     | vel<br>Tier #<br>Group #<br>K/A #<br>Importance Ratir                     | RO SRO<br>22_<br>11_<br>206000 K6.03<br>g2.93.1                                                     | )<br>                                 |  |
| Proposed Ques                                            | stion: 47 / 42                            |                                                                                                                                                                                  |                                                                           |                                                                                                     |                                       |  |
| A station black                                          | out has occurre                           | ed. What effe                                                                                                                                                                    | ct will the station black                                                 | out have on the HPCI syste                                                                          | em.                                   |  |
| A.                                                       | The HPCI sys                              | tem is not effe                                                                                                                                                                  | ected by a loss of AC                                                     | power because there are no                                                                          | HPCI                                  |  |
| В.                                                       | The HPCI sys                              | tem will functi                                                                                                                                                                  | ed by AC power.<br>ion; however, the flow                                 | controller will lose power ar                                                                       | nd HPCI                               |  |
| C.                                                       | The HPCI sys                              | stem will functi<br>steam and th                                                                                                                                                 | sl-دaس<br>ion; however, the glan<br><del>e inboard HPCI stearr</del>      | lcakere along the shaft's<br>d seal condenser will not eff<br><del>isolation valvo (MOV-15)</del> w | seal Could+<br>fectively<br>vill lose |  |
| D.                                                       | -power.<br>The HPCI sys<br>turbine contro | tem will not sl<br>I valve will no                                                                                                                                               | tart because the auxili<br>t open.                                        | ary oil pump will lose power                                                                        | and the                               |  |
| Proposed Answ                                            | ver: C.                                   | The HPCI s<br>not effective<br>isolation va                                                                                                                                      | system will function; he<br>ely condense the stea<br>lve will lose power. | wever, the gland seal cond<br>m and the inboard HPCI ste                                            | enser will<br>am                      |  |
| Explanation (Optional): A. M                             |                                           | MOV 15 is  <br>HPCI isolat                                                                                                                                                       | powered from 600 VA<br>ion signal.                                        | C and will not automatically                                                                        | close on a                            |  |
|                                                          | В.                                        | The HPCI fi<br>125 VDC ba                                                                                                                                                        | low controller will still l<br>attery through an inve                     | nave power it is powered fro<br>ter.                                                                | om the "B"                            |  |
|                                                          | D.                                        | The auxilia                                                                                                                                                                      | ry oil pump is powered                                                    | from DC.                                                                                            |                                       |  |
| Technical Refe                                           | rence(s):                                 | SDLP-23, F                                                                                                                                                                       | IPCI                                                                      |                                                                                                     |                                       |  |
| Proposed refere                                          | ences to be pro                           | ovided to appli                                                                                                                                                                  | icants during examina                                                     | lion: None                                                                                          |                                       |  |
| Learning Objective: K6. Knowl<br>on the HIG<br>K6.03 A.C |                                           | owledge of the effect that a loss or malfunction of the following will have<br>HIGH PRESSURE COOLANT INJECTION SYSTEM : (CFR: 41.7 / 45.7)<br>A.C. power: BWR-2,3,4 - 2.9 / 3.1* |                                                                           |                                                                                                     |                                       |  |
| Question Source:                                         |                                           | Bank #<br>Modified Bank # (Note changes or attach parent)<br>NewX                                                                                                                |                                                                           |                                                                                                     |                                       |  |
| Question Histor<br>(Optional - Que<br>the NRC; failure   | y:<br>stions validate<br>e to provide the | Last NRC E<br>d at the facility<br>information w                                                                                                                                 | ixam<br>v since 10/95 will gene<br>vill necessitate a detai               | rally undergo less rigorous i<br>ed review of every question                                        | review by<br>.)                       |  |
| Question Cognitive Level: Mem<br>Com                     |                                           | Memory or I<br>Comprehen                                                                                                                                                         | Fundamental Knowlec<br>sion or Analysis                                   | geX<br>                                                                                             |                                       |  |
|                                                          |                                           |                                                                                                                                                                                  |                                                                           |                                                                                                     |                                       |  |

| ES-401                                               |                                                           |                                        | Sample V<br>Ques                                  | Written Examination<br>stion Worksheet                                                           | Fc                                                    | orm ES-401-6 (R8, S                                               |
|------------------------------------------------------|-----------------------------------------------------------|----------------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------|
| Examination (                                        | Outline Cross-re                                          | eference:                              | Level                                             | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                  | RO<br>2<br>1<br>202002 Ki<br>_2.8_                    | SRO<br>2_<br>1<br>5.01<br>2.8_                                    |
| Proposed Que                                         | estion: 48 / 40                                           |                                        |                                                   |                                                                                                  |                                                       |                                                                   |
| The unit is at<br>significant oil<br>What effect w   | power with both<br>leak occurs on t<br>ill this have on t | reactor w<br>he "A" rea<br>he RWR :    | vater reci<br>actor wat<br>system?                | rculation (RWR) pum<br>er recirculation (RWR                                                     | ps operating a<br>) motor gener                       | at 90% speed. A<br>ator (MG) set piping                           |
| Α.                                                   | Both RWR pu                                               | umps will a                            | automati                                          | cally trip due to low oi                                                                         | l pressure_ <del>and</del>                            | the operator must                                                 |
| В.                                                   | The "A" RWF<br>pressure, red                              | t pump sc<br>uco tho "E                | oop tube<br>3 <sup>*</sup> RWR                    | will lock up and the c<br>pump speed to less th                                                  | lrive motor wil<br><del>an 80%, mon</del>             | l trip on low oil<br>itor for thermal.                            |
| C.                                                   | The "A" RWF<br>reservoir to m                             | l pump sc<br>naintain th<br>match the  | oop tube<br>e "A" RV<br><del>: "A" &amp; "F</del> | will lock up, allowing<br>VR pump operating at<br><del>3° BWD pump speeds</del>                  | the oil in the f<br>a reduced sp                      | luid coupling<br>eed. <del>Operator actio</del>                   |
| D.                                                   | The "A" RWF<br>less than 90%                              | pump mi                                | ust be ma<br>nitor for                            | anually tripped and re<br>thermal hydraulic inst                                                 | ,.<br>educe the "B"<br>ability                        | RWR pump speed t                                                  |
| Proposed Ans                                         | wer: B.                                                   | The "A'<br>on low<br><del>monito</del> | " RWR p<br>oil press<br><del>r for ther</del>     | ump scoop tube will le<br>ure, <del>reduce the "B" R</del><br><del>mal hydraulic instabili</del> | ock up and the<br><del>WR pump-spe</del><br>ty        | e drive motor will trip<br>ed to less than 80%                    |
| Explanation (C                                       | Optional): On lo<br>trip, ti<br>reduc                     | w oil pres<br>ipping the<br>ed to less | sure the<br>pump.<br>than 80                      | scoop tube will lockup<br>The running pump flo<br>% to prevent excessiv                          | o and the drive<br>w will increase<br>ve jet pump dit | e motor breaker will<br>e and sped must be<br>ferential pressure. |
| Technical Refe                                       | erence(s):                                                | SDLP-(                                 | 02H, AO                                           | P-8, Op-27                                                                                       |                                                       |                                                                   |
| Proposed refe                                        | rences to be pro                                          | ovided to a                            | applicant                                         | ts during examination                                                                            | None                                                  |                                                                   |
| Learning Obje                                        | ctive: K5. K<br>apply<br>K5.01                            | nowledge<br>to RECIR<br>Fluid cou      | of the op<br>CULATI<br>Ipling: B\                 | perational implications<br>ON FLOW CONTROL<br>WR-3,4 - 2.8/2.8                                   | s of the followi<br>_ SYSTEM:(                        | ng concepts as they<br>CFR: 41.5 / 45.3)                          |
| Question Sour                                        | ce:                                                       | Bank #<br>Modifie<br>New               | d Bank #                                          | <br>X(No                                                                                         | ote changes o                                         | r attach parent)                                                  |
| Question Histo<br>(Optional - Que<br>the NRC; failur | ory:<br>estions validate<br>re to provide the             | Last NF<br>d at the fa<br>informati    | RC Exam<br>cility sind<br>on will n               | ce 10/95 will generally<br>ecessitate a detailed i                                               | undergo less<br>eview of ever                         | rigorous review by<br>y question.)                                |
| Question Cogr                                        | nitive Level:                                             | Memory<br>Compre                       | y or Func<br>hension                              | amental Knowledge<br>or Analysis                                                                 | ×                                                     |                                                                   |
|                                                      |                                                           |                                        |                                                   |                                                                                                  |                                                       |                                                                   |

 $\triangle$ 

Comments:

55.43 \_\_\_\_

| ES-401                                                       |                                                                                                                                                                    |                                                         | Sample \<br>Ques                                                                                                                                                                 | Written Examination<br>stion Worksheet                                                            |                                                         | Form ES-401-6 (R8,                                                         |  |  |
|--------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------|--|--|
| Examination C                                                | Dutline Cross                                                                                                                                                      | -reference:                                             | Level                                                                                                                                                                            | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                   | RO<br>2<br>1<br>209001<br>_3.2_                         | SRO<br>2<br>1<br>K4.01<br>3.4_                                             |  |  |
| Proposed Que                                                 | estion: 49 / 4                                                                                                                                                     | 3                                                       |                                                                                                                                                                                  |                                                                                                   |                                                         |                                                                            |  |  |
| Which one of injection valve                                 | the following<br>s, 14MOV-11                                                                                                                                       | statements<br>A(B) / 14M                                | correctly<br>OV-12A(                                                                                                                                                             | v describe the automa<br>B)?                                                                      | itic function                                           | of the core spray                                                          |  |  |
| A.                                                           | The core s<br>when the c<br>reactor ves                                                                                                                            | pray injectio<br>ore spray pu<br>sel.                   | n valves<br>ump disc                                                                                                                                                             | will open on a core s<br>charge pressure is 10                                                    | pray autom<br>0 psig or gro                             | atic initiation signal<br>eater to inject into the                         |  |  |
| В.                                                           | The core s<br>when react                                                                                                                                           | pray injectio<br>or pressure                            | n valves<br>is less t                                                                                                                                                            | will open on a core s<br>han 450 psig to prote                                                    | pray autom<br>ct the low p                              | atic initiation signal<br>ressure piping.                                  |  |  |
| C.                                                           | The core spray injection valves will automatically close at a reactor vessel level of 222 inches to prevent flooding and damaging the main steam lines.            |                                                         |                                                                                                                                                                                  |                                                                                                   |                                                         |                                                                            |  |  |
| D.                                                           | The core spray injection valves will automatically close when the core spray sparger break detection logic is actuated to prevent flow diversion from the sparger. |                                                         |                                                                                                                                                                                  |                                                                                                   |                                                         |                                                                            |  |  |
| Proposed Ans                                                 | wer: B.                                                                                                                                                            | The co<br>initiatio<br>the low                          | ore spray<br>on signal<br>v pressu                                                                                                                                               | r injection valves will o<br>when reactor pressu<br>re piping.                                    | open on a c<br>re is less th                            | ore spray automatic<br>an 450 psig to protect                              |  |  |
| Explanation (0                                               | Dptional): Th<br>RF<br>pip<br>the                                                                                                                                  | e core spray<br>V pressure<br>ing. There<br>RPV high le | r injectio<br>less thai<br>are no a<br>evel or s                                                                                                                                 | ns valves automatica<br>n 450 psig. This prote<br>utomatic closures of t<br>parger break detectic | lly open on<br>ects the low<br>he core spr<br>on logic. | an initiation signal and<br>pressure core spray<br>ay injections valves of |  |  |
| Technical Ref                                                | erence(s):                                                                                                                                                         | SDLP-                                                   | 14, CAD                                                                                                                                                                          | file S14-004.cdr                                                                                  |                                                         |                                                                            |  |  |
| Proposed refe                                                | rences to be                                                                                                                                                       | provided to                                             | applicar                                                                                                                                                                         | nts during examination                                                                            | n: None                                                 |                                                                            |  |  |
| Learning Objective: K4. Kn<br>and/or<br>overpre              |                                                                                                                                                                    | . Knowledg<br>d/or interloci<br>erpressuriza            | nowledge of LOW PRESSURE CORE SPRAY SYSTEM design feature(s<br>r interlocks which provide for the following: K4.01 Prevention of<br>ressurization of core spray piping 3.2 / 3.4 |                                                                                                   |                                                         |                                                                            |  |  |
| Question So                                                  | urce:                                                                                                                                                              | Bank<br>Modifi<br>New                                   | #<br>ed Banl                                                                                                                                                                     | <# (                                                                                              | Note chan                                               | ges or attach parent                                                       |  |  |
| Question His<br>(Optional - Q<br>review by the<br>question.) | tory:<br>uestions val<br>NRC; failur                                                                                                                               | Last N<br>idated at th<br>e to provid                   | IRC Exa<br>ne facilit<br>e the in                                                                                                                                                | am<br>y since 10/95 will ge<br>formation will neces                                               | enerally un<br>sitate a de                              | dergo less rigorous<br>tailed review of even                               |  |  |

.
Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

\_X\_\_\_

10 CFR Part 55 Content:

55.41 <u>7</u> 55.43 <u></u>

| ES-401                                                             |                                                                                            | Sample Written Examination<br>Question Worksheet                                                                                       | Form ES-401-6 (R8, S1)                                                                                                                   |
|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Examination Outline                                                | Cross-reference:                                                                           | Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                               | RO SRO<br>22<br>11<br>217000 K3.02<br>3.63.6_                                                                                            |
| Proposed Question:                                                 | 50 / 50                                                                                    |                                                                                                                                        |                                                                                                                                          |
| A break has occurre<br>upstream of the RCI<br>vessel). What effect | d in the steam sup<br>C high flow sensin<br>will this have on F                            | ply line to the Reactor Core Isc<br>g instrument taps (between the<br>PV Pressure and RCIC?                                            | e flow sensing taps and the reactor                                                                                                      |
| A. RCI                                                             | C will automatically                                                                       | / isolate on high temperature in                                                                                                       | drywell enhance.<br>The <del>RCIC pipe routing area</del> .                                                                              |
| B. RCI<br>stop                                                     | C will automatically the leak. Reactor                                                     | / isolate on high temperature in<br>pressure will be maintained by                                                                     | the <del>RCIC pipe routing area</del> and<br>EHC and the turbine bypass                                                                  |
|                                                                    | es.<br>C will automatically                                                                | / isolate when reactor pressure                                                                                                        | ອວ-ເວ<br>decreases to <del>50</del> psig. The reactor                                                                                    |
| D. RCIC<br>psig                                                    | C will automatically                                                                       | surize.<br>/ isolate and stop the leak wher                                                                                            | n reactor pressure decreases to 50 - (cc                                                                                                 |
| Proposed Answer:                                                   | C. RCIC<br>psig.                                                                           | will automatically isolate when I<br>The reactor will continue to dep                                                                  | reactor pressure decreases to 50 ressurize.                                                                                              |
| Explanation (Optiona                                               | I): Based on SDL<br>not be isolated<br>drywell and wil<br>However, RCI<br>isolate the leal | P-13, DWG# S13-012.cdr, a br<br>when a RCIC isolation occurs.<br>I not actuate the pipe routing an<br>C will isolate when reactor pres | eak upstream of the flow taps will<br>In addition, the break is in the<br>rea temperature sensors.<br>sure decreases to 50 psig, but not |
| Technical Reference                                                | (s): SDLP-                                                                                 | 13                                                                                                                                     |                                                                                                                                          |
| Proposed references                                                | to be provided to                                                                          | applicants during examination:                                                                                                         | None                                                                                                                                     |
| Learning Objective: K3. Knowledg<br>ISOLATION (<br>45.4) K3.02 F   |                                                                                            | e of the effect that a loss or mai<br>DOLING SYSTEM (RCIC) will h<br>eactor vessel pressure 3.6 / 3.6                                  | function of the REACTOR CORE<br>have on following: (CFR: 41.7 /                                                                          |
| Question Source:                                                   | Bank #<br>Modifie<br>New                                                                   | <u>INPO 7228</u><br>ed Bank # (No<br>                                                                                                  | te changes or attach parent)                                                                                                             |
| Question History:                                                  | Last N<br>validated at the fa                                                              | RC Exam<br>acility since 10/95 will generally<br>ion will necessitate a detailed r                                                     | undergo less rigorous review by eview of every question.)                                                                                |
| he NRC; failure to pr                                              |                                                                                            |                                                                                                                                        |                                                                                                                                          |

ł

 $\Diamond$ 

10 CFR Part 55 Content: 55.

55.41 <u>7</u> 55.43 <u></u>

Comments:

### **Parent Question**

| QuestionId | 7228 NSSSVendor | GE          | CogLevel     | Ka# | .217000.A2.15 |
|------------|-----------------|-------------|--------------|-----|---------------|
|            | AbbrevLocName   | Duane Arnol | d 1 ExamType | ILO |               |

Question:

A break has occurred in the steam supply line to the Reactor Core Isolation Cooling system upstream of the high flow sensing location. Which ONE of the following will provide system isolation antler this condition?

Reactor pressure low (50 psig) RCIC emergency area cooler high temperature (175 deg F) RCIC equipment room high vent inlet/outlet differential temperature (50 deg F) Suppression pool area vent air high temperature (150 deg F)

Reference: ..217000.A2.15

| ES-40                                                 | 01                                                                           | nain- ain                                                                                      |                                                               | Sample V<br>Ques                                               | Vritten Examination<br>tion Worksheet                                                                                |                                                                           | Form ES-401-                                                                    | -6 (R8, S1                                      |
|-------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------|
| Exam                                                  | nination O                                                                   | utline Cross-re                                                                                | ierence:                                                      | Level                                                          | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                      | RO<br>2_<br>1<br>21200<br>3.8_                                            | SRO<br>2<br>00 K1.15<br>3.9_                                                    | -                                               |
| Propo                                                 | osed Que                                                                     | stion: 52 / 45                                                                                 |                                                               |                                                                |                                                                                                                      |                                                                           |                                                                                 |                                                 |
| A rea<br>rod <del>2</del><br>rods.<br>and d<br>on thi | ctor scran<br><del>7-18</del> . This<br>System e<br>letermined<br>is informa | n occurred 30 r<br>s control rod ha<br>engineering has<br>d that the "B" R<br>tion, why did co | ninutes a<br>d a notic<br>s perform<br>PS scran<br>ontrol rod | go. All p<br>eable de<br>ed a field<br>n pilot air<br>27-18 in | lant systems respon<br>lay in starting to scr<br>d inspection on 27-1<br>valve did not repos<br>sert during the reac | nded as des<br>ram as comp<br>18 CRD hyd<br>sition to scra<br>stor scram? | signed except fo<br>bared to the othe<br>raulic control un<br>im the control ro | r control<br>er control<br>it (HCU)<br>d. Based |
|                                                       | A.                                                                           | Control rod 27                                                                                 |                                                               | RPS scra                                                       | m pilot air valve rep                                                                                                | ositioned a                                                               | nd bled the air o                                                               | ff the                                          |
| ,27                                                   | В.                                                                           | Control rod 27                                                                                 | nd inlet v<br><del>~18</del> "A" F<br>alve alloy              | alves all<br>PS scra                                           | owing them to oper<br>m pilot air valve rep<br>valve to open and t                                                   | n.<br>positioned ai<br>he rod to dri                                      | nd bled the air o                                                               | ff the                                          |
|                                                       | C.                                                                           | Repositioning                                                                                  | of scram                                                      | pilot air                                                      | valve to open and t<br>valves on other HC                                                                            | Upbled the s                                                              | scram air down v                                                                | which                                           |
|                                                       | D.                                                                           | Repositioning<br>control rod 27                                                                | of the ba                                                     | ckup sci<br>n outlet a                                         | am outlet and inlet<br>am valves bled the<br>ind inlet valves to o                                                   | valves to op<br>scram air h<br>pen.                                       | eader down allo                                                                 | wing                                            |
| Propo                                                 | osed Ansv                                                                    | ver: D.                                                                                        | Reposi<br>down a                                              | itioning o<br>allowing o                                       | f the backup scram<br>control rod 27-18 sc                                                                           | valves blec<br>ram outlet a                                               | I the scram air h<br>and inlet valves t                                         | eader<br>to open.                               |
| Expla                                                 | nation (O                                                                    | ptional):                                                                                      |                                                               |                                                                |                                                                                                                      |                                                                           |                                                                                 |                                                 |
| Α.                                                    | Both R                                                                       | PS scram pilot                                                                                 | air valve                                                     | must rep                                                       | osition to bled the a                                                                                                | air off the sc                                                            | ram inlet and ou                                                                | ıtlet                                           |
| В.                                                    | Both R                                                                       | PS scram pilot                                                                                 | air valve                                                     | must rep                                                       | osition to bled the a                                                                                                | air off the sc                                                            | ram inlet and / c                                                               | or outlet                                       |
| C.                                                    | Reposi                                                                       | tioning of the so<br>g down. <del>If not</del>                                                 | cram pilo<br>we could                                         | t air valv<br>not do ir                                        | e will block and prev<br>adividual rod scrame                                                                        | vent the scr<br><del>Sr •</del>                                           | am air header fr                                                                | om                                              |
| Techr                                                 | nical Refe                                                                   | rence(s):                                                                                      | SDLP                                                          | 05, Reac                                                       | tor Protection Syste                                                                                                 | em                                                                        |                                                                                 |                                                 |
| Propo                                                 | sed refer                                                                    | ences to be pro                                                                                | vided to                                                      | applicant                                                      | s during examination                                                                                                 | on: None                                                                  |                                                                                 |                                                 |
| Learn                                                 | ing Objec                                                                    | tive: K1. Kr<br>betwe<br>41.9 /                                                                | nowledge<br>en REAC<br>45.7 to 4                              | of the pl<br>TOR PR<br>5.8) K1.1                               | nysical connections<br>OTECTION SYSTE<br>5 SCRAM air head                                                            | and/or caus<br>EM and the f<br>er pressure                                | se- effect relatio<br>following: (CFR:<br>3.8/3.9                               | nships<br>41.2 to                               |
| Quest                                                 | tion Sourc                                                                   | e:                                                                                             | Bank #<br>Modifie<br>New                                      | d Bank #                                                       | (                                                                                                                    | Note chang                                                                | es or attach par                                                                | ent)                                            |
| Quest<br>(Optic<br>the Ni                             | tion Histor<br>onal - Que<br>RC; failure                                     | y:<br>stions validated<br>to provide the                                                       | Last Ni<br>I at the fa<br>informat                            | RC Exam<br>acility sine<br>ion will n                          | ce 10/95 will genera<br>ecessitate a detaile                                                                         | ally undergo                                                              | less rigorous re<br>every question.)                                            | view by                                         |

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

55.41 \_2\_ 55.43 \_\_\_\_



10 CFR Part 55 Content:

| ES-401                               | Sample Writter<br>Question V           | n Examination<br>Vorksheet       | Form E                                | ES-401-6 (R8, S1)     |
|--------------------------------------|----------------------------------------|----------------------------------|---------------------------------------|-----------------------|
| Examination Outline Cross-reference: | Level<br>Tier<br>Grou<br>K/A i<br>Impo | #<br>up #<br>#<br>ortance Rating | RO<br>2<br>1<br>215005 K3.07<br>_3.2_ | SRO<br>2<br>1<br>3.3_ |

Proposed Question: 54 / 48

During a reactor startup the unit is at 35% power when the reactor operator selects the center control rod in preparation for withdrawal. The operator notices the following information on the 09-5 panel.

LPRM Status lights on the 4 Rod Display

Three DET A BYPASS lights litOneDET B BYPASS light litTwoDET C BYPASS lights litZeroDET D BYPASS lights lit

Based on this information what is the status of the RBM system.

- A. The "A" RBM is automatically bypassed since there are to few inputs to the "A" RBM
- B. The "B" RBM is automatically bypassed since there are to few inputs to the "B" RBM
- C. The "A" RBM is providing a rod block to RMCS because there are to few inputs to the "A" RBM
- D. The "B" RBM is providing a rod block to RMCS because there are to few inputs to the "B" RBM

Proposed Answer: C. The "A" RBM is providing a rod block to RMCS because there are to few inputs to the "A" RBM

Explanation (Optional): The RBM will provide a rod block signal to RMCS if there are to few LPRM inputs to the RBM circuitry. The RBM needs 50%, The "A" RBM does not have 50% of the LPRM inputs above the downscale values. The "A" uses the "A" and "C" level LPRMs and the "B" RBM uses the "B" and "D" LPRMs.

Technical Reference(s): SDLP-07C

Proposed references to be provided to applicants during examination: None

Learning Objective:

K3. Knowledge of the effect that a loss or malfunction of the AVERAGE POWER RANGE MONITOR/LOCAL POWER RANGE MONITOR SYSTEM will have on following: (CFR: 41.7 / 45.4) K3.07 Rod block monitor 3.2/3.3

| Question Source: | Bank #          |                                 |
|------------------|-----------------|---------------------------------|
|                  | Modified Bank # | (Note changes or attach parent) |
|                  | New             | X                               |

Question History:

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

55.41 \_\_7\_\_\_ 55.43 \_\_\_\_ \_x\_

10 CFR Part 55 Content:

|                                                    |                                  |                                                     | ample V<br>Ques                    | Vritten Examination<br>tion Worksheet                                |                                         | Form ES-401-6 (R8                                      |
|----------------------------------------------------|----------------------------------|-----------------------------------------------------|------------------------------------|----------------------------------------------------------------------|-----------------------------------------|--------------------------------------------------------|
| Examination 0                                      | Dutline Ci                       | ross-reference:                                     | Level                              | Tier #<br>Group #<br>K/A #<br>Importance Rating                      | RO<br>2<br>1<br>21600<br>_3.3_          | SRO<br>2<br>0 K4.14<br>4.3_                            |
| Proposed Que                                       | estion: 55                       | / 49                                                |                                    |                                                                      |                                         |                                                        |
| The narrow ra<br>fuel zone leve                    | nge RPV<br>Lindicatio            | level indication on is calibrated for               | is calibra<br>or <u>(3)</u>        | ated for <u>(1)</u> , wide i                                         | range is ca                             | librated for <u>(2)</u> and                            |
| Α.                                                 | (1)<br>(2)<br>(3)                | RPV 1000 psig<br>RPV 1000 psig<br>RPV 0 psig / 21   | / 546°F<br>/ 546°F<br>2°F anc      | and 135°F drywell to<br>and 135°F drywell to<br>212°F drywell temp   | emperature<br>emperature<br>erature     | )<br>)                                                 |
| В.                                                 | (1)<br>(2)<br>(3)                | RPV 1000 psig<br>RPV 0 psig / 21<br>RPV 0 psig / 21 | / 546°F<br>2°F and<br>2°F and      | and 135°F drywell te<br>212°F drywell temp<br>212°F drywell temp     | emperature<br>erature<br>erature        | •                                                      |
| C.                                                 | (1)<br>(2)<br>(3)                | RPV 1000 psig<br>RPV 1000 psig<br>RPV 1000 psig     | / 546°F<br>/ 546°F<br>/ 546°F      | and 135°F drywell te<br>and 135°F drywell te<br>and 135°F drywell te | emperature<br>emperature<br>emperature  |                                                        |
| D.                                                 | (1)<br>(2)<br>(3)                | RPV 1000 psig<br>RPV 1000 psig<br>RPV 0 psig / 21   | / 546°F<br>/ 546°F<br>2°F and      | and 135°F drywell te<br>and 135°F drywell te<br>135°F drywell temp   | emperature<br>emperature<br>erature     | •                                                      |
| Proposed Ans                                       | wer:                             | A. (1)<br>(2)<br>(3)                                | RPV 10<br>RPV 10<br>RPV 0          | 00 psig / 546°F and<br>00 psig / 546°F and<br>psig / 212°F and 212   | 135°F dryv<br>135°F dryv<br>2°F drywell | well temperature<br>well temperature<br>temperature    |
| Explanation (C                                     | Optional):                       | Fuel Zone is us<br>accident conditi                 | ed unde<br>ons. Th                 | r accident conditions<br>e <del>other oge</del> are calib            | and is the rated unde                   | refore calibrated und<br>er normal conditions.         |
| Technical Ref                                      | erence(s)                        | : SDLP-0                                            | )2B                                | Namen range 2 a                                                      | side vary                               | د                                                      |
| Proposed refe                                      | rences to                        | be provided to a                                    | applicant                          | s during examination                                                 | n: None                                 |                                                        |
| Learning Obje                                      | ctive:                           | K4. Knowledge<br>and/or interlock<br>Temperature co | of NUCI<br>s which<br>mpensa       | EAR BOILER INSTI<br>provide for the follow<br>tion for reactor wate  | RUMENTA<br>ring: (CFR:<br>r level indic | TION design feature<br>41.7) K4.14<br>cation: 3.3/ 3.4 |
| Question Sour                                      | rce:                             | Bank #<br>Modifie<br>New                            | d Bank #                           | (N                                                                   | lote change                             | es or attach parent)                                   |
| Question Histo<br>(Optional - Qu<br>the NRC; failu | ory:<br>estions va<br>re to prov | Last NF<br>alidated at the fa<br>ide the informati  | C Exam<br>cility sind<br>on will n | ce 10/95 will general<br>ecessitate a detailed                       | ly undergo<br>review of o               | less rigorous review<br>every question.)               |
| <b>•</b> • • •                                     |                                  | ale : Manaa                                         | _                                  |                                                                      |                                         |                                                        |

Δ

# Comprehension or Analysis

10 CFR Part 55 Content:

55.41 \_\_7\_\_ 55.43 \_\_\_\_

| ES-401                                            |                                                  | ;                                  | Sample<br>Que                       | Written Examination<br>stion Worksheet                                           | Form                                                      | ES-401-6 (R8, S <sup>-</sup>                         |
|---------------------------------------------------|--------------------------------------------------|------------------------------------|-------------------------------------|----------------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------|
| Examination                                       | Outline Cross-ref                                | erence:                            | Level                               | Tier #<br>Group #<br>K/A #<br>Importance Rating                                  | RO<br>2<br>1<br>217000 K5.0<br>3.1_                       | SRO<br>2<br>1<br>7<br>3.1_                           |
| Proposed Qu                                       | estion: 56 / 51                                  |                                    |                                     |                                                                                  |                                                           |                                                      |
| Reactor Core<br>reaches 222.                      | lsolation Cooling<br>5", RCIC steam s            | has init<br>upply iso              | iated du<br>plation v               | e to a low RPV water le<br>alve 13MOV-131 close                                  | evel. When RP<br>s.                                       | / water level                                        |
| RCIC will reir                                    | nitiate when RPV                                 | water le                           | vel lowe                            | rs to less than:                                                                 |                                                           |                                                      |
| Α.                                                | 222.5 inches.                                    |                                    |                                     |                                                                                  |                                                           |                                                      |
| В.                                                | 126.5 inches.                                    |                                    |                                     |                                                                                  |                                                           |                                                      |
| C.                                                | 222.5 inches, I                                  | 3UT the                            | RCIC tu                             | irbine trip/ throttle valve                                                      | e must be locally                                         | reset.                                               |
| D.                                                | 126.5inches, E                                   | UT the                             | RCIC tu                             | rbine trip/ throttle valve                                                       | must be locally                                           | reset.                                               |
| Proposed An                                       | swer: B. 126                                     | .5 inche                           | s                                   |                                                                                  |                                                           |                                                      |
| Explanation (                                     | Optional): RCIC<br>water l<br>followi            | Turbine<br>evel rea<br>ng a hig    | Steam II<br>ches 22<br>h RPV w      | nlet Isolation Valve 13M<br>2.5 inches. If RPV wate<br>vater level closure of 13 | /IOV-131 will clo<br>er level lowers to<br>BMOV-131, RCI0 | se when RPV<br>126.5 inches<br>C will auto-initiate. |
| Technical Re                                      | ference(s):OP-19                                 | REACT                              | OR CO                               | RE ISOLATION COOLI                                                               | NG SYSTEM                                                 |                                                      |
| Proposed ref                                      | erences to be pro                                | vided to                           | applicar                            | nts during examination:                                                          | None                                                      |                                                      |
| Learning Obj                                      | ective:                                          |                                    |                                     | (As a                                                                            | vailable)                                                 |                                                      |
| Question Sou                                      | irce:                                            | Bank #<br>Modifie<br>New           | ⊧ FitzPa<br>ed Bank                 | trick Requalification 21<br># (No                                                | 701003B01C Rote changes or a                              | ev. 2<br>ttach parent)                               |
| Question Hist<br>(Optional - Qu<br>the NRC; failu | ory:<br>uestions validated<br>ure to provide the | Last N<br>at the fi<br>information | RC Exai<br>acility sir<br>tion will | m<br>nce 10/95 will generally<br>necessitate a detailed r                        | <br>undergo less ri<br>eview of every o                   | gorous review by<br>question.)                       |
| Question Coo                                      | nitive Level:                                    | Memor<br>Compr                     | y or Fur<br>ehensio                 | ndamental Knowledge<br>n or Analysis                                             | X                                                         |                                                      |
|                                                   | 55 Content:                                      | 55.41                              | 5                                   |                                                                                  |                                                           |                                                      |
| 10 CFR Part                                       | oo oontonti.                                     | 55.43                              |                                     |                                                                                  |                                                           |                                                      |

 $\diamond$ 

| ES-401                                                           |                                                                                                        | Sample<br>Que                                                               | Written Examination<br>stion Worksheet                                                                                                                       |                                                                               | Form ES-401-6 (R8, S1                                                                      |
|------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Examination Outli                                                | ine Cross-reference                                                                                    | : Level                                                                     | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                              | RO<br>2<br>1<br>_218000<br>3.0                                                | SRO<br>2<br>1<br>K6.05<br>3.1                                                              |
| Proposed Questic                                                 | on:57 / 52                                                                                             |                                                                             |                                                                                                                                                              |                                                                               |                                                                                            |
| A loss of the 71A0<br>effect will the loss                       | CUPS-2 relay room                                                                                      | uninterup<br>banel hav                                                      | table bus distribution p<br>e on the automatic dep                                                                                                           | anel has jus<br>ressurizatio                                                  | st occurred. What<br>n system (ADS)?                                                       |
| A. T                                                             | he ADS "A" initiation                                                                                  | n logic cha                                                                 | annel will loose power a                                                                                                                                     | and automa                                                                    | tically swap to the "B"                                                                    |
| B. A                                                             | DS have lost power                                                                                     | to the pil                                                                  | ot valve solenoids and<br>ief mode                                                                                                                           | will only act                                                                 | uate mechanically on                                                                       |
|                                                                  | he "depressurization                                                                                   | 1 or safet                                                                  | /valves leaking" charth                                                                                                                                      | re <del>corder an</del>                                                       | the 09-21 panel bas                                                                        |
| He<br>D. T<br>va<br>Proposed Answer                              | st power and is no l<br>he "white" open indi<br>alve is open becaus<br>د. ۲۹-۹<br>: D. The "<br>illumi | onger a v<br>cation ligi<br>e the valv<br>روما عبد<br>white" op<br>nate whe | alid indication of ADS f<br>nt above each control s<br>re monitoring system ha<br>س Stor المكانية الم<br>en indication light abov<br>n the valve is open bec | witch will no<br>as lost powe<br>الإلماني المالي<br>e each con<br>ause the va | ot illuminate when the<br>er.<br>اعدا مط<br>trol switch will not<br>alve monitoring system |
| Explanation (Option                                              | has lo<br>onal):                                                                                       | ost power                                                                   | · ·                                                                                                                                                          |                                                                               |                                                                                            |
| A loss of UPS pow                                                | ver only effects the                                                                                   | VMS syst                                                                    | em. Logic power is sur                                                                                                                                       | oplied from                                                                   | 125 VDC                                                                                    |
| Technical Referer                                                | nce(s):SDLP-02J "A                                                                                     | DS," OP-(                                                                   | 68 "ADS".                                                                                                                                                    |                                                                               |                                                                                            |
| Proposed reference                                               | ces to be provided to                                                                                  | o applicar                                                                  | nts during examination:                                                                                                                                      | None                                                                          |                                                                                            |
| Learning Objective                                               | e: K6. Knowledg<br>on the AUTO<br>A.C. power: 3                                                        | ge of the 6<br>MATIC D<br>3.0*/ 3.1*                                        | effect that a loss or mai<br>EPRESSURIZATION S                                                                                                               | function of t                                                                 | he following will have<br>CFR: 41.7 / 45.7) K6.05                                          |
| Question Source:                                                 | Bank<br>Modif<br>New                                                                                   | #<br>ied Bank                                                               | #(No                                                                                                                                                         | te changes                                                                    | or attach parent)                                                                          |
| Question History:<br>(Optional - Question<br>the NRC; failure to | Last I<br>ons validated at the<br>provide the inform                                                   | NRC Exai<br>facility sir<br>ation will i                                    | n<br>nce 10/95 will generally<br>necessitate a detailed r                                                                                                    | undergo le<br>eview of ev                                                     | ss rigorous review by<br>ery question.)                                                    |
| Question Cognitive                                               | e Level: Memo<br>Comp                                                                                  | ory or Fur<br>prehensio                                                     | ndamental Knowledge<br>n or Analysis                                                                                                                         | X                                                                             |                                                                                            |
| 10 CFR Part 55 C                                                 | ontent: 55.41<br>55.43                                                                                 | 7                                                                           | -                                                                                                                                                            |                                                                               |                                                                                            |
| Comments:                                                        |                                                                                                        |                                                                             |                                                                                                                                                              |                                                                               |                                                                                            |

م مرب

| ES-401                              | Sample<br>Que | Written Examination<br>stion Worksheet | Form ES-401-6 (R8, S1 |             |  |
|-------------------------------------|---------------|----------------------------------------|-----------------------|-------------|--|
| Examination Outline Cross-reference | : Level       | ·                                      | RO                    | SRO         |  |
|                                     |               | Tier #<br>Group #<br>K/A #             | 2<br>1<br>223001 A1.1 | 2<br>1<br>1 |  |
|                                     |               | Importance Rating                      | 3.1                   | 3.2         |  |

Proposed Question: 58 / 53

A loss of coolant accident is in progress, torus and drywell sprays have been initiated. Which one of the following will result if these sprays are NOT terminated and torus pressure continues to decreases below 0.0 psig?

drop.

- A. Chugging at the outlet of the downcomer will result in structural failure of the downcomers.
- B. The reactor building to torus vacuum breakers will open at differential pressure of 0.5 psid and partially de-inert the Primary Containment.
- C. The torus downcomer ring header will fail (collapse) at a differential pressure of 0.5 psid between the torus and drywell.
- D. The Reactor Building to Torus vacuum breakers will fail at differential pressure of 0.5 psid
- Proposed Answer: B. The reactor building to torus vacuum breakers will open at differential pressure of 0.5 psid and partially de-inert the Primary Containment.

Explanation (Optional):

- A. Chugging will not occur because the drywell sprays are on which will take the non condensibles back into the drywell.
- C. The downcomer will not collapse at this pressure.
- D. These vacuum breakers are design to open at this pressure.

Technical Reference(s): SDLP-16A

Proposed references to be provided to applicants during examination: None

Learning Objective: Al. Ability to predict and/or monitor changes in parameters associated with operating the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES controls including: (CFR: 41.5 / 45.5) A1.11 Reactor building to suppression chamber differential pressure: Plant-Specific 3.1/ 3.2

Question Source: Bank # INPO 303

A LOCA is in progress and drywell sprays have been initiated. Which one of the following will result if drywell sprays are NOT terminated and drywell pressure lowers below 0.0 psig?

Partial de-inerting of the Primary Containment.

Chugging at the outlet of the downcomer. Mechanical failure (collapse) of the Torus downcomer ring header. Mechanical failure of the Reactor Building to Torus vacuum breakers

Reference: ...226001.K3.01

Phenomenon associated with initiation of DW sprays. Phenomen associated with evaporative cooling due to spraying while in the unsafe region of the DW spray initiation limit curve.

Event is within the design of the vacuum breakers.

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | _X_ |
|---------------------------|--------------------------------------------------------------|-----|
| 10 CFR Part 55 Content:   | 55,41 <u>5</u>                                               |     |

| ES-401                                              |                                                    |                                                                                      | Cample V<br>Ques                                      | Written Examination<br>stion Worksheet                                                                             | <sup>بر</sup>                                                                        | orm ES-401-6 (R8,                                                                   |
|-----------------------------------------------------|----------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Examination C                                       | Outline Cros                                       | ss-reference:                                                                        | Level                                                 | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                    | RO<br>2<br>1<br>223002 /<br>_3.0_                                                    | SRO<br>2<br>1<br>A2.06<br>3.2_                                                      |
| Proposed Que                                        | stion: 59 / 5                                      | 54                                                                                   |                                                       |                                                                                                                    |                                                                                      |                                                                                     |
| The unit is 100<br>system (PCIS)<br>effect does thi | )% power w<br>condenser<br>s have on tl            | vith no other a<br>r vacuum instr<br>he plant and v                                  | ctivities<br>ument <del>/</del><br>vhat ope           | in progress. The A1<br><del>switch has</del> is indication<br>ator actions are nec                                 | primary conta<br>ng 0 inches m<br>essary?                                            | inment isolation<br>ercury vacuum. Wl                                               |
| Α.                                                  | The <u>inboa</u><br>on high A                      | ard "A" main s<br>PRM flux and                                                       | team lin<br>the oth                                   | e isolation valve (MS<br>er MSIVs closed on h                                                                      | IV) CLOSED,<br>igh steam flov                                                        | the reactor scramn<br>v. Implement EP-9,                                            |
| В.                                                  | Opening<br>The <u>outbo</u><br>scramme<br>Implemer | MSIV to reope<br><u>pard</u> "A" main<br>d on high APf<br>nt EP-9, Open              | en the M<br>steam li<br>RM flux a<br>ing MSI          | SIVs.<br>ne isolation valve (M<br>and the other MSIVs o<br>V to reopen the MSIV                                    | SIV) CLOSED<br>closed on high                                                        | , the reactor<br>steam flow.                                                        |
| C.<br>D.                                            | All MSIVs<br>All MSIVs<br>appropria                | remain OPE<br>remain OPE<br>te TS actions                                            | N. Manu<br>N. Verif<br>are imp                        | ually scram the reactory<br>y that an isolation is r<br>lemented.                                                  | or and CLOSE<br>not required ar                                                      | all MSIVs.<br>Ind verify that the                                                   |
| Proposed Ans                                        | wer: D                                             | ). All MS<br>verify t                                                                | Vs remanat the a                                      | ain OPEN. Verify that appropriate TS action                                                                        | t an isolation is<br>s are impleme                                                   | s not required and nted.                                                            |
| Explanation (C                                      | Dptional): A.                                      | These<br>The log                                                                     | condition<br>gic requi                                | ns would not have res<br>res 1 out of 2 taken to                                                                   | sulted in closu<br>vice.                                                             | re of the "A" MSIV.                                                                 |
|                                                     | C                                                  | The log                                                                              | jic requi                                             | res 1 out of 2 taken to<br>pent failure will not re                                                                | wice.<br>Sult in an MSI                                                              | V closure                                                                           |
|                                                     | D                                                  | Correc<br>TS. AF                                                                     | t. Verify<br>RP 09-5-                                 | that an isolation is no<br>1-55. PCIS SYSTEM                                                                       | ot required and<br>A ISOLATION                                                       | d enter appropriate                                                                 |
| Technical Refe                                      | erence(s):                                         | SDLP                                                                                 | 16C, PC                                               | IS and ARP 09-5-1-5                                                                                                | 5. PCIS SYST                                                                         | EM A ISOLATION                                                                      |
| Proposed refe                                       | rences to be                                       | e provided to                                                                        | applican                                              | ts during examination                                                                                              | n: None                                                                              |                                                                                     |
| Learning Obje                                       | ctive: A<br>C<br>; a<br>m<br>4                     | 2. Ability to (a<br>ONTAINMEN<br>and (b) based<br>hitigate the con<br>1.5 / 45.6) A2 | ) predict<br>T ISOLA<br>on thos<br>nsequen<br>06 Cont | the impacts of the fo<br>TION SYSTEM/NUC<br>e predictions, use pro<br>ces of those abnorma<br>ainment instrumental | llowing on the<br>LEAR STEAN<br>ocedures to co<br>al conditions c<br>ion failures 3. | PRIMARY<br>I SUPPLY SHUT-O<br>prrect, control, or<br>or operations: (CFR:<br>0/ 3.2 |
| Question Sour                                       | ce:                                                | Bank #<br>Modifie<br>New                                                             | d Bank :                                              | # (N                                                                                                               | lote changes o                                                                       | or attach parent)                                                                   |
|                                                     |                                                    |                                                                                      |                                                       |                                                                                                                    |                                                                                      |                                                                                     |

I

 $\bigtriangledown$ 

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

\_\_X\_\_

10 CFR Part 55 Content:

55.41 <u>5</u> 55.43 <u>5</u>

| ES-401                                                                                         | Sample Written Examination<br>Question Worksheet                                                                                                                | Form ES-401-6 (R8, S1)                                   |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| Examination Outline Cross                                                                      | reference: Level Re<br>Tier #<br>Group #<br>K/A # 23<br>Importance Rating _3                                                                                    | O SRO<br>_22<br>_11<br>39002 A3.03<br>3.63.6_            |
| Proposed Question: 60 / 55                                                                     |                                                                                                                                                                 |                                                          |
| Which of the following cont<br>(SRV) is open.<br>A. <del>Increas</del> e in<br>B. Safety relie | مەرەمەر<br>ol room indications provide <del>accurate</del> indication<br>the safety relief valve tail pipe temperature<br>valve red solenoid energized light ON | that a safety relieve valve<br>d white accorder life     |
| C. Indicated-i<br>D. Indicated i                                                               | proase in total core flow and white accoustic                                                                                                                   | Inter lit                                                |
| Proposed Answer: A.                                                                            | -ise in the safety relief valve tail pipe t                                                                                                                     | temperature                                              |
| Explanation (Optional): B.<br>C.<br>D.                                                         | C This indication does not provide valve seat<br>SRV open has no effect on total core flow<br>Indicated total steam flow decreases (Com                         | t information (Memory)<br>(Comprehensive)<br>prehensive) |
| Technical Reference(s):                                                                        | SDLP-71F and ARP-09-4-1-16                                                                                                                                      |                                                          |
| Proposed references to be                                                                      | provided to applicants during examination: No                                                                                                                   | one                                                      |
| Learning Objective:                                                                            | A3. Ability to monitor automatic operations<br>VALVES including: (CFR: 41.7 / 45.7) A3.<br>3.6/3.6                                                              | of the RELIEF/SAFETY<br>03 Tail pipe temperatures        |
| Question Source:                                                                               | Bank #<br>Modified Bank # (Note ch<br>NewX                                                                                                                      | anges or attach parent)                                  |
| Question History:<br>(Optional - Questions valida<br>the NRC; failure to provide               | Last NRC Exam<br>ted at the facility since 10/95 will generally under<br>the information will necessitate a detailed review                                     | ergo less rigorous review by<br>v of every question.)    |
| Question Cognitive Level:                                                                      | Memory or Fundamental Knowledge<br>Comprehension or Analysis                                                                                                    | ¥                                                        |
| 10 CFR Part 55 Content:                                                                        | 55.41 <u>7</u><br>55.43 <u></u>                                                                                                                                 |                                                          |
| Commenter                                                                                      |                                                                                                                                                                 |                                                          |

I

| ES-401                              | Sample V<br>Ques | Written Examination<br>stion Worksheet          | Form E                                | ES-401-6 (R8, S1)      |
|-------------------------------------|------------------|-------------------------------------------------|---------------------------------------|------------------------|
| Examination Outline Cross-reference | : Level          | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>2<br>1<br>241000 A4.16<br>_3.3_ | SRO<br>2<br>1<br>_3.2_ |
| Proposed Question: 61 / 56          |                  |                                                 |                                       |                        |

The reactor is at 100% power when a transient occurs. You noticed a small upward spike on the APRMs and reactor pressure has taken a step increased of 3 psig and is constant at the new value. Reactor power remains at approximately 100%. Which one of the following indications, <u>on the EHC console</u>, is consistent with the event that has occurred.

- A. "A" IN CONTROL light is ON
- B. "B" IN CONTROL light is ON
- C. LOAD LIMIT LIMITING light is ON
- D. Mechanical Trip TRIPPED light is ON

Proposed Answer: B. EHC Console "B" IN CONTROL light is ON

Explanation (Optional): The indication of an APRM spike and then the step increase of 3 psig is the characteristic signature of a pressure regulator swap. The "A" pressure regulator is typically in control with the "B" pressure regulator set at 3 psig higher.

- A. Since there has been no operator action to increase pressure and the pressure has increased by 3 psig the "A" in control light is OFF. It has failed in the upward direction.
- C. This light is on when the load limiter is limiting the turbine load. This is set at 900 MWe (OP-9) if this were limiting load APRM would have increase significantly and stayed elevated. If the Load Limiter decreased and is controlling then the pressure would be lower not higher.
- D. If the mechanical trip light is ON the turbine has tripped. The turbine has not tripped.

Technical Reference(s):OP-9, AOP-6 and SDLP94C

Proposed references to be provided to applicants during examination: None

Learning Objective: A4. Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8) A4.16 Lights and alarms 3.3/3.2

| Question Source:            | Bank #<br>Modified Bank #<br>New | (Note changes or attach parent)                     |
|-----------------------------|----------------------------------|-----------------------------------------------------|
| Question History:           | Last NRC Exam                    | · · · · · · · · · · · · · · · · · · ·               |
| (Optional - Questions valid | lated at the facility since 10   | )/95 will generally undergo less rigorous review by |
| the NRC: failure to provide | the information will neces       | sitate a detailed review of every question.)        |

| Question | Coanitive | Level: | Memo    |
|----------|-----------|--------|---------|
| Gueouon  | Cognitive |        | NICH IO |

Memory or Fundamental Knowledge

### Comprehension or Analysis

\_\_X\_\_

10 CFR Part 55 Content:

55.41 \_\_7\_\_ 55.43 \_\_\_\_

| ES-401                                                                                                                                                                                               |                                                                                                                                                                                              | Sample<br>Que                                                                                                                                                      | Written Examination<br>stion Worksheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                       | Form ES-401-6 (R8, S                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Examination Outline C                                                                                                                                                                                | Cross-referenc                                                                                                                                                                               | e: Level                                                                                                                                                           | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | RO<br>2<br>1<br>259002<br>_3.8_                                                                       | SRO<br>2<br>2.4.34<br>3.6_                                                                                                                      |
| Proposed Question: 6                                                                                                                                                                                 | 2/58                                                                                                                                                                                         |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                       |                                                                                                                                                 |
| A significant fire in the<br>following indications<br>room. (Actual reactor<br>الا عدد محمط<br>A. Wide<br>B. Narrow<br>C. Wide<br>D. Fuel Z                                                          | control room l<br>محمد العنون<br>water level is<br>water level is<br>water level income<br>range level income<br>range level income<br>cone level income<br>cone level income                | nas resulte<br>obtain a va<br>40 inches)<br>5.<br>lications or<br>ndications or<br>lications or<br>ation on ir                                                     | ed in the control room b<br>alue of reactor vessel w<br>n instrument rack 25-5<br>on instrument rack 25-6<br>n instrument rack 25-6<br>nstrument rack 25-51                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | eing evacu<br>vater level fi<br>5                                                                     | ated. Which of the rom outside the contro                                                                                                       |
| Proposed Answer:                                                                                                                                                                                     | D. Fuel                                                                                                                                                                                      | Zone leve                                                                                                                                                          | el indication on instrume                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ent rack 25-                                                                                          | -51                                                                                                                                             |
| Explanation (Optional)                                                                                                                                                                               | : A&C. The                                                                                                                                                                                   | wide rang                                                                                                                                                          | e level indications can                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | only be use                                                                                           | d for trend informatior                                                                                                                         |
| ,,                                                                                                                                                                                                   | and<br>B. The                                                                                                                                                                                | below 45 i<br>Narrow ra                                                                                                                                            | nches should not be us<br>nge level indicator will l                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ed.<br>be off scale                                                                                   | for this level indication                                                                                                                       |
| Technical Reference(s                                                                                                                                                                                | and<br>B. The<br>s):AOP-43                                                                                                                                                                   | below 45 i<br>Narrow ra                                                                                                                                            | nches should not be us<br>nge level indicator will l                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ed.<br>be off scale                                                                                   | for this level indicatio                                                                                                                        |
| Technical Reference(s<br>Proposed references t                                                                                                                                                       | and<br>B. The<br>s):AOP-43<br>o be provided                                                                                                                                                  | below 45 i<br>Narrow ra<br>to applicar                                                                                                                             | nches should not be us<br>nge level indicator will l<br>nts during examination:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | sed.<br>be off scale<br>None                                                                          | for this level indicatio                                                                                                                        |
| Technical Reference(s<br>Proposed references t<br>Learning Objective:                                                                                                                                | and<br>B. The<br>s):AOP-43<br>o be provided<br>2.4.34 Know<br>emergency o<br>3.8/ SRO 3.6                                                                                                    | below 45 i<br>Narrow ra<br>to applicar<br>ledge of R<br>operations                                                                                                 | nches should not be us<br>nge level indicator will l<br>nts during examination:<br>O tasks performed outs<br>including system geog                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ed.<br>be off scale<br>None<br>side the ma<br>raphy and s                                             | for this level indicatio<br>in control room during<br>system implications. Ro                                                                   |
| Technical Reference(s<br>Proposed references to<br>Learning Objective:<br>Question Source:                                                                                                           | and<br>B. The<br>s):AOP-43<br>o be provided<br>2.4.34 Know<br>emergency o<br>3.8/ SRO 3.6<br>Banl<br>Mod<br>New                                                                              | below 45 i<br>Narrow ra<br>to applicar<br>ledge of R<br>operations<br>< #<br>ified Bank                                                                            | nches should not be us<br>nge level indicator will l<br>nts during examination:<br>O tasks performed outs<br>including system geogr<br>#(No                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | eed.<br>be off scale<br>None<br>side the ma<br>raphy and s<br>te changes                              | for this level indicatio<br>in control room during<br>system implications. Ro                                                                   |
| Technical Reference(s<br>Proposed references to<br>Learning Objective:<br>Question Source:<br>Question History:<br>(Optional - Questions v<br>the NRC; failure to pro                                | and<br>B. The<br>b):AOP-43<br>o be provided<br>2.4.34 Know<br>emergency o<br>3.8/ SRO 3.6<br>Bank<br>Mod<br>New<br>Last<br>validated at the<br>vide the inform                               | below 45 i<br>Narrow ra<br>to applicar<br>ledge of R<br>operations<br>( #<br>ified Bank<br>NRC Exar<br>facility sir<br>nation will r                               | nches should not be us<br>nge level indicator will l<br>nts during examination:<br>O tasks performed outs<br>including system geogr<br># (No<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | eed.<br>De off scale<br>None<br>side the ma<br>raphy and s<br>te changes<br>undergo le<br>eview of ev | for this level indicatio<br>in control room during<br>system implications. Ro<br>or attach parent)<br>ess rigorous review by<br>rery question.) |
| Technical Reference(s<br>Proposed references to<br>Learning Objective:<br>Question Source:<br>(Optional - Questions v<br>the NRC; failure to pro-                                                    | and<br>B. The<br>B. The<br>s):AOP-43<br>o be provided<br>2.4.34 Know<br>emergency of<br>3.8/ SRO 3.6<br>Bank<br>Mod<br>New<br>Last<br>validated at the<br>vide the inform<br>vel: Mem<br>Com | below 45 i<br>Narrow ra<br>to applicar<br>ledge of R<br>operations<br>of #<br>ified Bank<br>NRC Exar<br>ation will r<br>hory or Fun<br>prehension                  | nches should not be us<br>nge level indicator will I<br>nts during examination:<br>O tasks performed outs<br>including system geogr<br># (No<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | eed.<br>be off scale<br>None<br>side the ma<br>raphy and s<br>te changes<br>undergo le<br>eview of ev | for this level indicatio<br>in control room during<br>system implications. Re<br>or attach parent)<br>ess rigorous review by<br>rery question.) |
| Technical Reference(s<br>Proposed references to<br>Learning Objective:<br>Question Source:<br>(Optional - Questions v<br>the NRC; failure to pro-<br>Question Cognitive Lev<br>10 CFR Part 55 Conter | and<br>B. The<br>B. The<br>s):AOP-43<br>o be provided<br>2.4.34 Know<br>emergency of<br>3.8/ SRO 3.6<br>Bank<br>Mod<br>New<br>Last<br>validated at the<br>vide the inform<br>vel: Mem<br>Com | below 45 i<br>Narrow rat<br>to applicar<br>ledge of R<br>operations<br>affied Bank<br>NRC Exar<br>facility sim<br>ation will r<br>ation will r<br>prehension<br>13 | nches should not be us<br>nge level indicator will I<br>nts during examination:<br>O tasks performed outs<br>including system geogr<br># (No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>(No<br>))))))))))))))))))))))))))))))) | eed.<br>be off scale<br>None<br>side the ma<br>raphy and s<br>te changes<br>undergo le<br>eview of ev | for this level indicatio                                                                                                                        |

| ES-401                                                         |                                                                                                             | Sample<br>Qu                                                                 | e Written Examination<br>lestion Worksheet                                                                                     | Form ES-401-6 (R                                                                                | 8, S1)     |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|------------|
| Examination Out                                                | tline Cross-ref                                                                                             | erence: Leve                                                                 | I<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                           | RO  SRO   2_ 2   1 1    226001 A4.07 3.5_                                                       |            |
| Proposed Quest                                                 | ion: 63 / 60                                                                                                |                                                                              |                                                                                                                                |                                                                                                 |            |
| The following pla                                              | ant conditions                                                                                              | are present:                                                                 |                                                                                                                                |                                                                                                 |            |
| Torus pr<br>RPV wat<br>Drywell p<br>and tem<br>Which ONE of th | essure<br>ter level<br>pressure<br>perature<br>ne following, by                                             | 18.0 psig<br>+30 inches i<br>Within the all<br>tiself, will per              | ndicated b <del>y-02-3LI-91</del> Fi<br>lowable region of the Dry<br>opening the<br>mit <del>manual initiation of</del> Di     | well Spray Initiation Limit Cur<br>velocs Gr<br>rywell spray f <del>rom t</del> he 'A' RHI      | ve<br>R    |
| A. 1<br>B. (<br>C. 1<br>D. 1                                   | Placing the DV<br>S18A in MANU<br>Closing the "A'<br>Placing <del>Contai</del><br>Placing <del>Contai</del> | Z & Torus Spra<br>AL OVERRID<br>LPCI Outboar<br>AmentSpray C<br>AmentSpray C | All Caps.<br>ay Valve Override of Fuel<br>E.<br>rd Injection Valve 10MOV<br>Control Switch 10A-S17A<br>Control Switch 10A-S17A | Zone Lvi Key lock Switch 10<br>-27A.<br>momentarily in RESET.<br>momentarily in MANUAL.         | A-         |
| Proposed Answe                                                 | er: D.                                                                                                      | Placing Cont<br>MANUAL.                                                      | ainment Spray Control St                                                                                                       | witch 10A-S17A momentarily                                                                      | in         |
| Explanation (Opt                                               | ional): The sp                                                                                              | ray valves on                                                                | the "A" loop will open if th                                                                                                   | e following conditions are me                                                                   | et:        |
|                                                                |                                                                                                             | 1. Conta<br>2. SPR/<br>3. RPV<br>the D<br>OVE                                | ainment pressure >2.7 ps<br>AY CONTROL switch is ta<br>level is above 0 inches o<br>W & Torus Spray Valve (<br>RRIDE.          | sig<br>aken to the MAN position<br>n the fuel zone instruments C<br>Override Switch if taken to | R<br>A. La |
|                                                                | А.<br>В.<br>С.                                                                                              | This will not b<br>This will not a<br>The switch m                           | bypass <del>the LPCF initiation</del><br>allow the spray valves to b<br>ust be taken to manual                                 | signatio open the valves,<br>be opened.                                                         | ч<br>С     |
| Technical Refere                                               | ence(s):SDLP-                                                                                               | 10, pp53 and C                                                               | DP-13B                                                                                                                         |                                                                                                 |            |
| Proposed referer                                               | nces to be prov                                                                                             | vided to application                                                         | ants during examination:                                                                                                       | None                                                                                            |            |
| _earning Objectiv                                              | ve: RHR /<br>and/or<br>reset/ b                                                                             | PCI: Contain<br>monitor in the<br>ypass/ overrid                             | nent spray system mode<br>control room: (CFR 41.7/<br>le. 35. / 3.5                                                            | A4 Ability to manually operat<br>45.5 to 45.8) A4.07 Valve log                                  | e<br>ic    |
|                                                                |                                                                                                             |                                                                              |                                                                                                                                |                                                                                                 |            |

 $\triangleright$ 

Torus pressure 18.0 psigRPV water level+30 inches indicated by 02-3LI-91Drywell pressurewithin the allowable region of the Drywell Spray Initiation Limit Curve

Which ONE of the following, by itself, will permit manual initiation of Drywell sprays from the 'A' RHR System?

- E. Placing the DW & Torus Spray Valve Override of Fuel Zone Lvl Key lock Switch 10A-S18A in MANUAL OVERRIDE.
- F. Closing the "A" LPCI Outboard Injection Valve 10MOV-27A.
- G. Placing Containment Spray Control Switch 10A-S17A momentarily in RESET.
- H. Placing Containment Spray Control Switch 10A-S17A momentarily in MANUAL.

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:Memory or Fundamental Knowledge<br/>Comprehension or Analysis10 CFR Part 55 Content:55.41 \_\_7\_

55.43

| ES-401                                                  |                                                           |                                                         | Question                                                    | en Examination<br>Worksheet                                                 |                                    | Form ES-401-6 (R8, S                 |
|---------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------|--------------------------------------|
| Examination (                                           | Dutline Cross-re                                          | ference:                                                | Level<br>Tie<br>Gro<br>K/A                                  | r#<br>oup#<br>\#                                                            | RO<br>2<br>2<br>262000             | SRO<br>2<br>1<br>1 A3.02             |
| Proposed Qu                                             | estion: 64 / 76                                           | 6                                                       |                                                             | onance nating                                                               | _3.2_                              | _3.3_                                |
| The unit has ju<br>transfer of ele-<br>configuration of | ust experienced<br>ctrical buses oc<br>of the electrical  | a turbine<br>curred. M<br>buses?                        | trip / reactor<br>/hich one of                              | scram and A fault<br>the following corre                                    | t on to 10<br>ectly descri         | 400. A residual bes the resultant    |
| Α.                                                      | Buses 10100<br>Buses 10300                                | , 10200, 1<br>, 10400 1(                                | 0300, 10400<br>0500 and 100                                 | and 10700 de-er<br>600 energized froi                                       | iergized<br>m reserve p            | oower                                |
| B.                                                      | Buses 10100<br>Buses 10300<br>Buses 10500                 | and 1020<br>, 10400 ar<br>and 1060                      | 0 de-energiz<br>1d 10700 en<br>0 energized                  | ed;<br>ergized from reser<br>from either reserv                             | ve power;<br>e power or            | EDGs                                 |
| C.                                                      | Buses 10400<br>Buses 10100<br>Bus10600 en<br>Bus10500 en  | and 1070<br>, 10200, 1<br>ergized fro<br>ergized fro    | 0 de-energiz<br>0300 energiz<br>om either res<br>om EDGs    | red;<br>zed from reserve r<br>serve power or ED                             | oower;<br>IGs                      |                                      |
| D.                                                      | Buses 10100<br>Bus 10300 er<br>Bus10500 en<br>Bus10600 en | , 10200, 1<br>hergized fr<br>ergized fro<br>ergized fro | 0400 and 10<br>om reserve j<br>om either res<br>om EDGs     | 700 de-energized<br>power;<br>serve power or ED                             | ;<br>Gs                            |                                      |
| Proposed Ans                                            | wer: D.                                                   | Buses<br>Bus 10<br>Bus105<br>Bus106                     | 10100, 1020<br>300 energize<br>600 energize<br>600 energize | 0, 10400 and 107<br>ed from reserve po<br>d from either rese<br>d from EDGs | 00 de-ener<br>ower;<br>rve power ( | gized;<br>or EDGs                    |
| Explanation (C                                          | ptional): Since<br>powe                                   | Bus 1040<br>red from ti                                 | 00 has faulte<br>ne EDGs.                                   | d this bus will be c                                                        | lead and b                         | us 10600 will be                     |
| Technical Refe                                          | erence(s):                                                | OP-46A                                                  | A, AOP-57, S                                                | DLP-71E                                                                     |                                    |                                      |
| Proposed refe                                           | rences to be pro                                          | ovided to a                                             | applicants du                                               | iring examination:                                                          | None                               |                                      |
| Learning Obje                                           | ctive:                                                    | A3. Abi<br>DISTRI<br>transfer                           | lity to monito<br>BUTION incl<br>3.2/3.3                    | r automatic opera<br>uding: (CFR: 41.7                                      | tions of the<br>7 / 45.7) A3       | A.C. ELECTRICAL<br>.02 Automatic bus |
|                                                         |                                                           | EO 1.03                                                 | 3, 1.09, 1.14                                               |                                                                             |                                    |                                      |
| Question Sour                                           | ce:                                                       | Bank #<br>Modifie                                       | LO3<br>d Bank #                                             | 31E~1.doc quest                                                             | ion 16<br>10400 was                | added to the question                |

 $\Delta$ 

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | x |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.417<br>55.43                                              |   |

Comments:

OP-22

Under normal operating conditions, the normal AC service power source and the off-site reserve AC power source are available to supply each emergency bus. The loss of the normal plant service power source results in automatic fast transfer to the off-site reserve AC power source. In the event of a failure to fast transfer, an automatic residual transfer will be made after a 3 second time delay, and each emergency diesel generator (EDG) will auto-start.

AOP-57 reserve supply breakers 10312 and 10412 close after bus voltage has been less than 25 percent of rate for greater than 3 seconds after the normal supply breaker trip.

## Sample Written Examination Question Worksheet

| Examination Outline Cross                                                                                      | -reference:                                                                   | Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                             | RO<br><br>264000 A2.0<br>_3.5                                                 | SRO<br>2<br>1<br>3.6                                                                    |
|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Proposed Question: 65 / 6                                                                                      | ۱.                                                                            |                                                                                                                      |                                                                               |                                                                                         |
| The "A" EDG is paralleled to<br>Test and ESW Pump Oper<br>with a loss of off site power<br>would be necessary? | the bos<br>to <del>bus-</del> 10500 fo<br>ability Test." If<br>what effect we | s<br>or performance of ST-9<br><del>a loss of coolant-accid</del><br>ould this have on the pl<br>- سامتار وسمعات الم | BA, "EDG A ar<br><del>lont were to oc</del><br>ant and what o<br>percliel "c" | nd C Full Load<br><del>cur,</del> coincident<br>perator actions<br>EDG, a Losc A accors |
| A. The "A" EDC<br>action is reg                                                                                | à has been deo<br>uired.                                                      | lared inoperable for the                                                                                             | e surveillance.                                                               | No operator                                                                             |
| B. <del>Bus</del> 10500 would autom<br>required to s                                                           | vill load shed an<br>natically start ar<br>start a second F                   | nd the "A" EDG will trip<br>nd load to bus 10500.<br>RHR pump.                                                       | on over speed<br>Operator action                                              | I. The "C" EDG<br>n would be                                                            |
| C. <del>Bus</del> -10500 v<br>10500, The<br>overloading                                                        | vill not load she<br>operator would<br>the "A" EDG.                           | d and the "C" EDG will<br>I have to manually con                                                                     | notauloweh<br>I <del>start but not k</del><br>trol loads to pre               | event                                                                                   |
| D. <del>Bus</del> 10500<br>The operato                                                                         | vill not load she<br>r would have to                                          | d. The "C" EDG will st<br>start a second RHR p                                                                       | autometicelly c<br><del>art and load or</del><br>ump.                         | lose in to the<br>to bus 10500? bus                                                     |
| Proposed Answer: C.                                                                                            | Bus 10500 w<br>load to bus 1<br>loads to prev                                 | vill not load shed and th<br>0500. The operator w<br>vent overloading the "A                                         | ne "C" EDG wo<br>ould have to m<br>" EDG.                                     | uld start but not<br>anually control                                                    |
| Explanation (Optional):                                                                                        | A. The p<br>shedd<br>of RH                                                    | blant configuration will r<br>ding capability on the 1<br>IR pump is required.                                       | result in a loss<br>0500 bus and                                              | of load<br>manual starting                                                              |
|                                                                                                                | B. The E<br>on ov                                                             | EDG may become over<br>rerspeed. Must verify the soult in this answer beit                                           | loaded howeve<br>hat degraded b                                               | er, it will not trip<br>ous voltage will                                                |
|                                                                                                                | D. The "<br>EDG                                                               | C" EDG will not load or<br>will be able to maintain                                                                  | nto this bus been normal voltag                                               | cause the "A"<br>e at the bus.                                                          |
| Technical Reference(s):                                                                                        | ST-9BA, SDI                                                                   | LP-93 (pp45, 46, 69), C                                                                                              | )P-22                                                                         |                                                                                         |
| Proposed references to be                                                                                      | provided to app                                                               | blicants during examina                                                                                              | ation: None                                                                   |                                                                                         |
|                                                                                                                |                                                                               |                                                                                                                      |                                                                               |                                                                                         |

ES-401

Learning Objective: A2. Ability to (a) predict the impacts of the following on the EMERGENCY GENERATORS (DIESEL/JET); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.01 Parallel operation of emergency generator 3.5/3.6

#### SDLP-93 1.05.b.1

Question Source:

Bank # Modified Bank # New



Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

Comments:

Licensee to verify that answer is incorrect. Ie. The EDG may become overloaded however, it will not trip on overspeed. Must verify that degraded bus voltage will not result in this answer being correct.

. Must jar H

55.41 <u>6</u>

| ES-401                               | Sample \ | Written Examination                             | imination Form ES-401-6                |                        |  |
|--------------------------------------|----------|-------------------------------------------------|----------------------------------------|------------------------|--|
|                                      | Ques     | stion Worksheet                                 | sheet                                  |                        |  |
| Examination Outline Cross-reference: | Level    | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>2<br>_2<br>290001 A1.01<br>_3.1_ | SRO<br>2<br>1<br>_3.1_ |  |

#### Proposed Question: 66 / 80

The unit is in a refueling outage with fuel moves in progress. The reactor building ventilation system is maintaining secondary containment at a negative 0.28 inches water differential pressure to atmosphere. The "A" standby gas treatment (SGT) train is operable and the "B" SGT train is tagged out of service for maintenance. Several minutes ago a fuel assemble was dropped over the core. The following indication are available in the control room.

| Refueling Floor Exhaust     |                 |
|-----------------------------|-----------------|
| Radiation Monitor 17RM-456A | 1.2 x 10E 2 cpm |
| Refueling Floor Exhaust     |                 |
| Radiation Monitor 17RM-456B | 3.2 x 10E 5 cpm |
| Reactor Building Vent       |                 |
| Radiation Monitor 17RM-452A | 1.5 x 10E 2 cpm |
| Reactor Building Vent       |                 |
| Radiation Monitor 17RM-452B | 1.3 x 10E 2 cpm |
|                             |                 |

Based on this information what is the expected configuration of secondary containment.

| Α.              | "A" SG<br>Supply<br>Exhaus              | F Train is ON, "B" SGT Train is OFF<br>Isolation Vales 66AOV-100A & B CLOSED<br>It Isolation Valves 66AOV-101A & B CLOSED                                                                                                                         |
|-----------------|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B.              | "A" SG <sup>-</sup><br>Supply<br>Exhaus | Г Train is ON, "B" SGT Train is OFF<br>Isolation Vale 66AOV-100A CLOSED<br>t Isolation Valve 66AOV-101A CLOSED                                                                                                                                    |
| . C.            | "A" & "E<br>Supply<br>Exhaus            | 3" SGT are OFF<br>Isolation Vale 66AOV-100A CLOSED<br>It Isolation Valve 66AOV-101A CLOSED                                                                                                                                                        |
| D.              | "A" & "E<br>Supply<br>Exhaus            | 3" SGT are OFF<br>Isolation Vale 66AOV-100B CLOSED<br>t Isolation Valve 66AOV-101B CLOSED                                                                                                                                                         |
| Proposed Answ   | ver: D.                                 | "A" & "B" SGT are OFF<br>Supply Isolation Vale 66AOV-100B CLOSED<br>Exhaust Isolation Valve 66AOV-101B CLOSED                                                                                                                                     |
| Explanation (Op | otional):                               | In this condition the 17RM-456B has detected the high radiation. The "A" has failed as is. Base on this information the "B" SGT system will not start and since the "B" is out of service there will be no SGT running. The reactor building will |

Technical Reference(s):LER 98001, ARP 09-75-1-15, OP-51A, OP-31pp 52

have the "B" isolation valve close.

Proposed references to be provided to applicants during examination: None

Learning Objective: A1. Ability to predict and/or monitor changes in parameters associated with operating the SECONDARY CONTAINMENT controls including: (CFR: 41.5 / 45.5) A1.01 System lineups 3.1/3.1

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

**Question Cognitive Level:** 

**Question History:** 

Memory or Fundamental Knowledge \_\_\_\_\_\_ Comprehension or Analysis

10 CFR Part 55 Content:

55.41 <u>5</u> 55.43 <u>5</u>

| ES-401                                                                                                          | Sample<br>Que                                                                | Written Examination<br>stion Worksheet                                                                       | Fo                                    | Form ES-401-6 (R8, S1                |  |
|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------|--|
| Examination Outline Cross-reference                                                                             | ence: Level                                                                  | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                              | RO<br>2<br>1<br>201001 K2<br>_4.5_    | SRO<br>2<br>2.05<br>4.5              |  |
| Proposed Question: 67 / 37                                                                                      |                                                                              |                                                                                                              |                                       |                                      |  |
| The alternate rod insertion (ARI) which one of the following source                                             | valve solenoio<br>es?                                                        | ds 03SOV-201 through                                                                                         | 205 are powe                          | ered from                            |  |
| A. <del>The "A" 120 Volt</del><br>B. <del>-The "B" 120 Volt</del><br>C. The "A" 125 Volt<br>D. The "B" 125 Volt | <del>AC Safeguard<br/>AC Safeguard</del><br>DC Battery / E<br>DC Battery / E | <del>d Control &amp; Instrument<br/>d Control &amp; Instrument<br/>Battery Charger<br/>Battery Charger</del> | B <del>us ( *<b>A</b>''-</del><br>Bus | 71 ACUPS<br>71 Ac9                   |  |
| Proposed Answers: C.                                                                                            | he "A" 125 Vi                                                                | DC Battery / Battery Ch                                                                                      | arger                                 |                                      |  |
| Explanation (Optional): Power to distributi                                                                     | these valves<br>on panel off of                                              | are supplied through 7<br>i the "A" 125 VDC batte                                                            | 1DC-A5, CKT<br>ry / battery ch        | #7. This is a narger.                |  |
| Technical Reference(s):                                                                                         | SDLP-03C, Ta                                                                 | ble III power supplies.                                                                                      |                                       |                                      |  |
| Proposed references to be provid                                                                                | led to applicar                                                              | nts during examination:                                                                                      | None                                  |                                      |  |
| Learning Objective: K2. Kno<br>K2.05 A                                                                          | wledge of ele<br>Iternate rod i                                              | ectrical power supplie<br>nsertion valve soleno                                                              | s to the follo<br>ids: 4.5*/4.5       | wing: (CFR: 41.7)                    |  |
| Question Source:                                                                                                | Bank #<br>Aodified Bank<br>Iew                                               | #(No                                                                                                         | te changes o                          | r attach parent)                     |  |
| Question History: L<br>(Optional - Questions validated a<br>the NRC; failure to provide the in                  | ast NRC Exam<br>the facility sin<br>formation will                           | m<br>nce 10/95 will generally<br>necessitate a detailed r                                                    | _<br>undergo less<br>eview of ever    | s rigorous review by<br>y question.) |  |
| Question Cognitive Level:                                                                                       | lemory or Fur<br>Comprehensio                                                | ndamental Knowledge<br>n or Analysis                                                                         | x                                     |                                      |  |
| 10 CFR Part 55 Content: 5                                                                                       | 5.41 <u>7</u><br>5.43                                                        |                                                                                                              |                                       |                                      |  |
|                                                                                                                 |                                                                              |                                                                                                              |                                       |                                      |  |

.

ļ

|                                                        |                                                                                         | Sample<br>Que                                                 | e Written Examination<br>estion Worksheet                                 | Form                                       | ES-401-6 (R8, S1)                 |  |
|--------------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------|-----------------------------------|--|
| Examination O                                          | utline Cross-refere                                                                     | nce: Leve                                                     | l<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                      | RO<br>2<br>1<br>201002 K3.01<br>3.4        | SRO<br>2<br>2<br>3.4_             |  |
| Proposed Ques                                          | tion: 68 / 38                                                                           |                                                               |                                                                           |                                            |                                   |  |
| During weekly o<br>The timer malfu                     | control rod drive te<br>Inction can not be                                              | sting the op<br>reset, how c                                  | erator receives a reacto<br>loes the timer malfuncti                      | r manual control t<br>on effect control r  | imer malfunction.<br>od movement. |  |
| Α.                                                     | Control rods can override switch.                                                       | be inserted i                                                 | using the emergency In                                                    | position of the em                         | nergency in/notch                 |  |
| <b>→→</b> B.                                           | The notch override function has been disabled. Gu hol Rods can not be individ           |                                                               |                                                                           |                                            |                                   |  |
| C.                                                     | control rods can not be selected to be moved because there is a select block            |                                                               |                                                                           |                                            |                                   |  |
| D.                                                     | The rod worth minimizer blocks rod withdrawal because it loses rod position indication. |                                                               |                                                                           |                                            |                                   |  |
| Proposed Answ                                          | rer: C. C<br>b                                                                          | ontrol rods o<br>ock                                          | can not be selected to b                                                  | e moved because                            | there is a select                 |  |
| Explanation (Op                                        | otional): Failure of<br>rod from l                                                      | the RMC tin<br>being selecte                                  | ner will result in a select<br>ed and thus prevent any                    | t block. This will p<br>v rod movement.    | prevent a control                 |  |
| Technical Refer                                        | ence(s): S                                                                              | DLP-03F, R                                                    | LMCS OP-25                                                                |                                            |                                   |  |
| Proposed refere                                        | ences to be provid                                                                      | ed to applica                                                 | ants during examination                                                   | : None                                     |                                   |  |
| Learning Object                                        | ive: K3. Kno<br>MANUAL<br>K3.01 Ab                                                      | wledge of ti<br>. CONTRO<br>ility to mov                      | he effect that a loss o<br>L SYSTEM will have o<br>e control rods 3.4/3.4 | r malfunction of<br>on following: (CF<br>I | the REACTOR<br>R: 41.7 / 45.4)    |  |
| Question Source: Bank<br>Modi<br>New                   |                                                                                         | Bank #<br>Modified Bank # (Note changes or attach par<br>NewX |                                                                           |                                            | ach parent)                       |  |
| Question Histor<br>(Optional - Ques<br>he NRC; failure | y: La<br>stions validated at<br>to provide the info                                     | est NRC Exa<br>the facility s<br>prmation will                | am<br>ince 10/95 will generally<br>necessitate a detailed                 | undergo less rigo<br>review of every qu    | prous review by<br>lestion.)      |  |
| Question Cognitive Level: Memo                         |                                                                                         | Memory or Fundamental KnowledgeX<br>Comprehension or Analysis |                                                                           |                                            |                                   |  |
| 10 CFR Part 55 Content: 55.41<br>55.43                 |                                                                                         | .41 <u>7</u>                                                  | -<br>-                                                                    |                                            |                                   |  |
| · ·                                                    |                                                                                         |                                                               |                                                                           |                                            |                                   |  |

| Examin<br>Propose<br>A startu                   | ation Outline C                                                            | Cross-refer                                             | ence:                                                                                                                                                                     | Level                                                   | Tier #                                                                                                            | RO                                                                        | SRO                                                                        |
|-------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------------------------------------|
| Propose<br>A startu                             | ed Question: 6                                                             |                                                         |                                                                                                                                                                           |                                                         | Group #<br>K/A #<br>Importance Rating                                                                             | 2<br>2<br>201006 K1.<br>_3.4_                                             | 2<br>2<br>02<br>3.4_                                                       |
| A startu                                        | •                                                                          | 9 / 66                                                  |                                                                                                                                                                           |                                                         | ·                                                                                                                 |                                                                           |                                                                            |
| position<br>position                            | p is in progres<br>of 24. Prior to<br>24. <del>Select the</del><br>سامرياس | s at 30% p<br>selecting<br>statement<br>f the statement | ower.<br>the ne:<br><del>That co</del>                                                                                                                                    | In-sequ<br>xt contro<br>orrectly                        | ence control rod 26-27<br>ol rod, control rod 26-27<br><del>describes the operators</del><br>phate vesponse       | has just settled<br>loses positior<br><del>s response</del> to t          | d at its target out<br>i indication at<br>his condition.                   |
| Α.                                              | No operator a disabled abov                                                | ction is req<br>e the low p                             | juired b<br>oower s                                                                                                                                                       | ecause<br>set point                                     | the rod worth minimize                                                                                            | er (RWM) conti                                                            | ol rod blocks are                                                          |
| B                                               | The operators<br>control rod blo                                           | will-Insert c                                           | ontrol                                                                                                                                                                    | rod 26-2                                                | 27 to the RWM alternate                                                                                           | e position of 22                                                          | to clear the RWM                                                           |
| C.                                              | No operator a power set poir                                               | ctions is re<br>nt.                                     | quired                                                                                                                                                                    | becaus                                                  | e the RWM will only ap                                                                                            | ply insert block                                                          | s above the low                                                            |
| D.                                              | The operator (<br>to clear the ro                                          | ₩₩ Insert a<br>d block.                                 | ı substi                                                                                                                                                                  | tute pos                                                | sition of 24 for control re                                                                                       | od 26-27 and r                                                            | e-initialize the RWM                                                       |
| Propose                                         | ed Answer:                                                                 | D a                                                     | <del>The op</del><br>and re-                                                                                                                                              | <del>erator w</del><br>initialize                       | ill Insert a substitute po<br>the RWM to clear the                                                                | sition of 24 for<br>rod block.                                            | control rod 26-27                                                          |
| Explana                                         | tion (Optional)                                                            | ): -<br>r<br>t<br>t<br>t                                | The los<br>result ir<br>blocks f<br>automa<br>brogran                                                                                                                     | s of RPI<br>n a RWN<br>from 0%<br>tically b<br>n aborts | IS for a single control ro<br>I program abort. This<br>power through 35% po<br>pypassed above the low<br>are not. | od or the total I<br>will result in ins<br>ower. RWM ro<br>v power set po | oss of a RPIS will<br>sert and withdrawa<br>od blocks are<br>int; however, |
| Technic                                         | al Reference(s                                                             | s): S                                                   | SDLP-0                                                                                                                                                                    | )3D, Ro                                                 | d Worth Minimizer, OP-                                                                                            | 64, Rod Worth                                                             | n Minimizer.                                                               |
| Propose                                         | ed references t                                                            | o be provid                                             | ded to a                                                                                                                                                                  | applican                                                | ts during examination:                                                                                            | None                                                                      |                                                                            |
| Learning Objective: K1. Kn<br>betwee<br>to 45.8 |                                                                            | K1. Knov<br>between<br>to 45.8) ł                       | nowledge of the physical connections and/or cause- effect relationships<br>een ROD WORTH MINIMIZER and the following: (CFR: 41.2 to 41.9 / 45<br>8) K1.02 RPIS: 3.4 / 3.4 |                                                         |                                                                                                                   |                                                                           | ect relationships<br>41.2 to 41.9 / 45.7                                   |
| Question Source:                                |                                                                            | E<br>N<br>N                                             | Bank #<br>Modified Bank # (Note changes or attach parent)<br>NewX                                                                                                         |                                                         |                                                                                                                   |                                                                           |                                                                            |
| Questior<br>(Optiona<br>the NRC                 | n History:<br>Il - Questions v<br>; failure to pro                         | L<br>validated a<br>vide the int                        | ast NF<br>t the fa<br>formati                                                                                                                                             | RC Exan<br>cility sin<br>on will n                      | n<br>ce 10/95 will generally<br>recessitate a detailed re                                                         | _<br>undergo less r<br>eview of every                                     | igorous review by question.)                                               |
| Questior                                        | n Cognitive Le                                                             | vel: N                                                  | /lemory<br>Compre                                                                                                                                                         | or Fun<br>hensior                                       | damental Knowledge<br>n or Analysis                                                                               | x                                                                         |                                                                            |

Q

10 CFR Part 55 Content:

| 55.41 | _2-9_ |
|-------|-------|
| 55.43 |       |

|   | ES-401                                                                                                                                                          | ·······                                                                                                                       | Sample Written Examination<br>Question Worksheet                                                                                                                                                                             | Form ES-4                                                                  | 01-6 (R8, S1)                                                                    |
|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|   | Examination Outline C                                                                                                                                           | cross-reference:                                                                                                              | : Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                   | RO SR<br>22<br>202001 K5.10<br>2.82.                                       | 0<br>2<br>2<br>8                                                                 |
|   | Proposed Question: 7<br>Plant Startop Is<br>IF the speed controller<br>placing the MG set con<br>Stort and<br>A. Wrip of<br>B. Start a<br>C. Overs<br>D. Start, | 0 / 67<br>in progress .<br>r for the first RW<br>ntrol switch to S<br>and speed would<br>peed because the<br>speed would rise | What would be the effective<br>/R pump MG Set to be placed in<br>TART, the MG set would:<br>60/51 relays). So<br>d rise to approximately 45%.<br>he generator field breaker would<br>be to 80%, then return to approximately | ect of slaving Hd<br>service was left at 50<br>I not close.<br>mately 26%. | 2 <sup>n</sup> RWR pump with<br>%, prior to<br>the speed dunand<br>Signal @ 50%? |
|   | Proposed Answer:                                                                                                                                                | D. Start,                                                                                                                     | speed would rise to 80%, then r                                                                                                                                                                                              | eturn to approximately                                                     | / 26%.                                                                           |
|   | Explanation (Optional)                                                                                                                                          | :                                                                                                                             |                                                                                                                                                                                                                              |                                                                            |                                                                                  |
|   | Technical Reference(s                                                                                                                                           | s):See Above                                                                                                                  |                                                                                                                                                                                                                              |                                                                            |                                                                                  |
|   | Proposed references t                                                                                                                                           | o be provided to                                                                                                              | o applicants during examination:                                                                                                                                                                                             | None                                                                       |                                                                                  |
|   | Learning Objective:                                                                                                                                             | K5. Knowledge<br>apply to RECII<br>set operation:                                                                             | e of the operational implications<br>RCULATION SYSTEM : (CFR: 4<br>Plant-Specific 2.8*/ 2.8                                                                                                                                  | of the following conce<br>11.5 / 45.3) K5.10 Mot                           | epts as they<br>or generator                                                     |
|   | Question Source:                                                                                                                                                | Bank                                                                                                                          | #FitzPatrick Requal No.202010                                                                                                                                                                                                | 04B03C Rev. 2                                                              |                                                                                  |
|   | IF the speed controller placing the MG set cor                                                                                                                  | for the first RW<br>htrol switch to ST                                                                                        | R pump MG Set to be placed in TART, the MG set would:                                                                                                                                                                        | service was left at 509                                                    | %, prior to                                                                      |
| 1 | A. Trip or<br>B. Start a<br>C. Overs<br>D. Start, s                                                                                                             | n overcurrent (50<br>and speed would<br>peed because th<br>speed would rise                                                   | 0/51 relays).<br>I rise to approximately 45%.<br>he generator field breaker would<br>e to 80%, then return to approxir                                                                                                       | not close.<br>nately 26%.                                                  | 1                                                                                |
| I | Answer D                                                                                                                                                        |                                                                                                                               |                                                                                                                                                                                                                              |                                                                            |                                                                                  |
|   | Question History:<br>(Optional - Questions v<br>the NRC; failure to pro<br>Question Cognitive Let                                                               | Last N<br>validated at the f<br>vide the informa<br>vel: Memo                                                                 | NRC Exam<br>facility since 10/95 will generally<br>ation will necessitate a detailed re<br>pry or Fundamental Knowledge                                                                                                      | <br>undergo less rigorous<br>eview of every questio<br>x                   | review by<br>n.)                                                                 |
|   | 10 CFR Part 55 Conte                                                                                                                                            | nt: 55.41<br>55.43                                                                                                            |                                                                                                                                                                                                                              |                                                                            |                                                                                  |

| ES-401                                                              | Ş                                                                                                                          | Sample \<br>Ques                                                            | Written Examination stion Worksheet                                                                                                                           | F                                                                                                 | orm ES-401-6 (R8, S1)                                                                                           |  |  |
|---------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|--|--|
| Examination Outline                                                 | Cross-reference:                                                                                                           | Level                                                                       | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                               | RO<br>2<br>_2<br>204000 K<br>_2.6_                                                                | SRO<br>2<br>2<br>2<br>2<br>2.6_                                                                                 |  |  |
| Proposed Question:                                                  | 71 / 68                                                                                                                    |                                                                             |                                                                                                                                                               |                                                                                                   |                                                                                                                 |  |  |
| Maintenance has de-<br>the RWCU system?                             | -energized MCC-1                                                                                                           | 52 for pl                                                                   | anned maintenance.                                                                                                                                            | How does thi                                                                                      | s maintenance effect                                                                                            |  |  |
| A. The<br>B. The<br>C. The<br>supp<br>D. The<br>retur               | "A" RWCU pump (<br>"B" RWCU pump (<br>RWCU system out<br>oly line will have to<br>RWCU system inb<br>n line will have to l | P-1A) w<br>P-1B) w<br>board s<br>be isola<br>board su<br>be isolat          | ill no longer have powe<br>ill no longer have powe<br>upply isolation valve (N<br>ted in accordance with<br>pply isolation valve (Me<br>ed in accordance with | er available t<br>er available t<br>MOV-18) will<br>Technical S<br>OV-15) will lo<br>Technical Sp | o the motor.<br>o the motor.<br>lopse power, and the<br>pecifications.<br>pose power, and the<br>pecifications. |  |  |
| Proposed Answer:                                                    | D. The R<br>and the<br>Specifi                                                                                             | NCU sys<br>e return<br>cations.                                             | stem supply isolation v<br>line will have to be isol                                                                                                          | alve (MOV-1<br>ated in acco                                                                       | 5) will loose power,<br>rdance with Technical                                                                   |  |  |
| Explanation (Optiona                                                | al): A. Supplie<br>B. Supplie<br>C. Supplie                                                                                | Supplied from MCC-131<br>Supplied from MCC-141<br>Supplied from "B" 125 VDC |                                                                                                                                                               |                                                                                                   |                                                                                                                 |  |  |
| Technical Reference                                                 | (s): SDLP                                                                                                                  | 12                                                                          | ·                                                                                                                                                             |                                                                                                   |                                                                                                                 |  |  |
| Proposed references                                                 | to be provided to                                                                                                          | applicar                                                                    | nts during examination:                                                                                                                                       | None                                                                                              |                                                                                                                 |  |  |
| Learning Objective:                                                 | K6. Knowledge<br>on the REACT(<br>power 2.6/2.6                                                                            | of the e<br>OR WAT                                                          | affect that a loss or ma<br>TER CLEANUP SYSTE                                                                                                                 | function of th<br>EM : (CFR: 4                                                                    | ne following will have<br>1.7 / 45.7) K6.05 A. C.                                                               |  |  |
| Question Source:                                                    | Bank #<br>Modifie<br>New                                                                                                   | Bank #<br>Modified Bank # (Note changes or attach parent)<br>NewX           |                                                                                                                                                               |                                                                                                   |                                                                                                                 |  |  |
| Question History:<br>(Optional - Questions<br>the NRC; failure to p | Last NI<br>s validated at the fa<br>rovide the informat                                                                    | RC Exar<br>acility sir<br>ion will r                                        | n<br>nce 10/95 will generally<br>necessitate a detailed                                                                                                       | undergo les                                                                                       | s rigorous review by<br>ery question.)                                                                          |  |  |
| Question Cognitive L                                                | evel: Memor<br>Compr                                                                                                       | Memory or Fundamental Knowledge                                             |                                                                                                                                                               |                                                                                                   |                                                                                                                 |  |  |
| 10 CFR Part 55 Cont                                                 | tent: 55.41<br>55.43                                                                                                       | 7                                                                           | -                                                                                                                                                             |                                                                                                   |                                                                                                                 |  |  |

Comments:

|                                                                                  |                                                                         | Sam<br>(                                                          | Question Workshe                                                     | et                                     | Form                                                      | 1 ES-401-6 (H8, S1)                                      |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------|----------------------------------------------------------|
| Examination O                                                                    | utline Cross-re                                                         | ference: Le                                                       | vel<br>Tier #<br>Group #<br>K/A #<br>Importance F                    | ating                                  | RO<br>2<br>2<br>214000 2.2.2<br>_2.6_                     | SRO<br>2<br>2<br>3.8                                     |
| Proposed Ques                                                                    | tion: 72 / 70                                                           |                                                                   |                                                                      |                                        |                                                           |                                                          |
| ی<br>The unit is at<br>control rod <del>-31</del><br><del>this control rod</del> | <b>८-3।</b><br>100% power<br><del>∙06 w</del> hich is o<br>₩ What actio | and mainten<br>currently at p<br>ons, if any m                    | ance has reques<br>osition 48. <del>(This-</del><br>ust be performed | ted to rem<br>will remov<br>to release | ove the RPI<br><del>e all positior</del><br>e this mainte | S buffer card for<br>hindication for<br>enance activity? |
| Α.                                                                               | A single rod                                                            | scram time                                                        | test must be perf                                                    | ormed <b>,</b> on                      | this control-                                             | rod, prior to-                                           |
| R                                                                                | A control roo                                                           | <del>k lo begin.</del><br>Loupling ch                             | eck must he ned                                                      | ormed_pri                              | or to allowin                                             | a work to bogin                                          |
| С.                                                                               | The control                                                             | rod must be                                                       | declared inopera                                                     | ble and th                             | e directional                                             | -control valves                                          |
| D.                                                                               | No actions a                                                            | <del>Isarmed</del><br>Ire necessar                                | - <del>]-</del><br>y <sup>^</sup> a <del>llow maintena</del>         | <del>nce to be</del> g                 | jin work.                                                 |                                                          |
| Proposed Answ                                                                    | ver: C.                                                                 | The contro<br>- valves-oloc                                       | I rod must be decla<br>strically disarmed.                           | ared inoper                            | able <del>_and the</del>                                  | directional control                                      |
| Explanation (O                                                                   | otional): A.&C<br>D.                                                    | . These test<br>The contro<br>by TS 3.3./                         | s are not required l<br>I rod must be decla<br>A.2b&d.               | by TS for th<br>ared inoper            | nis activity<br>able and elec                             | trically disarmed                                        |
| Technical Refe                                                                   | rence(s):AOP-                                                           | 26 LOSS OF                                                        | ROD POSITION I                                                       | DICATION                               | N*; TS 3.3.A.2                                            | 2                                                        |
| Proposed refere                                                                  | ences to be pr                                                          | ovided to app                                                     | licants during exan                                                  | nination:                              | None                                                      |                                                          |
| Learning Objec                                                                   | live: 2.2.2<br>2.6/S                                                    | 4 Ability to and<br>RO 3.8                                        | alyze the affect of <b>r</b>                                         | naintenanc                             | e activities or                                           | n LCO status. RO                                         |
| Question Source: B<br>M<br>N                                                     |                                                                         | Bank #<br>Modified Bank # (Note changes or attach parent)<br>NewX |                                                                      |                                        |                                                           |                                                          |
| Question Histor<br>(Optional - Que<br>the NRC; failure                           | y:<br>stions validate<br>e to provide the                               | Last NRC I<br>d at the facilit<br>e information                   | Exam<br>y since 10/95 will g<br>will necessitate a d                 | enerally ur<br>etailed rev             | ndergo less rig<br>iew of every o                         | gorous review by<br>question.)                           |
| Question Cognitive Level: Mer<br>Con                                             |                                                                         | Memory or<br>Comprehe                                             | Fundamental Kno<br>nsion or Analysis                                 | wledge                                 | * ×<br>*                                                  |                                                          |
| 10 CFR Part 55 Content: 55.4<br>55.43                                            |                                                                         | 55.41<br>55.43                                                    | 10_                                                                  |                                        |                                                           |                                                          |
|                                                                                  |                                                                         |                                                                   |                                                                      |                                        |                                                           |                                                          |

 $\overline{\nabla}$ 

| ES-401                              | Written Examination<br>stion Worksheet |                   | Form ES-401-6 (R8, S1) |     |
|-------------------------------------|----------------------------------------|-------------------|------------------------|-----|
| Examination Outline Cross-reference | ference: Level                         |                   | RO                     | SRO |
|                                     |                                        | Tier #<br>Group # | 2                      | 2   |

Proposed Question: 73 / 71

The "C" average power range monitor (APRM) failed downscale, all other APRMs are indicating 100% power with no abnormal indications. What effect will this failure have on the RBM system and what actions must be taken to correct this condition.

K/A #

215002 A2.03

\_3.3\_

\_3.1\_

A. The "A" RBM will generate a rod block. The "C" APRM and "A" RBM must be manually bypassed to clear the rod block.

Importance Rating

- B. The "A" RBM will generate a rod block. The "A" RBM must be manually bypassed to clear the rod block.
- C. The "A" RBM will automatically be bypassed. The "C" APRM must be manually bypassed which places the "E" APRM in service as the "A" RBM reference APRM.
- D. The "A" RBM will automatically be bypassed. The "C" APRM must be manually bypassed which places the "F" APRM in service as the "A" RBM reference APRM.
- Proposed Answer: C. The "A" RBM will automatically be bypassed. The "C" APRM must be manually bypassed which places the "E" APRM in service as the "A" RBM reference APRM.

Explanation (Optional): A.& B. The RBM does not generate a rod block, it is automatically bypassed when the reference APRM is less than 30 power. D. The correct reference APRM is E not F.

Note: The RBM will generate a rod block; however, since the reference APRM is downscale the RBM is automatically bypassed and the rod block is not passed to the RMCS.

Technical Reference(s):SDLP-07C

Proposed references to be provided to applicants during examination: None

Learning Objective: A2. Ability to (a) predict the impacts of the following on the ROD BLOCK MONITOR SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: (CFR: 41.5 / 45.6) A2.03 Loss of associated reference APRM channel: 3.1/3.3

| Question Source:                                                  | Bank #<br>Modified Bank #<br>New                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | (Note changes or attach parent)                                                                   |
|-------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| Question History:                                                 | Last NRC Exam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                   |
| (Optional - Questions validated the NRC; failure to provide the i | at the facility since the facility since the facility of the f | 0/95 will generally undergo less rigorous review by ssitate a detailed review of every question.) |

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_X\_
#### Comprehension or Analysis

10 CFR Part 55 Content:

| ES-401                                             | · ··· ···                          |                                                      | ample W<br>Quest                    | ritten Examination<br>ion Worksheet             |                            | Form ES-401-6 (R8,                            |
|----------------------------------------------------|------------------------------------|------------------------------------------------------|-------------------------------------|-------------------------------------------------|----------------------------|-----------------------------------------------|
| Examination                                        | Outline C                          | ross-reference:                                      | Level                               | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>2<br>245000<br>_2.5_ | SRO<br>2<br>2<br>0 A3.06<br>2.6_              |
| Proposed Qu                                        | estion: 74                         | ,<br>/ 74                                            |                                     |                                                 |                            |                                               |
| The Unit has<br>Which one of<br>turbine coasts     | just expe<br>the follov<br>s down? | rienced a turbine<br>ving describes th               | trip from<br>e expecte              | 100% power and the ed response of turbin        | e turbine is<br>ne support | currently costing down<br>systems as the main |
| Α.                                                 | The Me                             | otor Suction pur                                     | p and Er                            | nergency Bearing Oi                             | l pump will                | automatically start to                        |
| B.                                                 | The Mo                             | otor Suction pur                                     | e oil requ<br>p and Tu              | irements.<br>Irning Gear Oil pump               | will autom                 | atically start to supply                      |
| C.                                                 | the Ma<br>ONLY                     | in Turbine oil rea<br>the Emergency I                | luiremen <sup>.</sup><br>Bearing C  | ts.<br>Dil pump will start to s                 | supply the I               | Main Turbine oil                              |
| ח                                                  | require                            | ments.                                               | en                                  | impo will start                                 |                            |                                               |
| D.                                                 | NONE                               |                                                      |                                     | imps will start.                                |                            |                                               |
| Proposed Ans                                       | swer: B.                           | The Motor Such<br>supply the Mair                    | ion pump<br>I Turbine               | and Turning Gear Goil requirements.             | Dil pump wi                | ill automatically start to                    |
| Explanation (                                      | Optional):                         | SDLP-94A, sta<br>automatically s                     | es that d<br>art. Both              | uring a turbine coast<br>of these pumps sta     | down the<br>rt on low oi   | TGOP and MSP will<br>I pressure.              |
| Technical Ref                                      | ierence(s)                         | SDLP-94A pp.                                         | 52                                  |                                                 |                            |                                               |
| Proposed refe                                      | erences to                         | be provided to                                       | applicants                          | s during examination                            | : None                     |                                               |
| Learning Obje                                      | ective:                            | A3. Ability to ma<br>AND AUXILIAF<br>pressure 2.5/2. | onitor aut<br>Y SYSTE<br>3          | omatic operations of<br>EMS including:(CFR:     | the MAIN<br>41.7 / 45.7    | TURBINE GENERATO<br>') A3.06 Turbine lube c   |
| Question Sou                                       | rce:                               | Bank #<br>Modifie<br>New                             | d Bank #                            | FitzPatrick Requal Ex<br>(No                    | xam Bank (<br>ote change   | Question 0830<br>s or attach parent)          |
| Question Histo<br>(Optional - Qu<br>the NRC; failu | ory:<br>lestions v<br>lre to prov  | Last NF<br>alidated at the fa<br>ride the informati  | C Exam<br>cility sinc<br>on will ne | e 10/95 will generally<br>ecessitate a detailed | y undergo l<br>review of e | ess rigorous review by<br>very question.)     |
| Question Cog                                       | nitive Lev                         | el: Memon<br>Compre                                  | or Fund                             | amental Knowledge<br>or Analysis                | X                          |                                               |
|                                                    | 5 Conten                           | t: 55.41                                             | 7                                   |                                                 |                            |                                               |
| 10 CFR Part 5                                      | o oonten                           | 55.43                                                | <del></del>                         |                                                 |                            |                                               |

 $\bigtriangleup$ 

| ES-401                                                              | · · · · · · · · · · · · · · · · · · ·                     |                                                                                       | Sample V<br>Ques                                                                     | Written Examination<br>stion Worksheet                                                                                                              | F                                                                                        | Form ES-401-6 (R8, S1                                                                        |
|---------------------------------------------------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Examination O                                                       | utline Cross-                                             | reference:                                                                            | Level                                                                                | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                     | RO<br>2<br>_2<br>_262002 /<br>_2.8_                                                      | SRO<br>2<br>2<br>A4.01<br>3.1_                                                               |
| Proposed Que                                                        | stion: 75 / 77                                            |                                                                                       |                                                                                      |                                                                                                                                                     |                                                                                          |                                                                                              |
| The uninterrupt<br>completed and<br>What operator<br>back to normal | ible power s<br>the UPS is r<br>action, by pro<br>power?  | upply (UPS<br>eady to be j<br>ocedure, mi                                             | ) is being<br>powered<br>ust be ta                                                   | g supplied by the alte<br>I from the preferred U<br>ken in the control roo                                                                          | rnate AC sup<br>PS source (n<br>m to support                                             | ply. Work has been<br>notor generator set).<br>transferring the UPS                          |
| A.<br>B.<br>C.<br>D.                                                | Take manu<br>Lock up the<br>Isolate the r<br>Drive the SI | al control of<br>"A" & "B" r<br>eactor wate<br>RM and IRN                             | both rea<br>eactor w<br>r cleanu<br>1 detecto                                        | actor feedwater pump<br>vater recirculation (RV<br>up system to prevent a<br>ors into the core.                                                     | os by lowering<br>VR) scoop tu<br>an automatic                                           | g the MSC.<br>bes.<br>isolation.                                                             |
| Proposed Ansv                                                       | ver: B. Loc                                               | k up the "A                                                                           | ." & "B" r                                                                           | eactor water recircula                                                                                                                              | ation (RWR) s                                                                            | scoop tubes.                                                                                 |
| Explanation (O                                                      | B.<br>C.<br>D.                                            | If there<br>using the<br>This ac<br>locally<br>This ac<br>isolatio<br>The SF<br>core. | is a con<br>the MSC,<br>at the UI<br>at the UI<br>tion is n<br>n if a cou<br>RMs and | nplete loss of the UPS<br>, not both.<br>orrect based on OP-2<br>PS panel.<br>ot required by proced<br>mplete loss of the UP<br>IRMs are not proced | S <u>ONE</u> FW pi<br>27. All other a<br>lure, only a ve<br>'S occurs.<br>urally require | ump will be controlled<br>actions are taken<br>erification of the<br>d to be driven into the |
| Technical Refe                                                      | rence(s):AOI                                              | P-21, OP-46                                                                           | 3b, OP-2                                                                             | 7 and SDLP-71F                                                                                                                                      |                                                                                          |                                                                                              |
| Proposed refere                                                     | ences to be p                                             | provided to                                                                           | applican                                                                             | ts during examinatior                                                                                                                               | n: None                                                                                  |                                                                                              |
| Learning Ob <b>j</b> ec                                             | tive: A4.<br>45.5                                         | Ability to m<br>5 to 45.8) A                                                          | anually c<br>4.01 Tra                                                                | operate and/or monito                                                                                                                               | or in the contr<br>e source to pr                                                        | rol room: (CFR: 41.7 /<br>referred source 2.8/3.1                                            |
| Question Sourc                                                      | e:                                                        | Bank #<br>Modifie<br>New                                                              | d Bank #                                                                             | # (N                                                                                                                                                | ote changes                                                                              | or attach parent)                                                                            |
| Question Histor<br>(Optional - Que<br>the NRC; failure              | y:<br>stions valida<br>to provide t                       | Last NF<br>ted at the fa<br>he informati                                              | RC Exan<br>cility sin<br>on will n                                                   | n<br>ce 10/95 will generall<br>lecessitate a detailed                                                                                               | y undergo les                                                                            | ss rigorous review by<br>ery question.)                                                      |
| Question Cogni                                                      | tive Level:                                               | Memon<br>Compre                                                                       | y or Fund<br>ahension                                                                | damental Knowledge<br>1 or Analysis                                                                                                                 | X                                                                                        |                                                                                              |
| 10 CFR Part 55                                                      | Content:                                                  | 55.41<br>55.43                                                                        | 7                                                                                    |                                                                                                                                                     |                                                                                          |                                                                                              |
|                                                                     |                                                           |                                                                                       |                                                                                      |                                                                                                                                                     |                                                                                          |                                                                                              |

 $m \red$ 

| ES-401                                         |                                                                      | Sam                                              | ple Written Examination<br>Question Worksheet                              | Form ES-401-6 (R8,                                                                                              |
|------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Examination                                    | Outline Cross-re                                                     | eference: Le                                     | evel<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                    | RO SRO<br>222<br>263000 2.4.10<br>3.03.1_                                                                       |
| Proposed Qu                                    | estion: 76 / 78                                                      |                                                  |                                                                            |                                                                                                                 |
| The unit is o<br>LOSS," alari<br>(EDG) if a va | perating at 100<br>ms. What effe<br>alid start signal                | 0% power wł<br>ct does this<br>I were presei     | nen annunciator 09-8-4<br>condition have on the "<br>nt?                   | -23, "EDG D CNTRL PWR<br>D" emergency diesel generator                                                          |
| Α.                                             | 125 VDC co                                                           | ntrol power l                                    | has been lost. The ED                                                      | G would auto-start, <del>but would n</del>                                                                      |
| В.                                             | 120 VAC UF                                                           | PS control po                                    | ower has been lost. Th                                                     | e "🕺" EDG would auto-start-and                                                                                  |
| C.                                             | -automaticali<br>125 VDC co                                          | <del>y load.</del><br>ntrol power l              | nas been lost. The "🇖"                                                     | EDG would not auto-start and                                                                                    |
| D.                                             | - <del>running wou</del><br>120 VAC UF<br>- <del>and if runnir</del> | ild have to be<br>PS control po<br>ig could be s | e shutdown by performi<br>ower has been lost. Th<br>hutdown from the engi  | i <del>ng an emergency shutdown</del><br>e " <b>∳</b> " EDG would not auto-start<br><del>ne control panel</del> |
| Proposed Ans                                   | swer: C.                                                             | 125 VDC<br>auto-start<br>performing              | control power has beer<br>and if running would ha<br>g an emergency shutdo | n lost. The "D" EDG would not<br>ave to be shutdown by<br>own.                                                  |
| Explanation (                                  | Optional): ARP<br>the lo                                             | 09-8-4-23, sta<br>ss of EDG D                    | ates that the loss of 125 V<br>starting and shutdown ca                    | /DC to the control circuit results in pability.                                                                 |
| Technical Ref                                  | ference(s):                                                          | ARP 09-8-                                        | 4-23                                                                       |                                                                                                                 |
| Proposed refe                                  | erences to be pro                                                    | ovided to app                                    | licants during examinatio                                                  | n: None                                                                                                         |
| Learning Obje                                  | ective:                                                              | 263000 DC<br>response p                          | Electrical Distribution 2.                                                 | 4.10 Knowledge of annunciator<br>0 3.1                                                                          |
| Question Sou                                   | rce:                                                                 | Bank #                                           | INPO                                                                       |                                                                                                                 |
| Loss<br>Diese                                  | of all 125 VDC p<br>I Generators?                                    | ower would h                                     | ank # 7567<br>ave which one of the follo                                   | owing effects on the Emergency                                                                                  |
| Answer                                         | Diesels would                                                        | I not start and                                  | could not be started at th                                                 | ne Engine Control Panel                                                                                         |
|                                                | Diesels would                                                        | l auto-start an<br>l auto-start, bu              | d load.<br>It would not auto load.                                         |                                                                                                                 |
|                                                | Diesels would<br>Diesels would                                       | I not auto-star                                  | t but could be started at t                                                | ne Engine Control Panel.                                                                                        |

|

 $\bigtriangleup$ 

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_X\_ Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 \_\_\_7\_\_\_ 55.43 \_\_\_\_\_

Comments:

Use this question because there is much detail in the DC annunciator procedures that I would not expect an operator to know.

| ·····                                              |                                                                                      |                                                               | Ques                                                       | tion Worksheet                                                                                   |                                                                   | Form ES-401-6 (R8                                                        |
|----------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|--------------------------------------------------------------------------|
| Examination (                                      | Outline Cross-re                                                                     | ference:                                                      | Level                                                      | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                  | RO<br>2<br>2<br>290003<br>_2.8_                                   | SRO<br>2<br>2<br>A4.04<br>3.0_                                           |
| Proposed Que                                       | estion: 77 / 81                                                                      |                                                               |                                                            |                                                                                                  |                                                                   |                                                                          |
| A loss of coola<br>reactor buildin<br>MONITOR IN(  | ant accident has<br>ig vent exhaust.<br>OP OR HI," has                               | occurrec<br>Annunci<br><del>bcon in a</del><br>سراح جدین      | l. Secon<br>ator 09-7<br><del>larm for</del>               | dary containment ha<br>75-1-20, "CONTROL<br><del>5 minutes:</del> What op                        | s isolated on<br>ROOM SUP<br>erator action                        | high radiation in the<br>PLY RADIATION<br>is are required.               |
| Α.                                                 | None. The co                                                                         | ontrol roor                                                   | n HVAC                                                     | system will isolate or                                                                           | n a high cont                                                     | rol room supply                                                          |
| В.<br>С.<br>D.                                     | None. The co<br>Place the con<br>the control roo<br>Place the con<br>the control roo | ontrol roor<br>trol room<br>om area o<br>trol room<br>om HVAC | n HVAC<br>ventilatio<br>f any air<br>ventilatio<br>system. | System will isolate o<br>on isolation and purge<br>born radioactivity.<br>on isolation and purge | n a loss of co<br>e control swi<br>e control swi                  | oolant accident sign<br>tch in purge to purge<br>tch in isolate to isola |
| Proposed Ans                                       | wer: D.                                                                              | Place ti<br>isolate                                           | he contro<br>to isolate                                    | ol room ventilation isc<br>the control room HV                                                   | plation and p<br>/AC system.                                      | urge control switch i                                                    |
| Explanation (C                                     | Optional): The c<br>radiat<br>purge<br>in the                                        | ontrol roo<br>ion the op<br>mode is t<br>control ro           | m HVAC<br>erator m<br>o remov<br>om if use                 | does not have an au<br>ust place the system<br>e smoke and stale ai<br>ed under these circur     | utomatic isola<br>in isolation i<br>r. It will incre<br>nstances. | ation function. On hi<br>mode. The use of<br>ease the airborn acti       |
| Technical Refe                                     | erence(s):SDLP                                                                       | 70 and C                                                      | P-55B,                                                     | 9-75-1-20                                                                                        |                                                                   |                                                                          |
| Proposed refer                                     | rences to be pro                                                                     | vided to a                                                    | applicant                                                  | s during examination                                                                             | : None                                                            |                                                                          |
| Learning Objec                                     | ctive: A4. A<br>45.5 to                                                              | bility to m<br>5 45.8) A4                                     | anually c<br>I.04 Envi                                     | operate and/or monito<br>ronmental conditions                                                    | or in the cont<br>2.8/ 3.0                                        | rol room: (CFR: 41.7                                                     |
| Question Sour                                      | ce:                                                                                  | Bank #<br>Modified<br>New                                     | d Bank #                                                   | (No                                                                                              | ote changes                                                       | or attach parent)                                                        |
| Question Histo<br>Optional - Que<br>he NRC; failur | ry:<br>estions validated<br>e to provide the                                         | Last NR<br>I at the fac<br>informatio                         | IC Exam<br>cility sinc<br>on will ne                       | e 10/95 will generally<br>ecessitate a detailed                                                  | <br>y undergo lea<br>review of eve                                | ss rigorous review by<br>ery question.)                                  |
| Juestion Cogn                                      | itive Level:                                                                         | Memory<br>Compre                                              | or Fund<br>hension                                         | amental Knowledge<br>or Analysis                                                                 | X                                                                 |                                                                          |
| 0 CFR Part 55                                      | 5 Content:                                                                           | 55.41<br>55.43                                                | 7                                                          |                                                                                                  |                                                                   |                                                                          |
|                                                    |                                                                                      |                                                               |                                                            |                                                                                                  |                                                                   |                                                                          |

ļ

| ES-401                                                                                                                                                                                                                             | Sample Written Examination<br>Question Worksheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Form ES-401-6 (R8, S1                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Examination Outline Cross-refe                                                                                                                                                                                                     | rence: Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | RO     SRO      2    2      2    2       300000 A3.02    2.7_                                                                                                                                            |
| Proposed Question: 78 / 82                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                          |
| Compressor is operating at 100% p<br>compressor is operating in LAG<br>COMPRESSOR DISCHARGE T<br>stage discharge air temperature<br>instrument air system respond to<br>A. The "A" and "B"<br>and when the ai<br>automatically sta | and the "C" air compressor is operator is operator is in star<br>EMPERATURE HI on the "A" compressor is in star<br>is at 355°F and increasing. As the post of this event? Assume no operator a<br>air compressor will trip on high second<br>r header pressure decreases to 100<br>art.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | ndby. After you received alarm AIR<br>ressor. You verify the "A" second<br>temperature increases how will the<br>ction. rises<br>and stage discharge air temperature<br>psig the "C" air compressor will |
| B. The "A" air com<br>temperature trip<br>will automatical                                                                                                                                                                         | pressor will continue to run to failure<br>on the second stage discharge air to<br>y start when the breaker for the "A" a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | because there is no high<br>emperature. The "C" air compresso                                                                                                                                            |
| C. The "A" air com<br>when the air hea                                                                                                                                                                                             | oressor will trip on high second stage<br>ader pressure decreases to 90 psig t                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | e discharge air temperature and<br>he "C" air compressor will start and                                                                                                                                  |
| D. The "A" air com<br>when the air hea<br>maintain the air                                                                                                                                                                         | neader pressure.<br>pressor will trip on high second stage<br>ader pressure decreases to 110 psig<br>header pressure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | e discharge air temperature and<br>the "B" air compressor will load and                                                                                                                                  |
| Proposed Answer: D. The "A"<br>and whe<br>will load                                                                                                                                                                                | air compressor will trip on high seco<br>on the air header pressure decreases<br>and maintain the air header pressur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | nd stage discharge air temperature<br>s to 110 psig the "B" air compressor<br>re.                                                                                                                        |
| Explanation (Optional): As the d<br>360F. V<br>automat<br>in stand                                                                                                                                                                 | ischarge air temperature on the "A" of<br>When the compressor trips the "B" which is the compression trips the "B" which have a second to the sec | compressor increases it will trip at<br>hich is operating in LAG will<br>header pressure. The "C" which is                                                                                               |

- A. Both running compressors will not trip on a high discharge temperature.
- Each compressor has its own temperature switch39TS-113A-C.B. The "A" air compressor will trip at a temperature of 360.
- C. The "C" compressor starts at 100 psig not 90 and the "B" will load and maintain the header pressure so that the "C" should not automatically start.

Technical Reference(s): SDLP-39, ARP 9-6-2-17, OP-39.

Proposed references to be provided to applicants during examination: None

Learning Objective: A3. Ability to monitor automatic operations of the INSTRUMENT AIR SYSTEM including: (CFR: 41.7 / 45.7) A3.02 Air temperature 2.9/2.7

55.41 <u>7</u>

10 CFR Part 55 Content:

| ES-401                                          |                                   |                                                                      | Sample V<br>Ques                               | Written Examination<br>stion Worksheet                                 | For                                                     | m ES-401-6 (R8, S1)                                  |
|-------------------------------------------------|-----------------------------------|----------------------------------------------------------------------|------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------|
| Examination                                     | Outline C                         | ross-reference:                                                      | Level                                          | Tier #<br>Group #<br>K/A #<br>Importance Rating                        | RO<br>2<br>2<br>400000 A2.<br>_3.3_                     | SRO<br>2<br>2<br>01<br>3.4_                          |
| Proposed Qu<br>Lowering 7<br>The loss of the    | BC-pres                           | )/83<br>Scrite<br>ng turbine buildi<br>poig in the TRC               | ng close                                       | d loop cooling (TBCLC                                                  | <del>) pump</del> will res                              | ult in the standby                                   |
|                                                 |                                   | paig in the TDO                                                      |                                                | <del>raistiidiyo iisausii</del> 11<br>I                                | F THE press                                             | mp rais to start then                                |
| Α.                                              | (1)<br>(2)                        | 75<br>emergency se<br>TBCLC heade                                    | rvice wat                                      | ter will automatically st                                              | tart at 40 psig a                                       | nd inject into the                                   |
| В.                                              | (1)<br>(2)                        | 75<br>manually scrat                                                 | n the rea                                      | actor.                                                                 |                                                         |                                                      |
| C.                                              | (1)<br>(2)                        | 85<br>emergency se<br>TBCLC heade                                    | rvice wat<br>r.                                | er will automatically st                                               | art at 40 psig a                                        | nd inject into the                                   |
| D.                                              | (1)<br>(2)                        | 85<br>manually scrai                                                 | n the rea                                      | actor.                                                                 |                                                         |                                                      |
| Proposed An                                     | swer:                             | D. (1)<br>(2)                                                        | 85<br>manua                                    | lly scram the reactor.                                                 |                                                         |                                                      |
| Explanation (                                   | Optional):                        | The standby p<br>85 psig and if t<br>accordance wi                   | ump auto<br>he stand<br>th <del>OA</del> P-4   | omatically starts at TB0<br>by pump fails to start t<br>17.            | CLC discharge<br>hen manually s                         | header pressure of<br>cram the reactor in            |
| Fechnical Re                                    | ference(s)                        | ): AOP-4                                                             | 7 Loss o                                       | f TBCLC                                                                |                                                         |                                                      |
| Proposed refe                                   | erences to                        | be provided to                                                       | applican                                       | ts during examination:                                                 | None                                                    |                                                      |
| _earning Obj€                                   | ective:                           | A2. Ability to (a<br>on those predic<br>consequences<br>CCW pump 3.3 | a) predict<br>otions, us<br>of those<br>3/ 3.4 | the impacts of the follose procedures to correct abnormal operation: ( | owing on the Co<br>ct, control, or m<br>CFR: 41.5 / 45. | CWS and (b) based<br>itigate the<br>6) A2.01 Loss of |
| Question Sou                                    | rce:                              | Bank #<br>Modifie<br>New                                             | ed Bank #                                      | # (Nc                                                                  | te changes or a                                         | attach parent)                                       |
| Question Hist<br>Optional - Qu<br>he NRC; failu | ory:<br>lestions v<br>lre to prov | Last Ni<br>alidated at the fa<br>ride the informat                   | RC Exan<br>acility sin<br>ion will n           | n<br>ce 10/95 will generally<br>recessitate a detailed r               | undergo less ri<br>eview of every                       | igorous review by<br>question.)                      |
|                                                 | nitiva Lav                        | el Memor                                                             | v or Fun                                       | damental Knowledge                                                     | x                                                       |                                                      |

Δ

## Comprehension or Analysis

10 CFR Part 55 Content:

55.41 \_\_10\_ 55.43 \_\_\_\_

| LO-401                                                                 |                                                                             | Samp<br>Qi                                                                           | e Written Examination<br>Jestion Worksheet                                                                | Form E                                                                      | ES-401-6 (R8, S1)                                       |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------|
| Examination (                                                          | Outline Cross-re                                                            | ference: Leve                                                                        | el<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                     | RO<br>2<br>3<br>215001 K6.04<br>_3.1_                                       | SRO<br>2<br>3<br>4.1_                                   |
| Proposed Qu                                                            | estion: 80 / 84                                                             | 1                                                                                    | 2                                                                                                         |                                                                             |                                                         |
| During a full c<br>stuck in the co<br>accident were<br>taken to isolat | ore LPRM calib<br>ore at index-9 (2<br>to occur with a<br>te the TIP syster | ration the <del>Syste<br/>9-12):</del> The det<br>valid containme<br>n penetration?  | ector can not be moved in<br>ector can not be moved ir<br>ent isolation signal what c                     | Probe (TIP) <u>detect</u><br>n or out. If a loss of<br>perator action, if a | or becomes ++++<br>of coolant<br>any must be            |
| A.                                                                     | No operator a                                                               | iction is require                                                                    | d. The TIP Shear valve a                                                                                  | utomatically fires                                                          | to cut the                                              |
| B.                                                                     | No operator a                                                               | e and seal the g<br>option is require                                                | juide tube.<br>d. The Guide tube ball va                                                                  | lve automatically                                                           | closes, to cut the                                      |
| C.                                                                     | Operator actio                                                              | e and seal the g<br>on is required.                                                  | juide tube.<br>The TIP shear valve mus                                                                    | t be manually fire                                                          | d to cut the                                            |
| D.                                                                     | Operator cable<br>Operator action<br>the detector c                         | e and seal the g<br>on is required. T<br>able and seal th                            | uide tube.<br>The Guide tube ball valve<br>ne guide tube.                                                 | must be manually                                                            | y closed to cut                                         |
| Proposed Ans                                                           | wer: C.                                                                     | Operator act to cut the def                                                          | ion is required. The TIP steets                                                                           | shear valve must l<br>guide tube.                                           | be manually fired                                       |
| Explanation (C                                                         | Dptional): The T<br>TIP sl<br>TIP sl<br>must                                | IP ball valve do<br>near valve does<br>near valve mus<br>be isolated.                | bes not have enough force<br>s not have an automatic fu<br>t be used because the de                       | e to cut the detect<br>inction. Under the<br>tector is stuck and            | or cable. The<br>ese condition the<br>d the penetration |
| Technical Ref                                                          | erence(s):                                                                  | SDLP-07F, F                                                                          | AP-7.3.14                                                                                                 |                                                                             |                                                         |
| Proposed refe                                                          | rences to be pro                                                            | ovided to applic                                                                     | ants during examination:                                                                                  | None                                                                        |                                                         |
| Learning Obje                                                          | ctive:                                                                      | K6. Knowled<br>will have on t<br>K6.04 Primar                                        | ge of the effect that a loss<br>he TRAVERSING IN-COI<br>y containment isolation s                         | or malfunction of RE PROBE: (CFF ystem: 3.1/3.4                             | the following<br>8: 41.7 / 45.7)                        |
| Question Ser                                                           | ce:                                                                         | Bank #<br>Modified Ban<br>New                                                        | k # (Not                                                                                                  | e changes or atta                                                           | ch parent)                                              |
| QUESTION SOUL                                                          |                                                                             |                                                                                      |                                                                                                           |                                                                             |                                                         |
| Question Histo<br>Optional - Qu<br>he NRC; failu                       | ory:<br>estions validated<br>re to provide the                              | Last NRC Ex<br>d at the facility s<br>information wil                                | am<br>since 10/95 will generally<br>I necessitate a detailed re                                           | _<br>undergo less rigo<br>view of every que                                 | rous review by<br>estion.)                              |
| Question Histo<br>Optional - Que<br>he NRC; failur<br>Question Cogr    | ory:<br>estions validated<br>re to provide the<br>nitive Level:             | Last NRC Ex<br>d at the facility s<br>information wil<br>Memory or Fu<br>Comprehensi | am<br>since 10/95 will generally<br>I necessitate a detailed re<br>undamental Knowledge<br>on or Analysis | <br>undergo less rigo<br>eview of every que<br>X                            | rous review by<br>estion.)                              |

. 1

 $\triangleleft$ 

| ·                                                                                                                                     |                                                                                                                              | Samp<br>C                                                                                                                                                    | ble Written Examination                                                                                                                                                                                                                                                                          | Form                                                                                                                                                                  | ES-401-6 (R8, S                                                                                                                            |
|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Examination C                                                                                                                         | Jutline Cross-re                                                                                                             | ference: Lev                                                                                                                                                 | /el<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                                                                                           | RO<br>2<br>3<br>_233000 A1.03<br>3.3_                                                                                                                                 | SRO<br>2<br>3<br>_3.6_                                                                                                                     |
| Proposed Que                                                                                                                          | stion: 81 / 85                                                                                                               |                                                                                                                                                              |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                       |                                                                                                                                            |
| The plant is ma<br>the fuel pool po<br>tank level. Ma<br>What tempera                                                                 | aintaining 100%<br>ump discharge<br>aintenance expe<br>ture indications                                                      | 6 power <del>due to</del><br>line resulted ir<br>ects to return t<br>are available                                                                           | Severe hot weather conding the fuel pool cooling purt<br>the fuel pool cooling syster<br>to monitor fuel pool water                                                                                                                                                                              | itions. Several ho<br>ups tripping on lo<br>n to service in the<br>temperature?                                                                                       | ours ago a leak o<br>w skimmer surge<br>e next 5 hours.                                                                                    |
| A.                                                                                                                                    | Fuel pool tem                                                                                                                | peratures on t                                                                                                                                               | the BHB & HPCI TEMP 10                                                                                                                                                                                                                                                                           | TBS-131 at the (                                                                                                                                                      | )9-21 panel                                                                                                                                |
| В.                                                                                                                                    | Observing loc                                                                                                                | al annunciato                                                                                                                                                | r alarm lights at fuel pool fi                                                                                                                                                                                                                                                                   | lter demineralize                                                                                                                                                     | r panel                                                                                                                                    |
| C.                                                                                                                                    | Running the r                                                                                                                | esidual heat re                                                                                                                                              | emoval system in fuel pool                                                                                                                                                                                                                                                                       | cooling assist a                                                                                                                                                      | nd monitoring                                                                                                                              |
| D.                                                                                                                                    | Installing a ter                                                                                                             | mporary temp                                                                                                                                                 | erature indication in the sp                                                                                                                                                                                                                                                                     | ent fuel pool.                                                                                                                                                        |                                                                                                                                            |
| Proposed Ansi                                                                                                                         | wer: D. Installin                                                                                                            | g a temporary                                                                                                                                                | temperature indication in                                                                                                                                                                                                                                                                        | the spent fuel po                                                                                                                                                     | ol.                                                                                                                                        |
| Explanation (O                                                                                                                        | ptional): A.<br>B.<br>C.<br>D.                                                                                               | This chart re<br>pump suction<br>communica<br>This local por<br>To use RHF<br>time to get to<br>cooling is ex<br>Procedure A<br>has the ope<br>for this type | ecorder only has fuel pool<br>on temperatures. The wate<br>ting with the fuel pool <b>g</b> are<br>anel does not have any ter<br>is the plant must be in cold<br>the plant to a cold shutdow<br>spected to be returned to s<br>AOP-68 FUEL POOL COC<br>trator install a temperature<br>of event. | HX inlet and outler in these areas<br>ris not an accura<br>mperature alarms<br>shutdown. Ther<br>n condition befor<br>service.<br>DLING AND CLEA<br>indication in the | et as well as<br>até-no longer<br>te temperature:<br>s on it.<br>e is not enough<br>re fuel pool<br>ANUP TROUBLE<br>fuel pool i need<br>as |
|                                                                                                                                       |                                                                                                                              |                                                                                                                                                              |                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                       |                                                                                                                                            |
| Technical Refe                                                                                                                        | rence(s): AOP-                                                                                                               | -68 FUEL POC                                                                                                                                                 | OL COOLING AND CLEAN                                                                                                                                                                                                                                                                             | IUP TROUBLE                                                                                                                                                           |                                                                                                                                            |
| Technical Refe<br>Proposed refer                                                                                                      | erence(s): AOP-<br>rences to be pro                                                                                          | -68 FUEL POC                                                                                                                                                 | DL COOLING AND CLEAN cants during examination:                                                                                                                                                                                                                                                   | IUP TROUBLE<br>None                                                                                                                                                   |                                                                                                                                            |
| Technical Refe<br>Proposed refer<br>Learning Objec                                                                                    | erence(s): AOP-<br>rences to be pro<br>xtive: Al. Ab<br>opera<br>(CFR:                                                       | -68 FUEL POC<br>ovided to appli<br>ility to predict<br>ting the FUEL<br>41.5 / 45.5) A                                                                       | DL COOLING AND CLEAN<br>cants during examination:<br>and/or monitor changes in<br>POOL COOLING AND C<br>I.03 Pool temperature 3.1                                                                                                                                                                | IUP TROUBLE<br>None<br>parameters asso<br>LEAN-UP contro<br>/ 3.3                                                                                                     | ociated with<br>Is including:                                                                                                              |
| Technical Refe<br>Proposed refer<br>Learning Objec<br>Question Sou                                                                    | erence(s): AOP-<br>rences to be pro<br>xtive: Al. Ab<br>opera<br>(CFR:<br>rce:                                               | -68 FUEL POC<br>ovided to appli<br>ility to predict<br>ting the FUEL<br>41.5 / 45.5) A<br>New                                                                | DL COOLING AND CLEAN<br>cants during examination:<br>and/or monitor changes in<br>POOL COOLING AND C<br>I.03 Pool temperature 3.1                                                                                                                                                                | IUP TROUBLE<br>None<br>parameters asso<br>LEAN-UP contro<br>/ 3.3                                                                                                     | ociated with<br>Is including:                                                                                                              |
| Technical Refe<br>Proposed refer<br>Learning Objec<br>Question Sou<br>Question Histo<br>(Optional - Qu<br>review by the<br>question.) | erence(s): AOP-<br>rences to be pro<br>otive: Al. Ab<br>opera<br>(CFR:<br>rce:<br>ory:<br>uestions valida<br>NRC; failure to | -68 FUEL POC<br>ovided to appli<br>ility to predict<br>ting the FUEL<br>41.5 / 45.5) A<br>New<br>Last NRC B<br>ted at the fac<br>o provide the               | DL COOLING AND CLEAN<br>cants during examination:<br>and/or monitor changes in<br>POOL COOLING AND C<br>I.03 Pool temperature 3.1<br>X<br>Exam<br>ility since 10/95 will gen<br>information will necessi                                                                                         | IUP TROUBLE<br>None<br>parameters asso<br>LEAN-UP contro<br>/ 3.3                                                                                                     | ociated with<br>Is including:<br>less rigorous<br>review of every                                                                          |

Å

10 CFR Part 55 Content:

| 55.41 | 5 |
|-------|---|
| 55.43 |   |

| ES-401 Samı                                                                                                                                                           | ole Written Examination<br>Question Worksheet          | Form ES-401-6 (R8, S1)                                                  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------------------------|
| Examination Outline Cross-reference: Lev<br>4 transient has resulted in fuel failure<br>and a small Steen live break in the s<br>Proposed Question: 82/73 (are to the | vel<br>Tier #<br>Group #<br>K/A #<br>Importance Rating | RO     SRO       _2     _2       _2     _3       239001 A2.07     _3.9_ |
| The unit is operating at 85% power when a tunnel. The following plant conditions exist.                                                                               | main steam line (MSL) lea<br><del>:-</del>             | k develops in the main steam                                            |
| Steam Tunnel Temperature<br>MSL Radiation<br>MSL Flow                                                                                                                 | 100° F<br>1x pormal rigginare<br>85° flow              | asing at 20° F per minute.                                              |

What is the expected plant response and what operator actions will be required after the automatic actions have completed?

- Α. High MSL flow will result in a reactor scram and high MSL temperature will close the MSIVs. Implement actions in AOP-1, Scram and EOP-2, RPV control.
- Β. High MSL radiation will result in a reactor scram and high steam tunnel temperature will close the MSIVs. Implement actions in AOP-1, Scram.
- C. High steam tunnel temperature will close the MSIVs and the reactor will scram from the MSIV valve position. Implement actions in AOP-1, Scram and EOP-2, RPV control.
- high High steam tunnel temperature will close the MSIVs and the reactor will scram from the D. MSIV valve position. Implement actions in AOP-1, Scram.

RPV pressure.

Proposed Answer: C. High steam tunnel temperature will close the MSIVs and the reactor will scram from the MSIV valve position. Implement actions in EOP-2, RPV control.

Explanation (Optional): A.

The MSIV will close first on high temperature and then reactor will scram on MSIV position. EOP-2 entered on high pressure from MSIV closure.

- В. The MSL high radiation scram / isolation has been disabled.
- C. Correct.
- Should not be in EOP-2, The break is in the turbine building no entre D. conditions for EOP-5.
- Note: The MSIV will close in 2 minutes from high steam tunnel temperature. The MSIVs closure will result in a scram and high vessel pressure.

Technical Reference(s): SDLP-16C

Proposed references to be provided to applicants during examination: None

Learning Objective: A2. Ability to (a) predict the impacts of the following on the MAIN AND REHEAT STEAM SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or

operations: (CFR: 41.5 / 45.6) A2.07 Main steam area high temperature or differential temperature high 3.8/3.9

| Question Source:                                                                      | Bank #<br>Modified Bank # (No<br>NewX                                                                         | te changes or attach parent)                              |
|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|
| Question History:<br>(Optional - Questions validate<br>the NRC; failure to provide th | Last NRC Exam<br>ed at the facility since 10/95 will generally<br>e information will necessitate a detailed r | undergo less rigorous review by eview of every question.) |
| Question Cognitive Level:                                                             | Memory or Fundamental Knowledge<br>Comprehension or Analysis                                                  | X                                                         |
| 10 CFR Part 55 Content:                                                               | 55.415<br>55.43                                                                                               |                                                           |

Comments:

| ES-401                               | Sample V<br>Que: | Written Examination<br>stion Worksheet | Form ES-401-6 (R8, S1) |          |  |
|--------------------------------------|------------------|----------------------------------------|------------------------|----------|--|
| Examination Outline Cross-reference: | Level            | Tier #<br>Group #                      | RO<br>3                | SRO<br>3 |  |
|                                      |                  | Importance Rating                      | 2.1.10<br>_2.7_        | _3.9_    |  |

Proposed Question: 85 / 88

The unit has been at a steady state power for the last 7 days during a feedwater flow calibration. The calibration is complete and the final adjustments have been made to the feedwater flow instrument loop. The first 3D Monicore output after these adjustments were made has the following information:

| POWER MWT   | 2580          |
|-------------|---------------|
| POWER MWE   | 860           |
| FLOW MLB/HR | 75.453        |
| MFLCPR      | 0.938 37-24   |
| MFLPD       | 0.946 41-24-6 |
| PCRAT       | 1.004 15-32-4 |
| PR (PSIa)   | 1057          |
| LOAD LINE   | 101.7%        |

Based on this information what actions must the operator take?

- A. Reduce reactor pressure to provide more margin to the high pressure reactor scram.
- B. Thermal power must be decrease to 2536 MWt or less within 15 minutes.
- C. Contact reactor engineering within 15 minutes to decrease PCRAT less than 1.0.
- D. The reactor must be scrammed.

| Proposed Answer: | C. | Thermal power must be decrease to 2536 MWt or less within 15 |
|------------------|----|--------------------------------------------------------------|
|                  |    | minutes.                                                     |
|                  |    |                                                              |

Explanation (Optional): A.

- A. MFLCPR is less than 1.0 as required by TS
   B. Correct RAP 7.3.16 requires the plant to reduce power to less than 2536 MWt within 15 minutes.
- C. There is no need to reduce PCRAT to less than 1.0, because the plant has been at this power level for 7 days. The envelop must be updated.
  D. There is no reason to scram the reactor.

Technical Reference(s):RAP 7.3.16

Proposed references to be provided to applicants during examination: None

Learning Objective: Knowledge of conditions and limitations in the facility license. RO 2.7 / SRO 3.9

LO NET 238.3, 1.03.j Rated Thermal Power

**Question Source:** 

Bank # FitzPatrick Requal 33301036COLRS01 Rev.1

The plant is at full power when it is discovered that actual thermal power is 2580 MWt.

Select the following required action:

A. Scram the reactor.

B. Reduce power to within 2536 MWt within 15 minutes.

C. Commence an orderly shutdown by inserting the RSCS groups per RAP-7.3.16.

D. Quickly insert the cram rods per RAP-7.3.16 and notify the Nuclear Engineer.

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or AnalysisX |  |  |
|---------------------------|---------------------------------------------------------------|--|--|
| 10 CFR Part 55 Content:   | 55.41 _5, 10<br>55.43                                         |  |  |

| ES-401                                                                                                                  | Sample<br>Que                       | Written Examination<br>stion Worksheet                                | F                                              | orm ES-401-6 (R8, S1)                                 |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------------------------------------|------------------------------------------------|-------------------------------------------------------|
| Examination Outline Cross-reference                                                                                     | : Level                             | Tier #<br>Group #<br>K/A #<br>Importance Rating                       | RO<br>3<br>2.3.11<br>_2.7_                     | SRO<br>3<br>                                          |
| Proposed Question: 95 / 96                                                                                              |                                     |                                                                       |                                                |                                                       |
| A main steam line break outside of contract have successfully isolated the break a radiation leakage to the environment | ntainmer<br>and the re<br>in accord | nt has occurred. The m<br>actor scrammed. Wha<br>ance with AOP-40 MAI | ain steam lin<br>It actions can<br>N STEAM LII | e isolation valves<br>be taken to reduce<br>NE BREAK. |

- Α. Dispatch a team to verify reactor building integrity and start the main steam leakage collection system from the control room.
- Β. Dispatch a team to verify turbine building integrity and start the main steam leakage collection system from the relay room.
- C. Dispatch a team to verify turbine building integrity and start the main steam leakage collection system from the remote shutdown panels.
- D. Perform and emergency reactor depressurization.

Proposed Answer: B. Dispatch a team to verify turbine building integrity and start the main steam leakage collection system from the relay room.

Explanation (Optional): A. The MSLC system is manually operated from the relay room and the procedure directs teams to be dispatched to the turbine building. An RPV emergency depressurization is not required because there is no primary system discharging into secondary containment.

Technical Reference(s): AOP-40 MAIN STEAM LINE BREAK

Proposed references to be provided to applicants during examination: None

Bank #

New

Learning Objective:

2.3.11, Ability to control radiation releases.

**Question Source:** 

Modified Bank # (Note changes or attach parent)

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | X |
|---------------------------|--------------------------------------------------------------|---|
|                           |                                                              |   |

\_\_10\_

10 CFR Part 55 Content: 55.41 55.43

| ES-401                               | Sample<br>Que | Written Examination<br>stion Worksheet |                | Form ES-401-6 (R8, S1) |
|--------------------------------------|---------------|----------------------------------------|----------------|------------------------|
| Examination Outline Cross-reference: | Level         | Tier #<br>Group #                      | RO<br>3        | SRO<br>3               |
|                                      |               | N/A #<br>Importance Rating             | 2.4.1<br>_4.3_ | _4.6_                  |

Proposed Question: 96 / 97

The unit was operating at 100 % power when an event occurs. The following plant conditions are present:

| APRM Reactor Power                | 15%                      |          |
|-----------------------------------|--------------------------|----------|
| Reactor Level                     | 200 inches               |          |
| Reactor Pressure                  | 1145 psig                |          |
| Drywell Temperature               | 135°F                    |          |
| Drywell Pressure                  | 2.9 psig                 |          |
| Torus Water Temperature           | 95°F                     |          |
| Torus Pressure                    | 1.0 psig                 |          |
| Torus Level                       | 13.9 Feet                |          |
| Reactor Building to outside dP    | - 0.29 inches water      |          |
| Reactor Building Temperatures     | RWCU heat exchanger room | 105°F    |
|                                   | RWCU "A" Pump Room       | 110°F    |
|                                   | RWCU "B" Pump Room       | 110°F    |
| Reactor Building Radiation Levels | RWCU Heat Exchanger Room | 30 mr/hr |
|                                   | RWCU Pump Area           | 20 mr/hr |

Based on these conditions what emergency operating procedures should be entered and what -immediate-operator actions have been taken in the first minute?

- A. EOP-2, RPV Control; EOP-3 Failure to Scram; and EOP-4, Primary Containment Control have been entered and drywell sprays have been initiated.
- B. EOP-2, RPV Control; EOP-3 Failure to Scram; and EOP-4, Primary Containment Control have been entered and a manual scram initiated and mode switch placed in shutdown.
- C. EOP-3 Failure to Scram; EOP-4, Primary Containment Control; and EOP-5 Secondary Containment Control have been entered and the mode switch has been taken to shutdown.
- D. EOP-3 Failure to Scram; EOP-4, Primary Containment Control; and EOP-4a, Primary Containment Gas Control have been entered and SRMs & IRMs are driving into the core.

Proposed Answer:

EOP-2, RPV Control; EOP-3 Failure to Scram; and EOP-4, Primary Containment Control have been entered and a manual scram initiated and mode switch placed in shutdown.

Explanation (Optional): A.

- A. There are no conditions that would require drywell sprays to be initiated.C. There are no entry condition for EOP-5.
- D. There is adequate core cooling, therefore, there is no entry conditions for EOP-4a.

Technical Reference(s):FSAR Section 14, EOPs

B.

Proposed references to be provided to applicants during examination: EOPs w/o entry conditions.

Learning Objective: 2.4.1 Knowledge of EOP entry conditions and immediate action steps.

| Bank #          |                                 |
|-----------------|---------------------------------|
| Modified Bank # | (Note changes or attach parent) |
| New             | X                               |

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

**Question Source:** 

Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

55.41 <u>10</u> 55.43 <u>5</u>

| ES-401                                                                    |                                                                     | Sample Written Examination<br>Question Worksheet                                                                                                                              | Fo                                                                     | rm ES-401-6 (R8, S1)                                                            |
|---------------------------------------------------------------------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Examination Outlir                                                        | ne Cross-reference:                                                 | Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                      | RO<br>3<br><br>2.4.18<br>_2.7_                                         | SRO<br>3<br><br>_3.6_                                                           |
| Proposed Question                                                         | n: 97 / 98                                                          |                                                                                                                                                                               |                                                                        |                                                                                 |
| In EOP-4, "Primary<br>Torus pressure ex<br><del>in spraying the dry</del> | Containment Cont<br>ceeds 15 psig befor<br>well?                    | rol," the primary containment p<br>e drywell sprays can be initiate                                                                                                           | ressure sectior<br>d. What is the                                      | n (PC/P) requires that<br>basis for this <del>delay</del> リ <u></u>             |
| torus pressure. W<br>A. Th                                                | )ith torus pression<br>is will prevent chug                         | a above 15 psig charging in ging and the resultant failure of                                                                                                                 | the down con<br>the drywell ve                                         | here could cause sho<br>nt-downcomer.by de                                      |
| B. Th                                                                     | amaining greator th<br>is will ensure a larg<br>eakers and reduce t | e enough differential pressure t<br>he torus pressure                                                                                                                         | arywell<br>to open the tor                                             | us to drywell vacuum                                                            |
| C. Th                                                                     | is will remove radio                                                | activity from the noncondensible                                                                                                                                              | es, which mus                                                          | t be performed prior                                                            |
| D. Th<br>as                                                               | the water in the dov                                                | sure will reduce the upward was<br>wncomer is blown out of the do                                                                                                             | er force on the<br>wncomer.                                            | e drywell vent header                                                           |
| Proposed Answer:                                                          | A. This w<br>downo<br>drywe                                         | vill prevent chugging and the re<br>comer by maintaining greater th<br>II.                                                                                                    | sultant failure<br>Ian 1% noncor                                       | of the drywell vent<br>idensibles in the                                        |
| Explanation (Optio                                                        | nal): B. The to                                                     | orus to drywell vacuum breaker                                                                                                                                                | s only requires                                                        | a 0.5 psid to open.                                                             |
|                                                                           | C. It is re                                                         | commended that the venting is<br>It is not a requirement that this                                                                                                            | performed thr<br>s be performed                                        | ough the torus to<br>I prior to venting the                                     |
|                                                                           | contai<br>D. The w<br>drywe<br>becau<br>state a<br>to the           | nment.<br>ater level in the downcomer eff<br>Il vent header. This is only a co<br>se after the torus reaches 15 p<br>and will not be able to produce<br>primary system break. | ects the upwar<br>oncern during t<br>sig the RPV is<br>the forces that | rd forces on the<br>he initial break<br>in a lower energy<br>were produce prior |
| Technical Reference                                                       | ce(s): MIT-3                                                        | 01.11E, pp 18                                                                                                                                                                 |                                                                        |                                                                                 |
| Proposed reference                                                        | es to be provided to                                                | applicants during examination                                                                                                                                                 | None                                                                   |                                                                                 |
| Learning Objective                                                        | : 2.4.18 Knowle                                                     | dge of the specific basis for EC                                                                                                                                              | Ps                                                                     |                                                                                 |
| Question Source:                                                          | Bank i<br>Modifi<br>New                                             | #<br>ed Bank # (No<br>X                                                                                                                                                       | ote changes or                                                         | attach parent)                                                                  |
| Question History:                                                         | Last N                                                              | BC Exam                                                                                                                                                                       | ·                                                                      |                                                                                 |

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_X\_\_\_

## Comprehension or Analysis

10 CFR Part 55 Content:

55.41 <u>10</u> 55.43 <u>\_\_\_</u>

| ES-401                              | Sample<br>Que | Written Examination<br>stion Worksheet |                   | Form ES-401-6 (R8, S1) |
|-------------------------------------|---------------|----------------------------------------|-------------------|------------------------|
| Examination Outline Cross-reference | : Level       | Tier #<br>Group #<br>K/A #             | RO<br>3<br>2.4.32 | SRO<br>3               |

#### Proposed Question: 99 / 100

The reactor is at 75% power and increasing to 100% power. Torus cooling is ON and personnel are being staged for the performance of ST-4N, "HPCI Quick-Start, Inservice and Transient Monitoring Test (IST)." Once the personnel are staged power ascension will be stopped for HPCI testing. A moment ago the following EPIC computer alarm occurred LOSS OF PWR INTERPOSING RLY SYS, there were no corresponding annunciator alarms and the annunciators did not respond when the operator performed an annunciator test. What has occurred to the annunciators on the 09-3 through the 09-8 panels and what actions must be taken?

A. The AC annunciator power has been lost and automatically transferred to DC power, the annunciators must be reset from panels IR-1 & IR-2 in the relay room. Power ascension and testing may continue while the annunciators are reset.

B. The AC annunciator power has been lost and must be manually transferred to DC power at panels IR-1 & IR-2 in the relay room. The power ascension and all testing will be stopped during the manual transfer to DC power.

- C. The AC and DC annunciator power has been lost. Power ascension and all testing will be stopped.
- D. The AC and DC annunciator power has been lost. Power ascension will stopped; however, HPCI testing should be performed while maintenance restores the annunciators.

| Proposed Answer: | C. | The AC and DC annunciator power has been lost. | Power ascension |
|------------------|----|------------------------------------------------|-----------------|
|                  |    | and all testing will be stopped.               |                 |

Explanation (Optional): A.

- onal): A. If AC power is lost and automatically transfers to DC power the annunciators do not have to be reset.
  - B. If AC power fails the transfer to DC backup power is automatic.
  - D. If annunciators are lost all power ascension and test must be stopped in accordance with AOP-65.

Technical Reference(s): AOP-65

Proposed references to be provided to applicants during examination: None

Learning Objective: 2.4.32 Knowledge of op

2.4.32 Knowledge of operator response to loss of all annunciators.

Question Source:

Bank # \_\_\_\_\_ (Note changes or attach parent) New \_\_\_\_X\_\_\_

Question History:

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

Х

10 CFR Part 55 Content:

55.41 \_\_10\_ 55.43 \_\_5\_

Comments:

~\_\_\_\_\_

Licensee to verify that if a loss of all annunciator power that all annunciators will be lost (OFF)except \_\_\_\_\_.

# Draft FitzPatrick Written Exam With Facility Comments

**RO** Questions

Si

| ES-401                                                   | ·                                                                    | Sample<br>Qu                                                                        | e Written Examination<br>estion Worksheet                                                                                                                         | Form ES-401-6 (R8, S1                                                                                 |
|----------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Examination Ou                                           | tline Cross-re                                                       | erence: Leve                                                                        | l<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                              | RO SRO<br>11_<br>11_<br>295014 AK2.11<br>_3.63.7_                                                     |
| Proposed Quest                                           | ion: R5                                                              |                                                                                     |                                                                                                                                                                   |                                                                                                       |
| The reactor is or of the following of                    | perating at 100<br>conditions des                                    | )% power wher<br>cribes when a i                                                    | n the "B" reactor water re<br>manual reactor scram ne                                                                                                             | circulation pump trips. Which ON eds to be initiated?                                                 |
| A.<br>B.<br>C.<br>D.                                     | Immediately if<br>Immediately if<br>Immediately if<br>Following dete | APRM peak-to<br>core plate diffe<br>a LPRM upsca<br>ermination that                 | -peak oscillations of gre<br>rential pressure oscillati<br>le alarms occurs.<br>the MCPR Safety Limit h                                                           | ater than 10% occur.<br>ons are greater than 2.9 psid.<br>as been exceeded.                           |
| Proposed Answe                                           | er: A.                                                               | Immediately                                                                         | if APRM peak-to-peak or                                                                                                                                           | scillations of greater than 10%                                                                       |
| Explanation (Op<br>Technical Refere                      | tional): A.<br>B.<br>C.<br>D.<br>ence(s):AOP-8                       | The criteria is<br>Core plate os<br>LPRM period<br>کی لیا ہوا<br>Loss<br>AOP-32Unex | s greater than 10% APRI<br>cillation is not a criteria t<br>ic upscale and downsca<br>العليمة العليمة المعرونية الم<br>of Coolant Flow<br>plained Reactivity Chan | M peak-to-peak oscillations.<br>for a manual scram.<br>le alarms, not a single LPRM.<br>مسيور عربيه و |
| Proposed refere                                          | nces to be pro                                                       | vided to applica                                                                    | ants during examination:                                                                                                                                          | None                                                                                                  |
| Learning Objecti                                         | ve: AK2. ł<br>ADDIT<br>contro                                        | Knowledge of th<br>TON and the fo                                                   | e interrelations between<br>llowing: (CFR: 41.7 / 45.                                                                                                             | INADVERTENT REACTIVITY<br>8) AK2.11 Recirculation flow                                                |
| Question Source                                          | x:                                                                   | Bank #<br>Modified Ban<br>New                                                       | k # (Nc                                                                                                                                                           | te changes or attach parent)                                                                          |
| Question History<br>(Optional - Ques<br>the NRC; failure | tions validated<br>to provide the                                    | Last NRC Exa<br>I at the facility s<br>information wil                              | am<br>ince 10/95 will generally<br>I necessitate a detailed r                                                                                                     | undergo less rigorous review by eview of every question.)                                             |
| Question Cogniti                                         | ve Level:                                                            | Memory or Fu<br>Comprehensi                                                         | Indamental Knowledge<br>on or Analysis                                                                                                                            | X                                                                                                     |
| 10 CFR Part 55 (                                         | Content:                                                             | 55.417<br>55.435_                                                                   |                                                                                                                                                                   |                                                                                                       |
| Comments:                                                |                                                                      |                                                                                     |                                                                                                                                                                   |                                                                                                       |
|                                                          |                                                                      |                                                                                     | \$                                                                                                                                                                |                                                                                                       |

| ES-401                                     |                                                                     | Sample<br>Que                                                                                                                                                             | Written Examination<br>estion Worksheet                                     | Forn                                                 | n ES-401-6 (R8, S1)                |
|--------------------------------------------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------------------------|------------------------------------|
| Examination C                              | Outline Cross-referen                                               | ce: Level                                                                                                                                                                 | Tier #<br>Group #<br>K/A #<br>Importance Rating                             | RO<br>2<br>2<br>295013 AK3<br>3.6_                   | SRO<br>1<br>3.02<br>3.8_           |
| Proposed Que                               | stion: R19                                                          |                                                                                                                                                                           |                                                                             |                                                      |                                    |
| Which one of t                             | he following is the p                                               | urpose of th                                                                                                                                                              | ne Heat Capacity Tempe                                                      | erature Limit (H                                     | CTL) Curve?                        |
| А.                                         | To prevent exceed<br>LOCA before the b<br>vent.                     | ہ<br>ing the P <del>rir</del><br>lowdown e                                                                                                                                | مودعهریت S-ppussion<br>mary Containment Press<br>nergy transfer is within t | <b>hesen</b><br>urellimit during<br>he capacity of t | a DESIGN BASIS<br>he containment   |
| В.                                         | To prevent exceed<br>DEPRESSURIZAT<br>containment vent.             | ing the Prir<br>ION before                                                                                                                                                | nary Containment Press<br>the blowdown energy tr                            | ure limit during<br>ansfer is within                 | EMERGENCY<br>the capacity of the   |
| C.<br>toru                                 | To prevent dynami<br>suppression peol a<br>EMERGENCY DEF            | c pressure<br>nd submer<br>PRESSURI                                                                                                                                       | loads from exceeding th<br>ged suppression chamb<br>ZATION.                 | e structural lim<br>er components                    | its of the<br>during an            |
| D.<br>torus                                | To prevent dynami<br>- <del>suppression pool</del> a<br>BASIS LOCA. | c pressure<br>nd submer                                                                                                                                                   | loads from exceeding th<br>ged suppression chamb                            | e structural lim<br>er components                    | its of the<br>during a DESIGN      |
| ANSWER:                                    | B. To prevent<br>EMERGEN<br>within the c                            | exceeding<br>CY DEPRE<br>apacity of t                                                                                                                                     | the Primary Containment<br>SSURIZATION before the containment vent.         | nt Pressure limi<br>the blowdown e                   | it during<br>energy transfer is    |
| Explanation (O                             | ptional):                                                           |                                                                                                                                                                           |                                                                             |                                                      |                                    |
| Technical Refe                             | rence(s): MI <sup>-</sup>                                           | ı 1.118                                                                                                                                                                   | pp. 11                                                                      |                                                      |                                    |
| Learning Objective: AK3.<br>apply<br>45.6) |                                                                     | AK3. Knowledge of the reasons for the following responses as they apply to HIGH SUPPRESSION POOL TEMPERATURE: (CFR: 41.5 / 15.6) AK3.02 Limiting heat additions 3.6 / 3.8 |                                                                             |                                                      | oonses as they<br>RE: (CFR: 41.5 / |
| Question Sourc                             | e: Bai                                                              | ık #                                                                                                                                                                      | INPO 9503                                                                   |                                                      |                                    |
| Which one of t                             | ne following is the pu                                              | rpose of th                                                                                                                                                               | e Heat Capacity Tempe                                                       | rature Limit (HC                                     | CTL) Curve?                        |
| a.                                         | To prevent exceedi<br>DEPRESSURIZAT                                 | ng the Prim<br>ON before                                                                                                                                                  | nary Containment Press<br>the blowdown energy tra                           | ure limit during<br>ansfer is within                 | EMERGENCY                          |

 containment vent.
 b. To prevent exceeding the Primary Containment Pressure limit during a DESIGN BASIS LOCA before the blowdown energy transfer is within the capacity of the containment vent.

- c. To prevent dynamic pressure loads from exceeding the structural limits of the suppression pool and submerged suppression chamber components during an EMERGENCY DEPRESSURIZATION.
- d. To prevent dynamic pressure loads from exceeding the structural limits of the suppression pool and submerged suppression chamber components during a DESIGN BASIS LOCA.

Answer a

Reference: ...295013.K3.02

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or F<br>Comprehens | Fundamental Knowledge<br>sion or Analysis | _x_ |
|---------------------------|---------------------------|-------------------------------------------|-----|
| 10 CFR Part 55 Content:   | 55.41 5                   |                                           |     |

55.43

| ES-401                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Samp<br>Q                                                                                            | le Written Exam<br>uestion Worksh                                                                 | ination<br>eet                                                                             | Form ES-4                                                                                            | 01-6 (R8, S                                                  |
|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Examination (                                                                    | Outline Cross-re                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ference: Lev                                                                                         | rel<br>Tier #<br>Group #<br>K/A #<br>Importance                                                   | R0<br>                                                                                     | D     SR       2        1        2002 A2.09        .1                                                | IO<br>.3_                                                    |
| Proposed Qu                                                                      | estion: R 39                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                      |                                                                                                   |                                                                                            |                                                                                                      |                                                              |
| The unit is at<br>performing pr<br>AUTO UNLO<br>up," the "B" fe<br>on these conc | full power. The ocedure OP-27, CK control switcl edwater pump to the dwater pump to the d | "A" reactor rec<br>"Recirculation<br>h in ON. While<br>rips <del>, which res</del><br>nd procedure _ | irculation pump<br>System," the op<br>the "A" reactor<br>ults in reactor w<br>(2) will be use     | scoop tube was<br>berator failed to<br>recirculation pu<br>ator lovel docre<br>ed.         | s "locked up;" ho<br>place the SCOO<br>ump scoop tube v<br>asing to 195 incl<br>سور                  | wever, whi<br>IP TUBE<br>was "locke<br><del>res</del> . Base |
| А.                                                                               | (1) Only the "I<br>(2) AOP-1, "R                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3" reactor recine<br>eactor Scram.                                                                   | culation pump v<br>"                                                                              | vill run back to 4                                                                         | 14%                                                                                                  |                                                              |
| В.                                                                               | (1) Both the A<br>(2) AOP-42, "I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | & B reactor re<br>Feedwater Ma                                                                       | ecirculation pum<br>Ifunction (Lower                                                              | ps will run back<br>ing Feedwater                                                          | ∶to 44%<br>Flow)"                                                                                    |                                                              |
| C.                                                                               | (1) Only the "/<br>(2) AOP-8, "Lo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | A" reactor recinoss or Reducti                                                                       | culation pump v<br>on of Reactor C                                                                | vill trip<br>oolant Flow"                                                                  |                                                                                                      |                                                              |
| D.                                                                               | (1) Both the A<br>(2) AOP-8, "Lo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | & B reactor re<br>oss or Reducti                                                                     | ecirculation pum<br>on of Reactor C                                                               | ps will trip<br>oolant Flow"                                                               |                                                                                                      |                                                              |
| Proposed Ans                                                                     | swer:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | A. (1)<br>(2)                                                                                        | Only the "B" read<br>AOP-1, "Reactor                                                              | ctor recirculation<br>Scram."                                                              | n pump will run b                                                                                    | ack to 44%                                                   |
| Explanation (                                                                    | Dptional): Proce<br>TUBE<br>recircu<br>place<br>the re                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | dure OP-27, F<br>AUTO UNLO<br>ulation pump t<br>this in ON only<br>actor will scrat                  | Recirculation Sys<br>CK control switc<br>o run back if a F<br>y one pump will<br>m on low level a | stem has the op<br>h in ON. This w<br>W pump is lost<br>run back. With<br>fter "B" feedwat | erator place the s<br>vill allow a locked<br>. Since the opera<br>only a single pur<br>er pump trip. | SCOOP<br>1 up reacto<br>ator did no<br>mp run bao            |
| Technical Ref                                                                    | erence(s):OP-27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 7, "Reactor Re                                                                                       | circulation Syste                                                                                 | m, SDLP-021,                                                                               | SDLP-33                                                                                              |                                                              |
| Proposed refe                                                                    | rences to be pro                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | wided to appli                                                                                       | cants during exa                                                                                  | mination: No                                                                               | ne                                                                                                   |                                                              |
| Learning Obje                                                                    | ctive: A2. At<br>FLOW<br>procee<br>condit<br>3.1 / 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | bility to (a) pred<br>CONTROL S<br>dures to corrections or operati<br>3.3                            | dict the impacts<br>YSTEM ; and (b<br>ct, control, or mit<br>ions: A2.09 †Re                      | of the following<br>) based on thos<br>igate the conse<br>circulation flow                 | on the RECIRCI<br>se predictions, us<br>quences of those<br>mismatch: Plant                          | JLATION<br>e<br>abnorma<br>Specific                          |
| Question Sou                                                                     | ce:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Bank #<br>Modified Ba<br>New                                                                         | nk #                                                                                              | (Note cha<br>X                                                                             | anges or attach p                                                                                    | arent)                                                       |
|                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                      |                                                                                                   |                                                                                            |                                                                                                      |                                                              |

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

55.41 <u>5</u> 55.43 <u>5</u> \_\_\_X\_\_

10 CFR Part 55 Content:

| ES-401                                               |                                                |                                                               | Sample<br>Que                                           | Written Examination<br>stion Worksheet                                                                                    | F                                                | orm ES-401-6 (R8,                                        |
|------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------|
| Examination (                                        | Dutline Cros                                   | ss-reference:                                                 | Level                                                   | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                           | RO<br>2<br>1<br>211000 K<br>_2.9_                | SRO<br>2<br>1<br>3.1_                                    |
| Proposed Que                                         | estion: R44                                    |                                                               |                                                         |                                                                                                                           |                                                  |                                                          |
| An ATWS has<br>pressurized. I<br>taken to shutd      | occurred.<br>In addition,<br>Iown the rea      | Reactor powe<br>MCC-152, MC<br>actor.                         | er is at 2<br>3C-156,                                   | 25% and the scram disc<br>and MCC-166 have los                                                                            | charge volum<br>st power.  WI                    | e is full of water an<br>hat actions must be             |
| A.<br>B.<br>C.                                       | Start SLC<br>Start SLC<br>Inject SLC<br>power. | injection usir<br>injection usir<br>Solution thre             | ng the "A<br>ng the "E<br>ngh the                       | A" SLC pump, the "B" S<br>B" SLC pump, the "A" S<br>e CRD System, both the                                                | LC pump ha<br>LC pump ha<br>e "A" & "B" S        | s lost power.<br>s lost power.<br>LC pumps have los      |
| D.                                                   | Vent the                                       | scram air hea                                                 | der sinc                                                | e both the "A" & "B" SL                                                                                                   | C pumps hav                                      | ve lost power.                                           |
| Proposed Ans                                         | wer: B. S                                      | tart SLC injec                                                | tion usiı                                               | ng the "B" SLC pump, t                                                                                                    | he "A" SLC p                                     | oump has lost powe                                       |
| Explanation (C                                       | Dptional): A<br>B<br>C<br>D                    | case th<br>case th<br>Correc<br>The "B<br>Venting<br>is a hyd | 52 mop<br>e "A" pu<br>' SLC pu<br>the sci<br>fraulic lo | "A" pump and MCC-16<br>ump has lost power.<br>ump still has power.<br>ram air header will not<br>ock. In addition the "B" | 2 powers the<br>result in furth<br>pump still ha | e "B" pump. In this<br>er rod motion if the<br>as power. |
| Technical Refe                                       | erence(s):                                     | SDLP-                                                         | 1, "SBI                                                 | _C" , TS 3.4                                                                                                              |                                                  |                                                          |
| Proposed refe                                        | rences to b                                    | e provided to                                                 | applicar                                                | nts during examination:                                                                                                   | None                                             |                                                          |
| Learning Obje                                        | ctive:                                         | K2. Kn<br>K2.01 S                                             | wledge<br>SBLC pu                                       | e of electrical power sup<br>umps 2.9* / 3.1*                                                                             | oplies to the f                                  | iollowing (CFR: 41.                                      |
| Question Sour                                        | ce:                                            | Bank #<br>Modifie<br>New                                      | d Bank                                                  | #(No                                                                                                                      | te changes c                                     | or attach parent)                                        |
| Question Histo<br>(Optional - Que<br>the NRC; failur | ory:<br>estions valid<br>re to provide         | Last NF<br>dated at the fa<br>e the informat                  | RC Exar<br>cility sir<br>on will r                      | m<br>nce 10/95 will generally<br>necessitate a detailed r                                                                 | undergo les<br>eview of eve                      | s rigorous review by<br>ry question.)                    |
| Question Cogr                                        | nitive Level:                                  | Memor<br>Compre                                               | / or Fun<br>hensio                                      | damental Knowledge<br>n or Analysis                                                                                       | x                                                |                                                          |
|                                                      | 5 Content:                                     | 55 / 1                                                        | 7                                                       |                                                                                                                           |                                                  |                                                          |

/

| Sample<br>Que | Written Examination<br>stion Worksheet | Form ES-401-6 (R8, S1)                                                                      |                                                                                                               |  |
|---------------|----------------------------------------|---------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--|
| ce: Level     | Tier #<br>Group #<br>K/A #             | RO<br>2<br>1<br>215003 A3.04                                                                | SRO                                                                                                           |  |
|               | Sample<br>Que<br>ce: Level             | Sample Written Examination<br>Question Worksheet<br>ce: Level<br>Tier #<br>Group #<br>K/A # | Sample Written Examination<br>Question Worksheet<br>Ce: Level RO<br>Tier #2<br>Group #1<br>K/A # 215003 A3.04 |  |

Proposed Question: R46

The unit is at 35% power and performing a planned shutdown. The "B" intermediate range monitor (IRM) has failed upscale. The "B" IRM mode switch is in operate and has not been bypassed. When would you expect to receive a half scram and rod block from this IRM?

- A. When the "A" average power range monitor (APRM) decreases to 5%.
- B. When the reactor mode switch is moved to startup/Hot Standby
- C. When the "B" IRM detector is fully inserted into the core.
- D. As soon as the IRM failed upscale.

Proposed Answer: B. When the reactor mode switch is moved to startup/Hot Standby

Explanation (Optional): A. C. & D. The "A" APRM is not the companion APRM for this IRM. The only time that an IRM will provide an automatic function is when the mode switch is not in RUN OR in RUN with the companion APRM (B) downscale.

Technical Reference(s): None

Proposed references to be provided to applicants during examination: None

Learning Objective: A3 Ability to monitor automatic operations of the INTERMEDIATE RANGE MONITOR (IRM) SYSTEM including: A3.04 Control rod block status 3.5/3.5

Question Source: Bank # INPO 8236

Given the following conditions:

-The plant is performing a scheduled shutdown -Intermediate Range Monitoring (IRM) channel "B" has failed "UPSCALE" and has NOT been bypassed

At what point would an automatic half scram be expected for these conditions?

The plant enters Condition 2 *(correct answer)* APRM "B" reaches 5% power *(Note this answer is also correct)* IRM detectors are fully inserted Power is below the Low Power Setpoint *(Note this answer may also be correct)* 

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.) Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

55.41 \_\_7\_\_ 55.43 \_\_\_\_



10 CFR Part 55 Content:

| ES-401                              | Sample<br>Que | Written Examination<br>stion Worksheet          | Form ES-401-6 (R8, S1)                |                        |  |
|-------------------------------------|---------------|-------------------------------------------------|---------------------------------------|------------------------|--|
| Examination Outline Cross-reference | : Level       | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>2<br>1<br>215004 K2.01<br>_2.6_ | SRO<br>2<br>1<br>_2.8_ |  |
| Proposed Question: R47              |               | Importance Rating                               | _2.6_                                 | _2.8_                  |  |

The system "A" 24/48 volt batteries (71IB-1, 71IB-2) and chargers (71IBC-1, 71IBC-2) supply the (1) SRMs and the system "B" 24/48 volt batteries (71IB-3, 71IB-4) and charger (71IBC-3, 71IBC-4) supply the (2) SRMs.

| A. | (1) A & B<br>(2) C & D |
|----|------------------------|
| В. | (1) A & C<br>(2) B & D |
| C. | (1) A & D<br>(2) B & C |
| D. | (1) B & D<br>(2) A & C |

**Proposed Answer:** Β. (1) A & C (2) B & D

Explanation (Optional): The system "A" 24/48 VDC batteries / charger supplies SRM A & C and the system "B" 24/48 VDC batteries / charger supplies SRM B & D.

Technical Reference(s): SDLP-07B, SDLP-71B

Proposed references to be provided to applicants during examination: None

Learning Objective:

K2. Knowledge of electrical power supplies to the following: (CFR: 41.7) K2.01 SRM channels/detectors 2.6/2.8

**Question Source:** 

Bank # Modified Bank # (Note changes or attach parent)

**Question History:** Last NRC Exam

New

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | X |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.417<br>55.432_                                            |   |

|                                                                      |                                                                     | Sample<br>Qu                                                     | e Written Examination<br>estion Worksheet                                                                                  | Form ES-40                                                                      | 1-6 (R8, S1)                            |
|----------------------------------------------------------------------|---------------------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------|
| Examination                                                          | Outline Cross-                                                      | reference:                                                       | Level<br>Tier #                                                                                                            | RO                                                                              | SRO                                     |
|                                                                      |                                                                     |                                                                  | Group #                                                                                                                    | 1                                                                               |                                         |
|                                                                      | •                                                                   |                                                                  | N/A #<br>Importance Rating                                                                                                 | 259001 A2<br>_3.7_                                                              |                                         |
| Proposed Qu                                                          | estion: R57                                                         | The unit                                                         | is starting up and on                                                                                                      | a 80% nod lin                                                                   | L, 96% R<br>speed.                      |
| The plant is e<br>both reactor f<br>inoperable an<br>one of the foll | perating at 10<br>eedwater pum<br>d the plant pe<br>lowing is the e | 0% power wit<br>lps (RFP) in s<br>rforms as des<br>xpected resul | h <b>A</b> ll Condensate and Cor<br>ervice. There are no syste<br>signed. The A Reactor Fee<br>t of this trip and what ope | ndensate Booster<br>ems or componen<br>edwater Pump trip<br>rator actions are r | Pumps and<br>ts<br>s. Which<br>equired? |
| А.                                                                   | The "B" RFP<br>Monitor oper<br>booster pum                          | assumes the<br>ation of the ru<br>ps.                            | additional flow and powe<br>Inning feedwater and con                                                                       | r is maintained at densate and cond                                             | 90%.<br>ensate                          |
| B.                                                                   | The third cor<br>RFP assume<br>operation of<br>pumps.               | ndensate / cor<br>es the additior<br>the running fe              | ndensate booster pump st<br>al flow and power is main<br>redwater and condensate                                           | tarts and together<br>Itained at <del>100</del> %. Itained at the state b       | with the "B"<br>Monitor<br>booster      |
| C.                                                                   | The "B" RFP<br>level. Place<br>range and so                         | can not provi<br>the reactor m<br>purce monitors                 | de enough flow and a rea<br>ode switch to shutdown a<br>s.                                                                 | ictor scramoccur<br>nd insert the interr<br>ان معامد عمل سع                     | i on low<br>nediate<br>unhuh Leur l     |
| D.                                                                   | The "B" RFP<br>then stabilize<br>ensure that f                      | flow, seactor<br>at about \$59<br>eedwater flow                  | water recirculation flow ar<br>power. Monitor for therr<br>is within normal capacity                                       | nd power will decra<br>mal-hydraulic insta<br>of pump.                          | base and<br>Ibility and                 |
| Proposed Ans                                                         | swer: D.                                                            | The "B" RF<br>decrease a<br>thermal-hyc<br>within norm           | P flow, reactor water recir<br>nd then stabilize at about<br>Iraulic instability and ensu<br>al capacity of pump.          | culation flow and p<br>\$5% power. Moni<br>re that feedwater t                  | oower will<br>tor for<br>flow is        |
| Explanation (O                                                       | ptional): A.<br>B.                                                  | The "B" RFP<br>The third cor<br>additional ca                    | does not have the capacity<br>idensate/condensate booste<br>pacity to the feedwater pum                                    | to maintain <del>100</del> % p<br>er pump does not pr<br>p.                     | ower.<br>ovide                          |
|                                                                      | С.                                                                  | A reactor scr<br>the RWR will                                    | am will not occur. All system<br>I run back and plant stabilize                                                            | n will function as de<br>at about <del>65</del> % powe                          | signed and<br>er.                       |
| Technical Refe                                                       | rence(s):AOP-4                                                      | 2 FEEDWATE                                                       |                                                                                                                            |                                                                                 | FLOW);                                  |

 $\triangle$ 

Learning Objective:

A2. Ability to (a) predict the impacts of the following on the REACTOR FEEDWATER SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: A2.01 Pump trip 3.7/3.7

Question Source:

Modified Bank # FitzPatrick 25601012B02C Rev. 3

The plant is operating at 65% power with all Condensate and Condensate Booster Pumps and both RFPs in service. There are no systems or components inoperable. The A Condensate Pump trips due to an electrical fault. Which one of the following is the expected result of this trip?

- A. The operating pumps assume the additional load and the RFPs are not affected.
- B. The A Condensate Booster Pump trips on interlock, but the RFPs are not affected.
- C. The A Condensate Booster Pump trips on interlock causing RFPs to trip on low suction pressure.
- D. Condensate Booster Pump suction pressure decreases causing RFPs to trip on low suction pressure.

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

55.41 <u>5</u>\_\_\_ 55.43 \_\_\_\_\_
| ES-401                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Sample<br>Qu                                                                                                               | e Written Examination<br>estion Worksheet                                                                                                                                              | Forn                                                                                   | n ES-401-6 (R8, S1)                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Examination C                                                                                                                                                                                        | Dutline Cross-refe                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | erence: Leve                                                                                                               | l<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                   | RO<br>2<br>1<br>261000 A3.0<br>_3.2_                                                   | SRO<br><br>01<br>3.3_                                                                          |
| Proposed Que                                                                                                                                                                                         | estion: R59                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                            |                                                                                                                                                                                        |                                                                                        |                                                                                                |
| The Unit is operadiation detectors<br>started. The for<br>the formation detector<br>started. The for<br>the formation<br>of the formation<br>Disonal<br>SBGT<br>1B Far<br>Suction<br>Dischal<br>SBGT | erating at 100% p<br>ctors, both detect<br>billowing is the cu<br><u>SBGT Train A</u><br>n valve<br>arge Valve<br>Flow<br><u>SBGT Train B</u><br>n Valve<br><u>SBGT Train B</u><br>n Valve<br>Flow<br><u>SBGT Train B</u><br>n Valve<br><u>SBGT Train B</u><br><u>SBGT Train B</u><br><u>S</u><br><u>S</u><br><u>S</u><br><u>S</u><br><u>S</u><br><u>S</u><br><u>S</u><br><u>S</u> | OPERATING<br>OPERATING<br>15A OPER<br>100A OPER<br>100A OPER<br>5000 cfm<br>OPERATING<br>15B OPER<br>100B OPER<br>1000 cfm | BGT is haged out to<br>maintenance activities on<br>scale and both trains of<br>the system 5 minutes at<br>N                                                                           | the refuel floor<br>standby gas tree<br>ter the they otar                              | e . An <u>Cutione</u><br>or exhaust plenum st<br>eatment (SBGT) tradited.<br>resulta<br>fallow |
| differen<br>to Atro                                                                                                                                                                                  | ntial pressure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | -0. inches v                                                                                                               | vater                                                                                                                                                                                  |                                                                                        |                                                                                                |
| Based on these<br>A.<br>B.<br>ng as C.<br>hus.g.ned.<br>D.                                                                                                                                           | The 1A SBGT s<br>not achieve the<br>The 1B SBGT s<br>secondary conta<br>Only the 1A SB<br>started. `g'<br>Neither train of s<br>system started.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | is the status of<br>ystem flow is i<br>desired hold ti<br>ystem is opera<br>ainment pressi<br>GT system sho<br>SBGT system | of the SBGT system?<br>n excess of the design<br>me on the charcoal filter<br>ating at a reduced flow a<br>ure.<br>build have started, invest<br>wet house<br>should have started, inv | flow rate for the<br>rs.<br>nd will not be ab<br>igate why the 1E<br>vestigate why the | system and will<br>le to maintain + hu<br>3 SBGT system<br>e 1 <b>ß</b> SBGT                   |
| roposed Answ                                                                                                                                                                                         | ver: B                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | The 1B SBGT<br>to maintain se                                                                                              | system is operating at a<br>condary containment pro                                                                                                                                    | a reduced flow a essure.                                                               | nd will not be able                                                                            |
| Explanation (Op                                                                                                                                                                                      | ptional): A.<br>C. & D.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | The design flo<br>Both SBGT tra<br>downscale.                                                                              | w rate for the system is<br>ins will start if both of th                                                                                                                               | 3000 - 6000 cfm<br>ese radiation mo                                                    | n.<br>Dinitors fail                                                                            |
| echnical Refe                                                                                                                                                                                        | rence(s):OP-20 S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TANDBY GAS                                                                                                                 | STREATMENT SYSTEM                                                                                                                                                                      | A SDI P-01B S                                                                          | BGT                                                                                            |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                            |                                                                                                                                                                                        | , 0021, 012, 0                                                                         | bai                                                                                            |

Δ

Learning Objective:

A3. Ability to monitor automatic operations of the STANDBY GAS TREATMENT SYSTEM including: (CFR: 41.7 / 45.7) A3.01 System flow 3.2 / 3.3

Question Source:

**Question History:** 

Bank # \_\_\_\_\_ (Note changes or attach parent) New \_\_\_\_X\_\_\_

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

55.41 \_\_7\_\_\_ 55.43

Comments:

Will 1000cfm be able to maintain a negative 0.25 inches of water vacuum?

| =>-401                                                                                                    | Sample V<br>Ques                                       | Vritten Examination<br>tion Worksheet                    | Form ES-401-6 (R8, S1)                |                  |  |
|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------|---------------------------------------|------------------|--|
| Examination Outline Cross-re                                                                              | eference: Level                                        | Tier #<br>Group #<br>K/A #<br>Importance Rating          | RO<br>2<br>1<br>218000 A4.07<br>_3.5_ | SRO<br><br>      |  |
|                                                                                                           |                                                        |                                                          |                                       |                  |  |
| Proposed Question: R62                                                                                    |                                                        |                                                          |                                       |                  |  |
| Proposed Question: R62<br>The unit is operating at 100%<br>A" SRV came ON. The follo                      | power, three minu<br>wing plant condition              | utes ago the white ligh<br>ons are present.              | t above the contro                    | I switch for the |  |
| Proposed Question: R62<br>The unit is operating at 100%<br>A" SRV came ON. The follo<br>Torus temperature | b power, three minu<br>wing plant condition<br>85° F a | utes ago the white ligh<br>ons are present.<br>nd steady | t above the contro                    | I switch for the |  |

10.97 Mibm /hr

The SRV is OPEN based on the white light indicating the pilot solenoid valve is open. Α.

The SRV is OPEN based on the white light indicating high tail pipe temperature. В.

C. The SRV is CLOSED and the "A" SRV acoustic monitor has failed.

D. The SRV is CLOSED and the uninterruptible power supply has lost power.

Proposed Ans: C Explanation (Optional): A.

The SRV is not open. There is no <del>upward trend on torus temperature</del> and level. FF/SF muss maleh and level.

В. The SRV is not open and the white light is acoustic monitor not temperature.

C. The acoustic monitor has failed and the SRV is closed.

D. This light will not illuminate on a loss of UPS.

Technical Reference(s):

AOP-36; SOLP-06

Proposed references to be provided to applicants during examination: None

SDLP-02J

Learning Objective: A4. Ability to manually operate and/or monitor in the control room: A4.07 ADS valve acoustical monitor noise: 3.5/3.8

Question Source:

Bank # Modified Bank # (Note changes or attach parent) New

**Question History:** Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | x |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.41<br>55.43                                               |   |

Comments:

| ES-401                                                                                                                                                                                            | Sample<br>Que                                                                 | Written Examination<br>stion Worksheet                                                                                                | Form                                                                                           | ES-401-6 (R8, S1)                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Examination Outline Cross-refere                                                                                                                                                                  | nce: Level                                                                    | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                       | RO<br>2<br>1<br>201001 2.1.7<br>_3.7_                                                          | SRO                                                                                   |
| Proposed Question: R63                                                                                                                                                                            |                                                                               |                                                                                                                                       |                                                                                                |                                                                                       |
| Control rods are being withdrawn<br>withdrawn from position 12 to 24 t<br>The system flow is constant at <del>59</del><br>system flow oscillates, and After th<br>gpm. Based on these indications | in accordanc<br>be following<br>gpm prior to<br>e control rod<br>what has occ | e with the sequence. V<br>control rod drive hydrio<br>control rod movement.<br>settles at position 24 th<br>curred to the control rod | Vhen control rod<br>dic system flow i<br>As the control r<br>e system flow-is<br>drive system. | I 26-27 is<br>indications occur.<br>od is moved the<br>steadies out at- <del>59</del> |
| <ul> <li>A. The scram outlet</li> <li>B. The control rod dr</li> <li>C. The in-service stand</li> <li>D. The insert direction</li> </ul>                                                          | valve for this<br>ive flow cont<br>bilizing valve<br>nal control va           | control rod has failed C<br>rol valve has failed OPI<br>s fail CLOSED. مستنسط<br>alve 122 has failed CLC                              | PEN.<br>EN.<br>DSED.                                                                           |                                                                                       |
| Proposed Answer: C. The in-se                                                                                                                                                                     | rvice stabilizi                                                               | ng valves fail CLOSED.                                                                                                                |                                                                                                |                                                                                       |
| Explanation (Optional): A. If<br>th<br>B. If<br>aı<br>D. If                                                                                                                                       | the scram ou<br>e core.<br>the valve fail<br>nd would stay<br>the 122 valve   | utlet valve failed OPEN<br>ed open then the flow v<br>v elevated.<br>e failed closed then the                                         | then the control<br>vould be much h<br>rod would not be                                        | rod would drift into<br>igher than 59 gpm<br>e able to move.                          |
| Technical Reference(s): S                                                                                                                                                                         | DLP03C; O                                                                     | P-25                                                                                                                                  |                                                                                                |                                                                                       |
| Proposed references to be prov                                                                                                                                                                    | /ided to app                                                                  | licants during examin                                                                                                                 | ation: None                                                                                    | )                                                                                     |
| Learning Objective: 2.<br>ju<br>in                                                                                                                                                                | 1.7 Ability to<br>dgments bas<br>strument inte                                | evaluate plant performa<br>ed on operating charac<br>rpretation.3.7/ 4.4                                                              | ance and make o<br>teristics / reactor                                                         | operational<br>r behavior / and                                                       |
| L                                                                                                                                                                                                 | O 1.05.a.6                                                                    |                                                                                                                                       |                                                                                                |                                                                                       |
| Question Source: Band M                                                                                                                                                                           | ank #<br>odified Banl                                                         | K#FITZPATRICK 20                                                                                                                      | 101011CRDC(                                                                                    | 012 <u>Rev.1</u>                                                                      |
| Assume the plant is operating at 1 closed.                                                                                                                                                        | 00% steady s                                                                  | state when the inservice                                                                                                              | CRDH stabilizi                                                                                 | ng valves fail                                                                        |
| The CRDH system flow will:                                                                                                                                                                        |                                                                               |                                                                                                                                       |                                                                                                |                                                                                       |
| a) Drop by approximately 6 g                                                                                                                                                                      | pm and rema                                                                   | ain steady during contro                                                                                                              | I rod movement                                                                                 | S.                                                                                    |
| a) Pice by approximately 4 a                                                                                                                                                                      | om but woul                                                                   | d oscillate during contro                                                                                                             | I rad movement                                                                                 | •                                                                                     |

c) Remain unchanged and would remain steady during control rod movements.

~ ~

d) Remain unchanged, but would oscillate during control rod movements.

Answer D

 Question History:
 Last NRC Exam

 (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

\_x\_

10 CFR Part 55 Content:

55.41 <u>6</u> 55.43 <u>\_\_\_\_</u>

| . <u> </u>                     |                                    |                                     |                               |                                                                                             | Sample Que:                                                                                                  | Written Examination<br>stion Worksheet                                                                                                                                                                                      | Fo                                                                                                                   | orm ES-401-6 (R8, S1                                                                                                                     |
|--------------------------------|------------------------------------|-------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Examir                         | nation O                           | utline C                            | cross-ref                     | erence:                                                                                     | Level                                                                                                        | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                             | RO<br>2<br>1<br>215004 K<br>_2.8_                                                                                    | SRO<br><br>1.06                                                                                                                          |
| Propos                         | ed Que                             | stion: R                            | 64                            |                                                                                             |                                                                                                              |                                                                                                                                                                                                                             |                                                                                                                      |                                                                                                                                          |
| Which obounda                  | one of t<br>iry, exte              | he follow<br>nds thre               | wing con<br>ough the          | nponent:<br>core an                                                                         | s forms t<br>Id is ancl                                                                                      | he source range moni<br>hored in the upper cor                                                                                                                                                                              | toring (SRM)<br>e grid.                                                                                              | system pressure                                                                                                                          |
|                                | A.<br>B.<br>C.<br>D.               | Drive<br>Shuttle<br>Dry Tu<br>Guide | Tube<br>e Tube<br>ıbe<br>Tube |                                                                                             |                                                                                                              |                                                                                                                                                                                                                             |                                                                                                                      |                                                                                                                                          |
| Propos                         | ed Ansv                            | ver:                                | C.                            | Dry Tu                                                                                      | ibe                                                                                                          |                                                                                                                                                                                                                             |                                                                                                                      |                                                                                                                                          |
| Explana                        | ation (O                           | ptional)                            | : A.<br>B.<br>C.<br>D.        | The dr<br>This is<br>The sh<br>This ty<br>The Dr<br>welded<br>upper o<br>In-core<br>dry tub | ive tube<br>inside th<br>uttle mo<br>be move<br>ty ube f<br>d at the b<br>core grid<br>guide tu<br>e from fl | engages the motor an<br>ne dry tube.<br>Ves inside the dry tube<br>s up and down on top<br>forms the pressure bout<br>oottom of the in-core in<br>and is anchored at th<br>ube is located below th<br>ow induced vibrations | ad moves the<br>e and has the<br>of the drive to<br>undary of the<br>strument hou<br>e upper core<br>he core plate a | detector / shuttle tube<br>detector attached.<br>ube.<br>reactor vessel and is<br>sing and goes to the<br>grid.<br>area and protects the |
| Technic                        | al Refe                            | rence(s                             | ):                            | SDLP-                                                                                       | 07B, 02/                                                                                                     | ۹.                                                                                                                                                                                                                          |                                                                                                                      |                                                                                                                                          |
| Propose                        | ed refer                           | ences to                            | o be prov                     | vided to                                                                                    | applican                                                                                                     | ts during examination                                                                                                                                                                                                       | : None                                                                                                               |                                                                                                                                          |
| Learnin                        | g Objec                            | tive:                               | K1. Kn<br>betwee<br>K1.06     | owledge<br>en SOUF<br>Reactor                                                               | e of the p<br>RCE RAI<br>vessel 2                                                                            | hysical connections a<br>NGE MONITORING (\$<br>2.8/ 2.8                                                                                                                                                                     | nd/or cause- e<br>SRM) SYSTE                                                                                         | effect relationships<br>M and the following:                                                                                             |
| Questio                        | n Sourc                            | e:                                  |                               | Bank #<br>Modifie<br>New                                                                    | ed Bank :                                                                                                    | # (No                                                                                                                                                                                                                       | ote changes o                                                                                                        | r attach parent)                                                                                                                         |
| Questio<br>(Optiona<br>the NRC | n Histor<br>al - Que<br>C; failure | y:<br>stions v<br>e to prov         | alidated<br>vide the          | Last NI<br>at the fa<br>informat                                                            | RC Exan<br>acility sin<br>ion will r                                                                         | n<br>ce 10/95 will generally<br>necessitate a detailed                                                                                                                                                                      | <br>/ undergo less<br>review of ever                                                                                 | rigorous review by<br>y question.)                                                                                                       |
| Questio                        | n Cogni                            | tive Lev                            | /el:                          | Memor<br>Compre                                                                             | y or Fun<br>ehensior                                                                                         | damental Knowledge<br>o or Analysis                                                                                                                                                                                         | X                                                                                                                    | · .                                                                                                                                      |
| 10 CFR                         | Part 55                            | Conter                              | nt:                           | 55.41<br>55.43                                                                              | _3, 7_                                                                                                       |                                                                                                                                                                                                                             |                                                                                                                      |                                                                                                                                          |
|                                |                                    |                                     |                               |                                                                                             |                                                                                                              |                                                                                                                                                                                                                             |                                                                                                                      |                                                                                                                                          |

| ES-401                                                |                               |                               | Sa                                    | ample V<br>Ques                        | Written Examination<br>stion Worksheet                | Form I                                        | ES-401-6 (R8, S1)               |
|-------------------------------------------------------|-------------------------------|-------------------------------|---------------------------------------|----------------------------------------|-------------------------------------------------------|-----------------------------------------------|---------------------------------|
| Examination O                                         | utline Cr                     | oss-refe                      | erence:                               | Level                                  | Tier #<br>Group #<br>K/A #<br>Importance Rating       | RO<br>2<br>_2<br>201003 K4.02<br>_3.8_        | SRO                             |
| Proposed Ques                                         | tion: R6                      | 5                             |                                       |                                        |                                                       |                                               |                                 |
| Control rod 34<br>control rod is u<br>rod is withdrav | -03 is s<br>uncoupl<br>vn?    | electec<br>le from            | and is b<br>the conti                 | eing w<br>rol rod                      | vithdrawn from posit<br>drive. What is the o          | ion 42 to position<br>expected respon         | n 48. This<br>se as the control |
| Α.                                                    | When                          | the con                       | trol rod i                            | s move                                 | ed the ROD DRIFT                                      | annunciator will a                            | alarm and the                   |
| В.                                                    | The co                        | ntrol ro                      | d positio                             | n indic                                | n 48.<br>cation will display po                       | sition 49 instead                             | of position 48                  |
| C.                                                    | tor full<br>The R             | out.<br>OD OV                 | ERTRAV                                | 'EL anı                                | nunciator will alarm                                  | and the rod posi                              | tion indication                 |
| D.                                                    | will be<br>The R(<br>will dis | blank.<br>DD OVI<br>play 49   | ERTRAV                                | 'EL anı                                | nunciator will alarm                                  | and the rod posi                              | tion indication                 |
| Proposed Ans                                          | wer:                          | The Re<br>indicat             | OD OVE<br>ion will b                  | RTRA'<br>e blani                       | VEL annunciator wil<br>k.                             | l alarm and the r                             | od position                     |
| Explanation (Op                                       | otional):                     | A.<br>B.&C.                   | The cont<br>normal.<br>The RPI        | trol rod<br>S will n                   | will not drift to positio<br>ot display position 49   | n 48. The drive wi                            | I function as                   |
| Technical Refer                                       | ence(s)                       | :                             | AOP-25                                |                                        |                                                       |                                               |                                 |
| Proposed refere                                       | ences to                      | be prov                       | rided to a                            | oplicant                               | ts during examination                                 | : None                                        |                                 |
| Learning Object                                       | ive:                          | K4. Kno<br>and/or i<br>uncoup | owledge o<br>interlocks<br>led rod 3. | of CON <sup>-</sup><br>which<br>8/ 3.9 | TROL ROD AND DRI<br>provide for the follow            | VE MECHANISM<br>ing: K4.02 Detecti            | design feature(s)<br>on of an   |
| Question Source                                       | e:                            |                               | Bank #<br>Modified<br>New             | Bank #                                 | # (No                                                 | ote changes or atta                           | ach parent)                     |
| Question Histon<br>Optional - Ques<br>he NRC; failure | y:<br>stions va<br>to prov    | alidated<br>ide the i         | Last NRO<br>at the fac<br>nformatio   | C Exam<br>ility sind<br>n will n       | n<br>ce 10/95 will generally<br>ecessitate a detailed | <br>/ undergo less rigo<br>review of every qu | prous review by<br>estion.)     |
| Question Cognit                                       | ive Leve                      | el:                           | Memory<br>Compret                     | or Fund<br>nension                     | damental Knowledge<br>1 or Analysis                   | x                                             |                                 |
|                                                       | Content                       | •                             | 55 41                                 | 7                                      |                                                       |                                               |                                 |

| ES-401                                                   |                                                     | Sa                                                      | mple Written Examinatio<br>Question Worksheet                    | n                                            | Form ES-401-6 (R8                                   |
|----------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------|----------------------------------------------|-----------------------------------------------------|
| Examination Ou                                           | Itline Cros                                         | ss-reference: L                                         | .evel                                                            | RO                                           | SRO                                                 |
|                                                          |                                                     |                                                         | Lier #                                                           | 2                                            |                                                     |
|                                                          |                                                     |                                                         | K/A #                                                            | 205000                                       | K2 02                                               |
|                                                          |                                                     |                                                         | Importance Ratin                                                 | g _2.5_                                      | _2.7_                                               |
| Proposed Ques<br>The B Loop of<br>The unit has be        | tion: R69<br><b>f RHR h</b><br><del>en operat</del> | es been opera                                           | Hung in Shudown coc<br>cooling for the last 3 hou                | sling for the<br><del>Irs. The "B" loc</del> | last 3 hours.<br>Op of shutdown cooli               |
| is in operation.<br>effect <sub>x</sub> if any will      | Maintena<br>this have                               | nce has request<br>on the "B" loop                      | ed to take Bus 11500 ou<br>shutdown cooling valves               | It of service for s.                         | inspection. What                                    |
| Α.                                                       | This will I                                         | have no effect.                                         | There are no "B" loop sh                                         | utdown cooling                               | valves that are effe                                |
| B.                                                       | This will of                                        | disable the "B" P                                       | IHR heat exchanger byp                                           | ass valve (MO)                               | /- <b>4</b> 6B). This valve n                       |
| C.                                                       | be manua<br>This will o                             | ally positioned to<br>disable the <del>"B" lo</del>     | o maintain the desired Ri<br><del>xop-</del> shutdown cooling su | PV water tempe<br>ction <u>outboard</u>      | erature.<br>isolation valve (MO\                    |
| D                                                        | 17) and p                                           | prevent isolation                                       | of the penetration on a v                                        | alid isolation si                            | ignal.                                              |
| D.                                                       | however                                             | it will not preven                                      | t isolation of the penetra                                       | ction <u>inboard</u> is<br>tion on a valid i | isolation valve (MOV-                               |
| Proposed Answ                                            | er: D. T<br>(I                                      | his will disable t<br>MOV-18) howe∨<br>solation signal. | he "B" loop shutdown co<br>er it will not prevent isola          | oling suction <u>in</u><br>ttion of the pene | <u>board</u> isolation valve<br>etration on a valid |
| Explanation (Op                                          | tional): A                                          | . Bus 1150<br>valve                                     | 00 feeds MCC 156 which                                           | feeds the inbo                               | ard SDC isolation                                   |
|                                                          | B                                                   | 3. This valve                                           | e is feed from bus 11600                                         | / MCC                                        |                                                     |
|                                                          | C                                                   | . The outbo                                             | oard valve is DC                                                 |                                              |                                                     |
| Technical Refer                                          | ence(s):                                            | SDLP - 1                                                | 0 RHR and SDLP-710 Fi                                            | igure 1                                      |                                                     |
| Proposed refere                                          | nces to b                                           | e provided to ap                                        | plicants during examinat                                         | tion: None                                   |                                                     |
| Learning Object                                          | ive: K<br>o                                         | 2 Knowledge of<br>perated valves 2                      | electrical power supplies                                        | s to the followin                            | ig: K2.02 Motor                                     |
| Question Source                                          | 9:                                                  | Bank #<br>Modified<br>New                               | Bank #X                                                          | (Note changes                                | or attach parent)                                   |
| Question History<br>(Optional - Ques<br>the NRC; failure | /:<br>stions vali<br>to provid                      | Last NRC<br>dated at the faci<br>e the informatior      | Exam<br>hty since 10/95 will gene<br>will necessitate a detail   | rally undergo le<br>ed review of ev          | ess rigorous review b<br>very question.)            |
| Question Cognit                                          | ive Level:                                          | Memory of Compreh                                       | or Fundamental Knowled<br>ension or Analysis                     | geX                                          |                                                     |
|                                                          |                                                     |                                                         |                                                                  |                                              |                                                     |

| ES-401                               | Sample Que | Written Examination<br>stion Worksheet          | Form E                              | ES-401-6 (R8, S1) |
|--------------------------------------|------------|-------------------------------------------------|-------------------------------------|-------------------|
| Examination Outline Cross-reference: | Level      | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>2<br>2<br>219000 K6.02<br>2.5 | SRO<br>           |
| Proposed Question: R72               |            |                                                 |                                     |                   |

The "A" loop of residual heat removal (RHR) system has been operating in torus cooling with the "A" RHR pump at 7500 gpm. A moment ago annunciator RHR A LOGIC POWER FAILURE alarmed. What effect does this have on the "A" loop of the RHR system?

- A. The "A" RHR pumps trips and the "A" RHR loop pressure decreases to less than 90 psig.
- B. The RHR test & torus cooling valve (10MOV-34A) will automatically close and the RHR loop pressure will increase to approximately the pump shutoff head pressure.
- C. The RHR minimum flow valve (10MOV-16A) move from the OPEN position to the CLOSED position.
- D. The "A" loop of RHR will continue to run in torus cooling. The pump minimum flow valve will not open and isolation capability for selected "A" loop valves has been lost.

Proposed Answer: D. The "A" loop of RHR will continue to run in torus cooling however, pump minimum flow protection and loss of isolation capability for selected "A" loop valves have been lost.

Explanation (Optional): A.

- The RHR will not trip on loss of logic power. It will not be able to be remotely tripped or started.
- B. The 34A valve will not close and in addition the automatic isolation has been lost for this valve.
- C. The RHR minimum flow will already be closed because flow is at 7500 g.p.m. (>1250gpm).
- D. AOP-22, states that the minimum flow valve will go closed. In this case the minimum flow valve is already closed and therefore, will not open. In addition the automatic PCIS auto isolation will be lost on several valves.

Technical Reference(s): AOP-22, OP-13B, ARP 09-3-1-23

Proposed references to be provided to applicants during examination: None

Learning Objective:

K6.Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI:TORUS/SUPPRESSION POOL COOLING MODE: K6.02 D.C. electrical power 2.5\*/ 2.8\*

SDLP-71B, Objective 1.09.a.5, Given a set of plant conditions, describe the effect that a loss of each of the DC electrical systems may have on the RHR system.

Question Source:

Bank # \_\_\_\_\_ Modified Bank # \_\_\_\_\_ (Note changes or attach parent)
New \_\_\_\_X\_\_\_

Facility comment - May be beyond RO level of knowledge. (Facility has Izarning objective that covers area) Question History:

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

 Question Cognitive Level:
 Memory or Fundamental Knowledge

 Comprehension or Analysis
 \_\_\_\_\_\_X\_\_\_\_

10 CFR Part 55 Content:

55.41 <u>7</u> 55.43 <u></u>

| ES-401                              | Sample<br>Que | Written Examination stion Worksheet | Form ES-401-6 (R8, S1) |       |  |
|-------------------------------------|---------------|-------------------------------------|------------------------|-------|--|
| Examination Outline Cross-reference | : Level       | <b></b>                             | RO                     | SRO   |  |
|                                     |               | Group #<br>K/A #                    | 2<br>2<br>256000 K3.04 |       |  |
|                                     |               | Importance Rating                   | _3.6_                  | _3.7_ |  |

#### **Proposed Question: R75**

The plant is operating at 65% power with all Condensate and Condensate Booster Pumps and both RFPs in service. There are no systems or components inoperable. The A Condensate Pump trips due to an electrical fault. Which one of the following is the expected result of this trip?

- A. The operating pumps assume the additional load and the RFPs are not affected.
- B. The A Condensate Booster Pump trips on interlock, but the RFPs are not affected.
- C. The A Condensate Booster Pump trips on interlock causing RFPs to trip on low suction pressure.
- D. Condensate Booster Pump suction pressure decreases causing RFPs to trip on low suction pressure.
- Proposed Answer: A. The operating pumps assume the additional load and the RFPs are not affected.

Explanation (Optional):

Technical Reference(s): N/A

Proposed references to be provided to applicants during examination: None

Learning Objective: K3. Knowledge of the effect that a loss or malfunction of the REACTOR CONDENSATE SYSTEM will have on following: K3.04, Reactor Feedwater System (3.6/3.7)

SDLP-33, EO 1.05.b.2 & 1.14.c

**Question Source:** 

Bank # FITZPATRICK 25601012B02C Rev.3

The plant is operating at 65% power with all Condensate and Condensate Booster Pumps and both RFPs in service. There are no systems or components inoperable. The A Condensate Pump trips due to an electrical fault. Which one of the following is the expected result of this trip?

- a) The operating pumps assume the additional load and the RFPs are not affected.
- b) The A Condensate Booster Pump trips on interlock, but the RFPs are not affected.
- c) The A Condensate Booster Pump trips on interlock causing RFPs to trip on low suction pressure.
- d) Condensate Booster Pump suction pressure decreases causing RFPs to trip on low

### suction pressure.

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_X\_\_ Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 <u>7</u> 55.43 <u>----</u>

|                                            | 8                                                                                                                               | ample Written Ex<br>Question Work                                                               | amination<br>sheet                                                                     | Form ES                                                        | 5-401-6 (R8, S1)        |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------|
|                                            |                                                                                                                                 | ······································                                                          |                                                                                        | 4 - 4 - M - 4                                                  |                         |
| Examination Outline                        | Cross-reference:                                                                                                                | Level<br>Tier #<br>Group #<br>K/A #<br>Importan                                                 | F<br>-<br>2<br>ace Rating _                                                            | RO<br>2<br>272000 K1.10<br>_3.4                                | SRO<br>                 |
| Proposed Question:                         | R79                                                                                                                             |                                                                                                 |                                                                                        |                                                                | \                       |
| With the plant oper<br>exhaust radiation s | ating normally ini<br>ignals from the R                                                                                         | tially, which one<br>eactor Bldg. Abo                                                           | of the following                                                                       | g occurs follow<br>or monitors?                                | ing valid hi-hi         |
| A. (1. Re<br>2. SE<br>3. A                 | <b>ss (s)</b><br>eactor Bldg. <del>ventila</del><br>3GT initiates with F<br>basic supply and e                                  | <b>45</b><br>t <del>ion isolatee at the</del><br>leactor Bldg. sucti<br>xhaust fan lineup       | <del>: inlet and exhau</del><br>ion valves openii<br>remains in servie                 | <del>ist dampers</del><br>ng<br>ce                             | - Z supply              |
| B. (1. Re<br>2. SE<br>3. Su                | eactor Bldg. ventila<br>3GT initiates with F<br>upply and exhaust t                                                             | tion isolates at the<br>leactor Bldg. sucti<br>rans all trip                                    | e inlet and exhau<br>ion valves openii                                                 | ist dampers<br>ng                                              | - Refuel                |
| C. (1. Re<br>2. SE<br>3. A<br>4. Co        | eactor Bldg. ventila<br>3GT initiates with F<br>basic supply and e<br>omponents in CAD                                          | tion isolates at the<br>leactor Bldg. sucti<br>xhaust fan lineup<br>. PCP, and H2/O2            | e inlet and exhau<br>ion valves openii<br>remains in servio<br>systems isolate         | ist dampers<br>ng<br>ce                                        | re right c              |
| D. (1. Re<br>2. SE<br>3. Su<br>4. Co       | eactor Bldg. ventila<br>3GT initiates with F<br>upply and exhaust f<br>omponents in CAD,                                        | tion isolates at the<br>leactor Bldg. sucti<br>ans all trip<br>PCP and H2/O2                    | e inlet and exhau<br>on valves openir<br>systems isolate                               | est dampers<br>ng                                              |                         |
| Proposed Answer:                           | A. 1. Read<br>2. SBG<br>3. A bas                                                                                                | tor Bldg. ventilation<br>T initiates with Re<br>sic supply and ext                              | on isolates at the<br>actor Bldg. suction<br>naust fan lineup i                        | inlet and exhai<br>on valves openi<br>remains in servi         | ust dampers<br>ng<br>ce |
| Explanation (Optior                        | nal):These radiatio                                                                                                             | n monitors will pe                                                                              | rform the followir                                                                     | ng actions.                                                    |                         |
|                                            | 1.         SBGT s           2.         66AOV           3.         66AOV           4.         66FN-5           5.         66FN-1 | tarts and opens ir<br>100A / 66AOV-10<br>101A / 66AOV10<br>A, 5B, and 5C SU<br>2A or 6FN-12B Bl | nlet and exhaust<br>00B SUPPLY ISC<br>1B EXHAUST IS<br>IPPLY FANS 2 o<br>ELOW 369' RUN | dampers<br>DLATION CLOS<br>OLATION CLO<br>G 3 RUNNING<br>INING | SED<br>SED              |
|                                            | These radiation normal ventilation                                                                                              | monitors do not is<br>on lineup is in serv                                                      | solate other com<br>vice for mixing th                                                 | ponents. In ad<br>le RB environm                               | dition the<br>ent.      |
| rechnical Reference                        | (s):AOP-15, ISOLA<br>VENTILATION                                                                                                | TION VERIFICAT<br>AND COOLING S                                                                 | TION AND RECO<br>YSTEM* OP-51/                                                         | VERY; REACT<br>A and SDLP-o1                                   | OR BUILDING<br>B & 66A. |
|                                            |                                                                                                                                 |                                                                                                 |                                                                                        |                                                                |                         |
| <sup>2</sup> roposed references            | to be provided to a                                                                                                             | pplicants during e                                                                              | examination: N                                                                         | lone                                                           |                         |

 $\checkmark$ 

between RADIATION MONITORING SYSTEM and the following: K1.10 Reactor building refuel floor: 3.4/ 3.6

**Question Source:** 

Bank # FitzPatrick Requalification Bank 2043 Modified Bank # \_\_\_\_\_ (Note changes or attach parent) New \_\_\_\_\_

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_X\_\_\_ Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 \_\_7, 9\_ 55.43 \_\_\_\_

| ES-401                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sam<br>(                                                                                                                                                                                                                                                          | ble Written Examination<br>Question Worksheet                                                                                                             | Form                                                                                                | ES-401-6 (R8, S1)                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| Examination Outline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Cross-reference: Le                                                                                                                                                                                                                                               | vel<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                    | RO<br>2<br>3<br>234000 K1.04<br>_3.3_                                                               | SRO<br><br>3.6_                                                |
| Proposed Question: I                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 786                                                                                                                                                                                                                                                               |                                                                                                                                                           |                                                                                                     |                                                                |
| At which point in the fannunciator first occu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | wing Core Alterations<br>following Core Alterations<br>Ir?                                                                                                                                                                                                        | on scenario would activatio                                                                                                                               | on of the ROD OL                                                                                    | JT BLOCK                                                       |
| The Mode Sw<br>All control roo<br>There are no<br>The only hois<br>Core<br>1.<br>Core<br>2.<br>A fue<br>3.<br>The F<br>4.<br>The f<br>5.<br>The Bod Block first or                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | vitch is in REFUEL.<br>ds are fully inserted.<br>other-Rod Blocks in e<br>it in use is the Main Gr<br>dian in Progress<br>control Rod is selected<br>assembly is grappled<br>Refuel Platform is drive<br>uel assembly is lowered<br>CO5-operator-attempt<br>SCO I | ffect.<br>apple Hoist.<br>I in the Fuel Pool and raise<br>on over the core.<br>ad into its assigned location<br>is to withdraw the selected               | he following<br>ed to Full-Up.<br>n.<br>control rod.                                                | actions have occurrent                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                   |                                                                                                                                                           |                                                                                                     |                                                                |
| A. The least of th | Daded Main Grapple H<br>Refuel Platform is drive                                                                                                                                                                                                                  | oist reaches Full-Up in the<br>n over the core.                                                                                                           | Fuel Pool.                                                                                          |                                                                |
| C. The M<br>D. The c                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Aain Grapple Hoist sta<br>perator attempts to wi                                                                                                                                                                                                                  | rts to lower the fuel assem<br>thdraw the selected contro                                                                                                 | bly.<br>I rođ                                                                                       |                                                                |
| Proposed Answer:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | B. The Refuel                                                                                                                                                                                                                                                     | Platform is driven over the                                                                                                                               | core.                                                                                               |                                                                |
| Explanation (Optional                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ): A. The rod blo<br>over the co<br>C. This will be<br>D. In Refuel yo<br>bridge over                                                                                                                                                                             | ck occurs when a control re<br>re with a hoist loaded or the<br>a rod block however, not t<br>bu are allow to withdrawal of<br>the core and mast down the | od is selected and<br>e main grapple no<br>he first one.<br>one control rod, h<br>here would be a r | d the bridge is<br>ot full up.<br>owever with the<br>od block. |
| Technical Reference(                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | s): SDLP-08B                                                                                                                                                                                                                                                      |                                                                                                                                                           |                                                                                                     |                                                                |
| Proposed references                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | to be provided to appli                                                                                                                                                                                                                                           | cants during examination:                                                                                                                                 | None                                                                                                |                                                                |
| Learning Objective:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | K1. Knowledge of th<br>between FUEL HAN<br>45.7 to 45.8) K1.04                                                                                                                                                                                                    | e physical connections an<br>IDLING EQUIPMENT and<br>†Reactor manual control s                                                                            | d/or cause- effect<br>the following: (CF<br>ystem: 3.3 / 3.6                                        | t relationships<br>FR: 41.2 to 41.9 /                          |
| Question Source:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Bank #                                                                                                                                                                                                                                                            | INPO 8767                                                                                                                                                 |                                                                                                     |                                                                |
| At which point in the fo<br>annunciator first occur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | bliowing Core Alteratio<br>? (1C05B, A-6)                                                                                                                                                                                                                         | n scenario would activation                                                                                                                               | n of the ROD OU <sup>-</sup>                                                                        | T BLOCK                                                        |

<

Scenario:

-The Mode Switch is in REFUEL.

-All control rods are fully inserted.

-One control Rod is selected.

-There are no other Rod Blocks in effect.

-The only hoist in use is the Main Grapple Hoist.

-A fuel assembly is grappled and raised to Full-Up in the Fuel Pool.

-The Refuel Platform is driven over the core.

-The fuel assembly is lowered into its assigned location.

- The 1C05 operator attempts to withdraw the selected control rod.

Rod Block first occurs when ...

the Refuel Platform is driven over the core.

the loaded Main Grapple Hoist reaches Full-Up in the Fuel Pool. the Main Grapple Hoist starts to lower the fuel assembly.

the 1C05 operator attempts to withdraw the selected control rod. Reference: ...234000.K4.01

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | x |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.412<br>55.43                                              |   |

Comments:

SDLP-08, figure S08-012.dwg may be incorrect. The second logic path from the left should require a control rod not full in with a second control rod selected.

| ES-401                               | Sample N<br>Ques | Written Examination<br>stion Worksheet          | Form ES-401-6 (R8, S1)               |         |  |
|--------------------------------------|------------------|-------------------------------------------------|--------------------------------------|---------|--|
| Examination Outline Cross-reference: | Level            | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>2<br>3<br>288000 K1.02<br>3.4_ | SRO<br> |  |

#### Proposed Question: R87

Secondary containment (reactor building to atmosphere) differential pressure is being maintained at a negative 0.28 inches water with the following line up.

FN-5A

FN-5B

Main Supply Fan Main Supply Fan Main Supply Fan Below Refuel Floor Exhaust Fan

Below Refuel Floor Exhaust Fan

Refuel Floor Exhaust Fan Refuel Floor Exhaust FAn FN-5C STANDBY FN-12A DPERATING FN-12B\$TANDBY FN-13A OPERATING FN-13B\$TANDBY

**OPERATING** 

**OPERATING** 

If the Refuel Floor Exhaust fan FN-13A tripped on overcurrent what effect would this have on secondary containment?

- Α. The main supply fans will automatically trip to maintain a negative secondary containment differential pressure.
- B. The refuel floor exhaust fan FN-13B would automatically start to maintain a negative secondary containment differential pressure.
- The below refuel floor exhaust fan FN-12B would automatically start to maintain a C. negative secondary containment differential pressure.
- D. The below refuel floor exhaust fan FN-13B must be manually started to maintain a negative secondary containment differential pressure.

C. B. The bolow refuel floor exhaust fan FN-12B would automatically start to-**Proposed Answer:** maintain a negative secondary containment differential pressure.

Explanation (Optional): A.

- CB.
- The supply fans will automatically trip if both below refuel floor exhaust fans are off, not the above refuel floor fans. This fan will automatically start if the other refuel floor exhaust fan trips not the below-refuel floor exhaust fan. (starts on low Flow of wing fan) D.
  - The start of FN-12B is an automatic start not a manual start.

moonion fans Technical Reference(s):SDLP-66A

Proposed references to be provided to applicants during examination: None

Learning Objective:

K1. Knowledge of the physical connections and/or cause- effect relationships between PLANT VENTILATION SYSTEMS and the following: (CFR: 41.2 to 41.9 / 45.7 to 45.8) K1.02 Secondary containment 3.4/3.4

| Question Source:                                                                        | Bank #<br>Modified Bank # (No<br>NewX                                                                    | te changes or attach parent)                                      |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Question History:<br>(Optional - Questions validated<br>the NRC; failure to provide the | Last NRC Exam<br>at the facility since 10/95 will generally<br>information will necessitate a detailed r | _<br>undergo less rigorous review by<br>eview of every question.) |
| Question Cognitive Level:                                                               | Memory or Fundamental Knowledge<br>Comprehension or Analysis                                             | X *                                                               |
| 10 CFR Part 55 Content:                                                                 | 55.41 <u>9</u><br>55.43 <u></u>                                                                          |                                                                   |

Comments:

Will the damper open and the fan start fast enough to prevent a secondary containment isolation?  $46^{2}$ 

|                                                                                                                                                                                                                                |                                                                                                                                                                              | Sample<br>Que                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Written Examination<br>stion Worksheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                           | orm ES-401-6 (R8, S1)                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Examination Outline Cr                                                                                                                                                                                                         | oss-refere                                                                                                                                                                   | ence: Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | RO<br>3<br>2.1.19<br>3.0_                                                                                 | SRO                                                                                          |
| Proposed Question: R8                                                                                                                                                                                                          | 9                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                           |                                                                                              |
| A valid Group II isolation<br>sump isolation valve. E<br>Group II isolation status                                                                                                                                             | n signal h<br>Base on th<br>S.                                                                                                                                               | as occurred.<br>is information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | All Group II valves clos what color will be indic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ed except o<br>ated on the                                                                                | ne drywell floor drain<br>EPIC computer for                                                  |
| A. RED<br>B. GREEN<br>C. GRAY<br>D. <del>DLUE</del> -                                                                                                                                                                          | N<br>MAGE                                                                                                                                                                    | NTA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                           |                                                                                              |
| Proposed Answer:                                                                                                                                                                                                               | В. С                                                                                                                                                                         | REEN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                           |                                                                                              |
| Explanation (Optional):                                                                                                                                                                                                        | A. If                                                                                                                                                                        | one line is no                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ot isolated. Both valves                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | in one line                                                                                               |                                                                                              |
| Tophnical Deference (a)                                                                                                                                                                                                        | C. If<br>D. <del>T</del>                                                                                                                                                     | no isolation s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | signal is present<br>SEPIC does no<br>USD(cy Decomposition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <i>t have e</i><br><i>Ler</i> .                                                                           | ne is CLOSED.<br>mough into to come                                                          |
| Technical Reference(s):<br>Proposed references to                                                                                                                                                                              | C. If<br>D. <del>T</del><br>: S                                                                                                                                              | in no isolation s<br>there is no BL<br>DLP-66A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | signal is present<br>SEPIC does no<br>display provincion:<br>Display provincion:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | t have e                                                                                                  | ne is CLOSED.<br>enough into to come                                                         |
| Technical Reference(s)<br>Proposed references to<br>Learning Objective:                                                                                                                                                        | C. If<br>D. <del>T</del><br>: S<br>be provid<br>Ability to<br>system of                                                                                                      | in no isolation s<br>here is no BL<br>DLP-66A<br>ed to applicar<br>use plant com<br>r component s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ignal is present<br>EPIC does no<br>مرعامی المعالی<br>hts during examination:<br>nputer to obtain and eva<br>status. RO 3.0/ SRO 3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <i>F have e</i><br><i>F have e</i><br><i>Vone</i><br>None<br>aluate parar                                 | ne is CLOSED.<br>200 John in the Source                                                      |
| Technical Reference(s)<br>Proposed references to<br>Learning Objective:<br>Question Source:                                                                                                                                    | C. If<br>D. <del>T</del><br>: S<br>be provid<br>Ability to<br>system of<br>M<br>N                                                                                            | There is no isolation s<br>There is no BL<br>DLP-66A<br>ed to applicar<br>use plant com<br>r component s<br>ank #<br>lodified Bank<br>lew                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The second seco | <i>te changes</i>                                                                                         | ne is CLOSED.<br>عدم سولم <i>زید کی</i> کے مسط<br>netric information on<br>or attach parent) |
| Technical Reference(s)<br>Proposed references to<br>Learning Objective:<br>Question Source:<br>Question History:<br>(Optional - Questions va<br>he NRC; failure to provi                                                       | C. If<br>D. <del>T</del><br>D. <del>T</del><br>Se provid<br>Ability to<br>system of<br>B<br>N<br>N<br>L<br>alidated at<br>ide the inf                                        | The isolation s<br>There is no BL<br>SDLP-66A<br>ed to applicar<br>use plant com<br>r component s<br>ank #<br>lodified Bank<br>lew<br>ast NRC Exar<br>the facility sir<br>ormation will r                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | The second seco | <i>te</i> changes<br>undergo leseview of even                                                             | netric information on<br>or attach parent)<br>ss rigorous review by<br>ery question.)        |
| Technical Reference(s)<br>Proposed references to<br>Learning Objective:<br>Question Source:<br>Question History:<br>(Optional - Questions va<br>the NRC; failure to provi<br>Question Cognitive Leve                           | C. If<br>D. <del>T</del><br>D. <del>T</del><br>Se provid<br>Ability to<br>system of<br>B<br>N<br>N<br>Li<br>alidated at<br>ide the info<br>el: N                             | in his alterist<br>in o isolation s<br>here is no BL<br>BDLP-66A<br>ed to applicar<br>use plant com<br>r component s<br>ank #<br>lodified Bank<br>lew<br>ast NRC Exar<br>the facility sir<br>ormation will r<br>lemory or Fun<br>omprehension                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | The second seco | Le changes                                                                                                | netric information on<br>or attach parent)<br>ss rigorous review by<br>ery question.)        |
| Technical Reference(s)<br>Proposed references to<br>Learning Objective:<br>Question Source:<br>Question History:<br>(Optional - Questions va<br>the NRC; failure to provi<br>Question Cognitive Leve<br>10 CFR Part 55 Content | C. If<br>D. <del>T</del><br>D. <del>T</del><br>: S<br>be provid<br>Ability to<br>system of<br>System of<br>B<br>N<br>L<br>alidated at<br>ide the infe<br>el: N<br>C<br>t: 55 | in isolation s<br>ino isolation s<br>inc isolation s<br>inc isolation s<br>isolation s<br>isolation s<br>isolation s<br>isolation s<br>isolation<br>isolation s<br>isolation s<br>isolatisolation s<br>isolation s<br>isolation s | The second seco | <i>L have e</i><br><i>ler</i> .<br>None<br>aluate parar<br>0<br>te changes<br>undergo les<br>eview of eve | netric information on<br>or attach parent)<br>ss rigorous review by<br>ery question.)        |

ļ

.

| ES-401                                                                                                                                           | Question Worksheet                                                     | Form ES-401-6 (R8, S                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------|
| Examination Outline Cross-reference:                                                                                                             | Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating               | RO     SRO      3       1.1.22       2.8 |
| Proposed Question: R90                                                                                                                           | alast                                                                  |                                          |
| Preparations are being made to startu                                                                                                            | the Unit. The following conditio                                       | ns exist:                                |
| Reactor Mode SwitchShutdownReactor Pressure125 psigReactor Head BoltsFully tensioneControl rodsAll rods are IN                                   | d                                                                      |                                          |
| The reactor is in the:                                                                                                                           |                                                                        |                                          |
| <ul> <li>A. Refueling Mode.</li> <li>B. Hot Shutdown Mode.</li> <li>C. Cold Shutdown Mode.</li> <li>D. Startup/Hot Standby Mode.</li> </ul>      | lode.                                                                  |                                          |
| Proposed Answer: B. Hot Sl                                                                                                                       | nutdown Mode                                                           |                                          |
| Explanation (Optional): The mode swi<br>greater than 2                                                                                           | tch is in the Shutdown position at 12F. Therefore hot shutdown.        | nd reactor water temperature is          |
| Technical Reference(s): TS De                                                                                                                    | finition section                                                       |                                          |
| Proposed references to be provided to                                                                                                            | applicants during examination:                                         | None                                     |
| Learning Objective: 2.1.22<br>NET-2                                                                                                              | Ability to determine Mode of Ope<br>38.3, EO 1.03.g Mode of Operati    | eration<br>ion                           |
| Question Source: Bank                                                                                                                            | ŧ INPO 7976                                                            |                                          |
| Preparations are presently being made<br>Reactor Mode Switch: Shutdown<br>Reactor Pressure: 125 psig<br>All reactor vessel head closure bolts ar | to startup the Unit One reactor.<br>e fully tensioned All rods are IN. | The following conditions exist:          |
| The reactor is in:                                                                                                                               |                                                                        |                                          |
| Mode 3<br>Mode 2<br>Mode 4<br>Mode 5                                                                                                             |                                                                        |                                          |
| Question History: Last N                                                                                                                         | RC Exam                                                                | Indergo less rigorous review by          |

the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

\_x\_

10 CFR Part 55 Content:

 55.41
 \_\_\_\_\_

 55.43
 \_\_\_\_\_

 55.45
 13
 NET-238.3, EO 1.03.g Mode of Operation

| ES-401                               | Sample<br>Que | Written Examination<br>stion Worksheet | Form ES-401-6 (R8, S1) |     |  |
|--------------------------------------|---------------|----------------------------------------|------------------------|-----|--|
| Examination Outline Cross-reference: | Level         | Tier #                                 | RO                     | SRO |  |
|                                      |               | Group #<br>K/A #                       | 2.2.2.                 |     |  |
|                                      |               | Importance Rating                      | 4                      |     |  |

#### Proposed Question: R91

A plant startup is in progress and reactor water recirculation pump speed is 30%. The average power range monitor readings are listed below:

Channel A 2.3% Channel B 4.0% Channel C 5.0% Channel D 4.7% Channel E 2.4% Channel F 5.1%

If the reactor mode switch is placed in RUN, which one of the following describes the ability to raise power with control rods and/or recirc. flow?

- A. Power can be raised using control rods or reactor water recirculation flow.
- B. Power can be raised using control rods only.
- C. Power can be raised using reactor water recirculation only.
- D. Power cannot be raised.

Proposed Answer: D. Power cannot be raised.

Explanation (Optional): Under these conditions if the mode switch is placed in RUN the APRMs will give a rod block and feedwater flow is less than 20% so that the RWR pump speed can not be raised.

Technical Reference(s): None

Proposed references to be provided to applicants during examination: None

Learning Objective: Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels. RO 4.0 / SRO 3.5

Question Source: Bank # INPO 7674

A plant startup is in progress and Recirc. pump speed is 30%. APRM readings are as listed below:

Channel A 2.3% Channel B 4.0% Channel C 5.0% Channel D 4.7% Channel E 2.4% Channel F 5.1% If the Reactor Mode Switch is placed in RUN, which one of the following describes the ability to raise power with control rods and/or recirc. flow?

- A. Power can be raised using control rods or reactor water recirculation flow.
- B. Power can be raised using control rods only.
- C. Power can be raised using reactor water recirculation only.
- D. Power cannot be raised.

Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

55.41 <u>6</u>

|                                                                                                   | Question Worksheet                                                                                                 | Form ES-401-6 (R8, S1)                                            |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Examination Outline Cross-refere                                                                  | ence: Level<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                     | RO SRO<br>3<br>2.2.23<br>2.6                                      |
| Proposed Question: R92                                                                            |                                                                                                                    |                                                                   |
| The standby liquid control system<br>is the NCO required to perform in                            | n is being removed from service for plant<br>support of this limiting condition of o                               | anned maintenance. What action peration (LCO)?                    |
| A. Perform an indep<br>B. Will sign for the L<br>C. Prepares the LCC<br>D. Review the assoc       | endent verification of the LCO.<br>CO entry and exit.<br>D tracking sheet.<br>ciated plant tagging request.        |                                                                   |
| Proposed Answer: D. F                                                                             | Review the associated plant tagging r                                                                              | equest.                                                           |
| Explanation (Optional): A. T<br>B. T<br>C. T                                                      | This is performed by the control room<br>This is performed by the SM or CRS<br>This is performed by the controller | supervisor.                                                       |
| Technical Reference(s):ODSO-34<br>TRACKIN                                                         | TECH SPEC LCO AND MAINTENA                                                                                         | NCE RULE UNAVAILABILITY                                           |
| Proposed references to be provid                                                                  | ed to applicants during examination:                                                                               | None                                                              |
| Learning Objective: Ability to                                                                    | track limiting conditions for operation                                                                            | s. RO 2.6 / SRO 3.8                                               |
| Question Source: B<br>M                                                                           | ank #<br>lodified Bank # (No<br>lewX                                                                               | e changes or attach parent)                                       |
| Question History: L.<br>(Optional - Questions validated at<br>the NRC; failure to provide the inf | ast NRC Exam<br>the facility since 10/95 will generally<br>ormation will necessitate a detailed re                 | _<br>undergo less rigorous review by<br>eview of every question.) |
| Question Cognitive Level: N<br>C                                                                  | lemory or Fundamental Knowledge<br>comprehension or Analysis                                                       | X                                                                 |
| 10 CFR Part 55 Content: 55                                                                        | 5.4110_<br>5.43                                                                                                    |                                                                   |
| <b>D</b> ,                                                                                        |                                                                                                                    |                                                                   |

· |

| ES-401                                                                                   | Sample V<br>Ques | Written Examination<br>stion Worksheet          | For                        | rm ES-401-6 (R8, S1) |
|------------------------------------------------------------------------------------------|------------------|-------------------------------------------------|----------------------------|----------------------|
| Examination Outline Cross-reference:                                                     | Level            | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br>3<br>2.2.12<br>_3.0_ | SRO                  |
| Proposed Question: R93<br>Surveillance test ST-24J, "RCIC Flow<br>condition are present. | Rate and         | Inservice Test (IST),"                          | is being perfo             | rmed. The following  |

| RHR Loop A               |            | 9                |
|--------------------------|------------|------------------|
| Suppression Peel Cooling | Operating- | IN Torus Cooling |
| RCIC Turbine speed       | 2525 rpm   |                  |
| RCIC discharge Pressure  | 1500 psig  |                  |
| RCIC Flow                | 400 gpm    |                  |
| Torus Level              | 13.9 Feet  |                  |
| roius remperature        | 0/ F       |                  |

Based on these conditions, what operator actions are required?

- A. The test must be terminated and torus temperature reduced to less than 85°F within 24 hours.
- B. The test must be terminated and execute EOP-4 to reduce torus water level.
- C. Increase turbine speed by throttling 13MOV-30, test valve to CST.
- D. Reduce RCIC discharge pressure by throttling 13MOV-30, test valve to CST.

Proposed Answer: **b**, Reduce RCIC discharge pressure by throttling 13MOV-30, test valve to CST.

Explanation (Optional): A. Torus temperature must be less than 105 F and reduced to less than 95F within 24 hours.

- B. Torus water level is in the normal band and EOP-4 does not have to be entered.
- C. Turbine speed is above 2200 rpm and increasing turbine speed would further increase pressure.
- D. The pressure is above the design pressure of 1320psig

Technical Reference(s): ST-24J, "RCIC Flow Rate and Inservice Test (IST)

Proposed references to be provided to applicants during examination: None

Learning Objective: 2.2.12 Knowledge of surveillance procedures.

Question Source:

Bank # \_\_\_\_\_ (Note changes or attach parent) New X

Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge

## Comprehension or Analysis

\_\_X\_\_

10 CFR Part 55 Content:

55.41 \_\_10\_ 55.43 \_\_\_\_

|                                                      |                                                           |                                                                | Sample V<br>Ques                      | Written Examination<br>stion Worksheet                                                           | Fe                                                                    | orm ES-401-6 (R8, \$                            |
|------------------------------------------------------|-----------------------------------------------------------|----------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|-------------------------------------------------|
| Examination C                                        | Dutline Cross-re                                          | ference:                                                       | Level                                 | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                  | RO<br>3<br>2.3.4<br>_2.5_                                             | SRO                                             |
| Proposed Que                                         | estion: R94                                               |                                                                |                                       |                                                                                                  |                                                                       |                                                 |
| An operator w<br>outage. The c<br>for the operato    | ill receive 700 r<br>pperator has an<br>or to perform thi | nrem ove<br>accumula<br>s task?                                | r the nex<br>ated TEI                 | t 3 weeks performing<br>DE dose this year of <del>30</del><br>24                                 | a special tasl<br><del>)00</del> mrem.  W<br><b>100</b>               | k during the refuelin<br>/hat action is require |
| A.<br>B.                                             | No action is r<br>Only the Rad                            | equired, 4                                                     | he operation N                        | ator's TEDE doco will -<br>Manager must approve                                                  | remain below<br>the operator                                          | 5000 mrem this year exceeding the               |
| C.                                                   | Only the Ope                                              | rations ar                                                     | ose. <del>guie</del><br>nd Radia      | tion Protection Manag                                                                            | er must appr                                                          | ove the operator                                |
| D.                                                   | exceeding the<br>The Radiation<br>approve the c           | e adminis<br>n Protectio<br>perator e                          | trative T<br>on Mana<br>exceedin      | EDE dose <del>guideline o</del><br>liger, <del>Plant Manager</del> ar<br>g the administrative TI | <del>i 4000 mrem.</del><br>nd Site Execu<br>EDE dose <del>, gui</del> |                                                 |
| Proposed Ans                                         | wer: <del>D:</del><br>A.                                  | T <del>he Rí</del><br>O <del>fficer</del><br><del>dose g</del> | adiation<br>must ap                   | Protection Manager, F<br>prove the operator ex<br>of 4000 mrem.                                  | Plant Manage<br>cooding the a                                         | r and Site Executive<br>administrative TED      |
| Explanation (C                                       | Optional): The s<br>require<br>Exect                      | ite TEDE<br>red by the<br>utive Offic                          | dose gu<br>Radiati<br>cer. AP-        | uideline is 4000 mrem<br>on Protection Manage<br>07.05 pp. 22                                    | / year. Appro<br>r, Plant Mana                                        | oval to exceed this i<br>ger and Site           |
| Technical Refe                                       | erence(s):AP-0                                            | 7.05 pp. 2                                                     | $\frac{1}{2}$                         | mge - below 40                                                                                   | D                                                                     |                                                 |
| Proposed refe                                        | rences to be pr                                           | ovided to                                                      | applicar                              | K_<br>nts during examination                                                                     | : None                                                                |                                                 |
| Learning Obje                                        | ctive: Know<br>perm                                       | ledge of i<br>ssible lev                                       | radiation<br>rels in ex               | exposure limits and c<br>ccess of those authoriz                                                 | ontamination<br>ed. RO 2.5 /                                          | control / including<br>SRO 3.1                  |
| Question Sour                                        | ce:                                                       | Bank #<br>Modifie<br>New                                       | ed Bank                               | # (No                                                                                            | ote changes o                                                         | or attach parent)                               |
| Question Histo<br>(Optional - Que<br>the NRC; failui | ory:<br>estions validate<br>re to provide the             | Last N<br>d at the fa<br>e informat                            | RC Exar<br>acility sir<br>tion will r | n<br>nce 10/95 will generally<br>necessitate a detailed                                          | y undergo les<br>review of eve                                        | s rigorous review by<br>ry question.)           |
| Question Cogr                                        | nitive Level:                                             | Memor<br>Compr                                                 | y or Fun<br>ehensio                   | damental Knowledge<br>n or Analysis                                                              | x                                                                     |                                                 |
| 10 CFR Part 5                                        | 5 Content:                                                | 55.41<br>55.43                                                 | _10                                   |                                                                                                  |                                                                       |                                                 |
|                                                      |                                                           | 00.40                                                          |                                       |                                                                                                  |                                                                       |                                                 |

|                                                                                                                                           | Sample Written Examir<br>Question Workshe                                                                                               | nation For<br>et                                                           | rm ES-401-6 (R8, S1)                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Examination Outline Cross-refe                                                                                                            | rence: Level<br>Tier #<br>Group #<br>K/A #<br>Importance F                                                                              | RO<br>3<br>2.3.10<br>Rating2.9_                                            | SRO                                                                                                      |
| Proposed Question: R 95<br>In accordance with                                                                                             | T.S. which of the follow                                                                                                                | ng is the minimum                                                          | menproper control (5)                                                                                    |
| The unit is operating at 100% p<br>contacts the control room to rep<br>protection was contacted and th<br>protection department stated th | ower with Hydrogen injection i<br>ort that the heater bay door is<br>loy stated that dose rates in th<br>at they would close the door a | n service when a non<br>open and unattended<br>at area are 1100 mrer<br>nd | licensed operator for any<br>Badiation access, ble an<br>n/hr. The radiation with a radi<br>dose mercess |
| <ul> <li>A. post the door as</li> <li>B. post the door as</li> <li>C. lock the door as</li> <li>D. lock the door as</li> </ul>            | s a radiation area.<br>s a high radiation area.<br>nd post the door as a high radi<br>nd post the door as a very high                   | ation area.<br>a radiation area.                                           | of 11 00mmen /1                                                                                          |
| Proposed Answer: C.                                                                                                                       | lock the door and post the do                                                                                                           | or as a high radiation a                                                   | area.                                                                                                    |
| Explanation (Optional): Dose ra<br>should                                                                                                 | tes in the area of the moisture<br>be locked and controlled as a                                                                        | e separator are 1100 n<br>high rad area.                                   | nrem/hr. The door                                                                                        |
| Technical Reference(s):                                                                                                                   | AP-07.06 HIGH RADIATIC                                                                                                                  | N AREA CONTROL                                                             | ., TS 6.11                                                                                               |
| Proposed references to be prov                                                                                                            | ided to applicants during exan                                                                                                          | nination: None                                                             |                                                                                                          |
| Learning Objective:                                                                                                                       | 2.3.11, Ability to perform proc<br>radiation and guard against p                                                                        | edure to reduce exces<br>ersonnel exposure.                                | ssive levels of                                                                                          |
| Question Source:                                                                                                                          | Bank #<br>Modified Bank #<br>NewX_                                                                                                      | (Note changes or                                                           | r attach parent)                                                                                         |
| Question History:<br>(Optional - Questions validated<br>the NRC; failure to provide the i                                                 | Last NRC Exam<br>at the facility since 10/95 will g<br>nformation will necessitate a d                                                  | enerally undergo less<br>etailed review of every                           | rigorous review by<br>y question.)                                                                       |
| Question Cognitive Level:                                                                                                                 | Memory or Fundamental Kno<br>Comprehension or Analysis                                                                                  | wledgeX                                                                    |                                                                                                          |
| 10 CFR Part 55 Content:                                                                                                                   | 55.41<br>55.434                                                                                                                         |                                                                            | 1                                                                                                        |
|                                                                                                                                           |                                                                                                                                         |                                                                            |                                                                                                          |

]

| ES-401                                                   |                                                       | Sampl<br>QL                                                        | e Written Examination<br>Jestion Worksheet                                                                 | For                                                         | rm ES-401-6 (R8, S1                                        |
|----------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|
| Examination Ou                                           | tline Cross-refe                                      | erence: Leve                                                       | el<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                      | RO<br>3<br><br>2.4.24<br>_3.3_                              | SRO                                                        |
| Proposed Ques                                            | lion: R99                                             |                                                                    |                                                                                                            |                                                             |                                                            |
| A loss of coolan<br>depressurizes d<br>water to the dryv | t accident has jue to a loss of t<br>well coolers and | ust occurred.<br>he RBCLC pu<br>I what is the b                    | If the reactor building clause<br>imps can the RBCLC systems for your answer?                              | osed loop cooli<br>stem be utilized                         | ing (RBCLC) system<br>d to provide cooling                 |
| Α.                                                       | NO supplin<br>failure (                               | g RBCLC to o                                                       | Irywell loads could result                                                                                 | in high therma                                              | al piping stress and                                       |
| В.                                                       | NO supplin<br>result ir                               | g emergency                                                        | service water (ESW) or l                                                                                   | RBCLC to the o                                              | drywell loads could                                        |
| C.                                                       | YES the ES                                            | N system will                                                      | automatically inject into                                                                                  | the RBCLC he                                                | ader and supply                                            |
| D                                                        | YES the ES<br>supply                                  | N system mus<br>drywell coolin                                     | st be manually lined up to<br>g loads without jeopardiz                                                    | o inject into the<br>ing primary co                         | ent.<br>RBCLC header and<br>ntainment.                     |
| Proposed Answe                                           | er: B.                                                | suppling eme<br>could result i                                     | ergency service water (E<br>n a water harmmer and je                                                       | SW) or RBCLC<br>copardize prima                             | to the drywell loads                                       |
| Explanation (Op                                          | tional): AOP-11<br>LOCA is<br>drywell<br>coolers      | , cautions tha<br>s prohibited b<br>and jeopardiz<br>is a manually | at suppling ESW or reinje<br>ecause this could cause<br>re primary containment.<br>alignment not automatic | ecting RBCLC t<br>failure of the R<br>In addition, ES<br>s. | to drywell after<br>BCLC piping inside<br>W to the drywell |
| Technical Refere                                         | ence(s):                                              | AOP-11, Los                                                        | s of Reactor Building Clo                                                                                  | sed Loop Coo                                                | ling to a                                                  |
| Proposed referen                                         | nces to be provi                                      | ided to applic                                                     | ants during examination:                                                                                   | None                                                        | Joney                                                      |
| Learning Objecti                                         | ve: Knowled                                           | dge of loss of                                                     | cooling water procedure                                                                                    | s. RO 3,3/SF                                                | RO 3.7                                                     |
| Question Source                                          | :                                                     | Bank #<br>Modified Ban<br>New                                      | k # (No                                                                                                    | te changes or                                               | attach parent)                                             |
| Question History<br>(Optional - Ques<br>the NRC; failure | :<br>tions validated a<br>to provide the ir           | Last NRC Exa<br>at the facility s<br>oformation wil                | am<br>since 10/95 will generally<br>I necessitate a detailed r                                             | _<br>undergo less r<br>eview of every                       | igorous review by question.)                               |
| Question Cogniti                                         | ve Level:                                             | Memory or Fu<br>Comprehensi                                        | undamental Knowledge<br>on or Analysis                                                                     | _x                                                          |                                                            |
| 10 CFR Part 55 (                                         | Content:                                              | 55.4110_<br>55.43                                                  | -                                                                                                          |                                                             |                                                            |
| Comments:                                                |                                                       |                                                                    |                                                                                                            |                                                             |                                                            |

A JOCA has occurred concept with a loss on Offite Nower. The CRS directs therities supplying ESW to he DW Colers par NoP-11. Which Owe of he following bost describer tilly this ORDER Action is not appropriate lacen les and they: norm Ren rent there A. Supplying ESW to DW Cooler SV Woulds Require shothing down own prin of EDGS B. SSW with other statis has cleaning a huncherely sligners to supply the Dhe Coolers due to he loss of HACKE C. Supplying 55W to DW costres under hose conditions cutis me falme of RBCCC Riping due to water harmiel D. Supplying E.S.L. to DL redaces unter Age conditions my mose & Repio Repuetion of De presence ansing Repretense to men bracker to year.

# Draft FitzPatrick Written Exam With Facility Comments

**SRO Questions** 

| ES-401                                                                                                                                                                                                                        | Sample<br>Que                                              | Written Examination<br>stion Worksheet                                                                                                | Fo                                                                                    | orm ES-401-6 (R8, S1)                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Examination Outline Cross-reference                                                                                                                                                                                           | : Level                                                    | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                       | RO<br><br>295013 A                                                                    | SRO<br>1<br>1<br>K3.02<br>3.8_                                                                                  |
| Proposed Question: S6                                                                                                                                                                                                         |                                                            |                                                                                                                                       |                                                                                       |                                                                                                                 |
| The plant is operating normally at 100<br>been manually initiated to perform ST<br>(IST)." The suppression pool water te<br>FAILURE annunciator has alarmed.<br>be 112°. Which one of the following<br>reason for the action. | 9% power<br>-4N, "HP<br>emperatur<br>The opera<br>statemen | : The High Pressure Co<br>CI Quick-Start, In servi-<br>re is increating. TORU<br>ator observes the suppl<br>its describes the next re | colant Injection<br>ce, and Trans<br>IS BULK TEN<br>ression pool we<br>equired action | on (HPCI) system has<br>sient Monitoring Test<br>/IP HI OR RTD<br>water temperature to<br>n to be taken and the |

- A. Secure HPCI testing and operate all available suppression pool cooling to ensure that under the worst case accident conditions, sufficient net positive suction head would be available to core spray and the residual heat removal pumps.
- B. Initiate an orderly power reduction to ensure that the suppression pool is maintained within the heat capacity temperature limit.
- C. Insert a manual scram to ensure that if a reactor blowdown were to occur, stable steam condensation will occur during the blowdown.
- D. Start water transfer from the suppression pool to condenser hotwell and establish makeup to the suppression pool from the CST's to increase the heat capacity of the suppression pool.
- ANSWER: C. Insert a manual scram to ensure that stable steam condensation will occur during a reactor blow down.

Explanation (Optional): Technical Specification require a manual scram if suppression pool temperature is greater than 110 °F. This will ensure that the suppression pool will have stable steam condensation during the blowdown.

Technical Reference(s): ARP09-3-1-14, Technical Specification basis 3.7

Proposed references to be provided to applicants during examination: EOP-4, W/O entry conditions

Learning Objective: AK3. Knowledge of the reasons for the following responses as they apply to HIGH SUPPRESSION POOL TEMPERATURE: (CFR: 41.5 / 45.6) AK3.02 Limiting heat additions 3.6 / 3.8

| Question Source: | Bank #                 |   |                                 |  |  |
|------------------|------------------------|---|---------------------------------|--|--|
|                  | Modified Bank #<br>New | X | (Note changes or attach parent) |  |  |

Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis



The EOP-4, Primary Containment requires a manual scram as well as TS, TS is memory an EOP is Comprehension.

10 CFR Part 55 Content:

55.41 \_\_5\_\_ 55.43 \_(b)(2)\_

| ES-401                               | Sample Ques | Written Examination<br>stion Worksheet          | Foi                 | m ES-401-6 (R8, S1)              |
|--------------------------------------|-------------|-------------------------------------------------|---------------------|----------------------------------|
| Examination Outline Cross-reference: | Level       | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br><br>295014 Ał | SRO<br>1_<br>1_<br>(2.11<br>3.7_ |

Proposed Question: S7

The reactor is operating at 100% power when the following annunciator alarms, RWR MG A DRV MTR BKR TRIP. You notice reactor power is decreasing? the "A" reactor recirculation pump speed has decreased to zero and feedwater flow and steam flow are decreasing. The operator has received several periodic LPRM upscales and downscale alarms on the full core display and hae the LPRMupscale and downscale annunciators on the 00-5 panel. Based on this information what actions are required and why must they be taken?

- A. Reduce the "B" recirculation pump speed to 90% to minimize excessive jet pump differential pressures.
- B. Start the "A" recirculation pump to provide increased margin to thermal-hydraulic instability.
- C. A manual reactor scram is required because of thermal-hydraulic instability.
- D. Determine if the MCPR Safety Limit has been exceeded and manually scram the reactor if the safety limit has been exceeded.
- Proposed Answer: C. A manual reactor scram is required because thermal-hydraulic instability is occurring.

Explanation (Optional): The operating condition after a recirculation pump trip will place the unit near the exclusion region. AOP-8, "Loss of Coolant Flow," requires the operators to monitor for stability and if indications for thermal-hydraulic instability. is identified to manually scram the reactor. The periodic LPRM upscale and downscale alarms indicate that the core is unstable A manual scram is required.

- A. Running pump must be less than 80%
- B. Core instabilities are occurring must manually scram.
- C. Indication of instability and manual scram is required
- D. If a safety limit is exceeded the reactor must be shutdown. There is no requirement to scram. TS 6.7

AK2. Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following: (CFR: 41.7 / 45.8) AK2.11

Technical Reference(s): AOP-8 Loss of Coolant Flow, AOP-32Unexplained Reactivity Change

Recirculation flow control 3.6 / 3.7

Proposed references to be provided to applicants during examination: None

Learning Objective:

Question Source:

| ce:  | Bank #<br>Modified Bank #<br>New | (Note changes or attach parent) |
|------|----------------------------------|---------------------------------|
| ory: | Last NRC Exam                    |                                 |

**Question History:**
(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

**Question Cognitive Level:** 

Memory or Fundamental Knowledge Comprehension or Analysis

55.41

55.43

\_7\_

(b)(5)\_

10 CFR Part 55 Content:

Comments:

TS page 133, 3.5.J Basis states that the APRMs will prevent the MCPR safety limit from being exceeded. I do not think that this is correct. For in-phase thermal-hydraulic instability the APRM system may prevent the safety limit from being exceeded. However, for out of phase thermal-hydraulic instability I do not believe that the APRM system will protect the safety limit unless you have a thermal-hydraulic instability scram.

|                                                                            |                                                                                                   | Question Workshee                                                                                                                                                               | nation<br>et                                                                                                                               | Form ES-401-6 (R8, S                                                                                                         |
|----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| Examination C                                                              | utline Cross-referend                                                                             | e: Level<br>Tier #<br>Group #<br>K/A #<br>Importance F                                                                                                                          | RO<br><br>295016<br>Rating                                                                                                                 | SRO<br>1<br>1<br>AK2.01<br>4.5_                                                                                              |
| Proposed Que                                                               | stion: S9                                                                                         |                                                                                                                                                                                 |                                                                                                                                            |                                                                                                                              |
| The unit has ju<br>line isolation va<br>operator has re<br>be taken, in ac | st experienced a spu<br>alves; a reactor scrar<br>ported that there is h<br>cordance with statior | rious fast closure of the "A<br>n; and isolation of the high<br>eavy black smoke in the c<br>procedures, to achieve a                                                           | " inboard and "D"<br>pressure coolant in<br>able spreading roo<br>plant shutdown?                                                          | outboard main steam<br>njection system. An<br>m. What actions mus                                                            |
| Α.                                                                         | Evacuate the contro                                                                               | I room and station operate                                                                                                                                                      | ors at the auxiliary s                                                                                                                     | shutdown panels and                                                                                                          |
| В.                                                                         | Evacuate the control                                                                              | l room and station operate                                                                                                                                                      | ors at the auxiliary s                                                                                                                     | shutdown panels and                                                                                                          |
| C.                                                                         | Do NOT evacuate t<br>10MOV-25A(B) and<br>these valves                                             | ne control room, place the<br>10MOV-27A(B) to BYPAS                                                                                                                             | keylock switches o<br>SS to prevent inadv                                                                                                  | n the 09-3 panel for<br>ertent actuation of                                                                                  |
| D.                                                                         | Do NOT evacuate t<br>10MOV-25A(B) and<br>these valves.                                            | ne control room, place the 10MOV-27A(B) to NORM                                                                                                                                 | keylock switches o<br>AL to prevent inadv                                                                                                  | n the 09-3 panel for<br>vertent actuation of                                                                                 |
| Proposed Ansv                                                              | ver: B. Eva<br>shu<br>swit                                                                        | cuate the control room an<br>down panel and alternate<br>ches in LOCAL to prevent                                                                                               | d station operators<br>shutdown panel ar<br>spurious operation                                                                             | at the auxiliary<br>nd place isolation<br>of equipment.                                                                      |
| Explanation (O                                                             | otional): AOP-43 req<br>in the cable<br>equipment.<br>in LOCAL.<br>individual co<br>is via the co | uires that the control room<br>spreading room (2) verba<br>All three conditions are m<br>This will isolate and remov<br>mponents. If the switches<br>ntrol room and not the rem | be evacuated if (1)<br>I report of a fire (3)<br>et. The isolation so<br>re all the automatic<br>s are in the remote<br>note shutdown pane | ) a significant fire exis<br>unexplained loss of<br>vitches must be place<br>actions of the<br>positions then control<br>el. |
| Technical Refe                                                             | rence(s): AOI                                                                                     | 2-43, SDLP-10 RHR                                                                                                                                                               |                                                                                                                                            |                                                                                                                              |
| Proposed refere                                                            | ences to be provided                                                                              | to applicants during exam                                                                                                                                                       | ination: None                                                                                                                              |                                                                                                                              |
| _earning Objec                                                             | tive: AK2. Knowle<br>ABANDONN<br>shutdown pa                                                      | edge of the interrelations b<br>IENT and the following: (C<br>anel: Plant-Specific 4.4* /                                                                                       | etween CONTROL<br>CFR: 41.7 / 45.8) A<br>4.5*                                                                                              | ROOM<br>K2.01 Remote                                                                                                         |
| Question Sourc                                                             | e: Ban<br>Moo<br>New                                                                              | < #<br>ified Bank #X_                                                                                                                                                           | (Note changes                                                                                                                              | or attach parent)                                                                                                            |
| Question Histor                                                            | y: Last                                                                                           | NRC Exam                                                                                                                                                                        |                                                                                                                                            |                                                                                                                              |

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

\_\_x\_\_

10 CFR Part 55 Content:

55.41 \_\_7\_\_ 55.43 \_\_5\_\_

| ES-401                                                                                                                                                                                                                                              | Sample<br>Qu                                                                                                                                                                        | e Written Examination<br>estion Worksheet                                                                                                                                                                                 | Form                                                                                                                                   | ES-401-6 (R8, S1)                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Examination Outline Cross                                                                                                                                                                                                                           | -reference: Leve                                                                                                                                                                    | I<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                      | RO<br><br>295025 2.2.2                                                                                                                 | SRO<br>1<br>2<br>4.1_                                                                         |
| Proposed Question: S 13                                                                                                                                                                                                                             |                                                                                                                                                                                     |                                                                                                                                                                                                                           |                                                                                                                                        |                                                                                               |
| Which one of the following<br>Specifications?                                                                                                                                                                                                       | conditions would r                                                                                                                                                                  | esult in a safety limit viol                                                                                                                                                                                              | ation in accorda                                                                                                                       | nce with Technical                                                                            |
| <ul> <li>A. A high water level i<br/>drops to 125.6 inch</li> <li>B. During reactor start<br/>valves to open. Th</li> <li>C. A spurious turbine i<br/>flux. Reactor pressivalves.</li> <li>D. A recirculation pum<br/>minimum fraction o</li> </ul> | n the scram discha<br>es and water level<br>up at 30% power,<br>is results in the rea<br>rip occurs from 10<br>ure peaked at 1070<br>p trips. The reactor<br>f limiting critical po | arge volume which result<br>is being controlled by H<br>a problem in the EHC Pr<br>actor pressure decreasin<br>0% power. The reactor<br>0 psig and is being main<br>or operator checks the pr<br>ower ratio (MFLCPR) to b | ts in a scram. Re<br>PCI.<br>ressure Set caus<br>g to 850 psig.<br>scram occurred<br>tained at 920 psi<br>rocess computer<br>be 0.998. | eactor water level<br>ses the bypass<br>from APRM high<br>ig by the bypass<br>r and finds the |
| Proposed Answer: C.                                                                                                                                                                                                                                 | A spurious tu<br>occurred from<br>() and is being r                                                                                                                                 | rbine trip occurs from 10<br>APRM high flux. React<br>maintained at 920 psig b                                                                                                                                            | 0% power. The<br>or pressure peak<br>y the bypass val                                                                                  | reactor scram<br>ced at 1070 psig<br>ves.                                                     |
| Explanation (Optional): A.<br>B.<br>C.<br>D.                                                                                                                                                                                                        | Reactor scrar<br>Reactor did n<br>TS Bases 1.1<br>scram occurs<br>case the expe<br>valves.<br>MFLCPR has<br>safety limit ba                                                         | n was on a valid signal<br>ot operate above 25% p<br>.C states that a safety lir<br>from other than the exp<br>ected scram signal is 10%<br>not exceeded the opera                                                        | ower at less thar<br>nit violation will b<br>ected reactor scr<br>% closure of the<br>ting limit MCPR,                                 | 785 psig.<br>be assumed if the<br>ram signal. In this<br>Turbine stop<br>therefore the        |
| Technical Reference(s):                                                                                                                                                                                                                             | TS 1.1. safety                                                                                                                                                                      | limits                                                                                                                                                                                                                    |                                                                                                                                        |                                                                                               |
| Proposed references to be                                                                                                                                                                                                                           | provided to applica                                                                                                                                                                 | ints during examination:                                                                                                                                                                                                  | None                                                                                                                                   |                                                                                               |
| Learning Objective:                                                                                                                                                                                                                                 | 2.2.22 Knowle<br>(CFR: 43.2 / 4                                                                                                                                                     | edge of limiting condition<br>5.2) RO 3.4/SRO 4.1                                                                                                                                                                         | s for operations                                                                                                                       | and safety limits.                                                                            |
| Question Source:                                                                                                                                                                                                                                    | Bank #<br>Modified Bank<br>New                                                                                                                                                      | . # (Not                                                                                                                                                                                                                  | e changes or att                                                                                                                       | ach parent)                                                                                   |
| Question History:<br>Optional - Questions valida<br>he NRC; failure to provide t                                                                                                                                                                    | Last NRC Exa<br>ted at the facility si<br>he information will                                                                                                                       | m<br>ince 10/95 will generally<br>necessitate a detailed re                                                                                                                                                               | _<br>undergo less rig<br>view of every qu                                                                                              | orous review by<br>uestion.)                                                                  |
| Question Cognitive Level:                                                                                                                                                                                                                           | Memory or Fu<br>Comprehensio                                                                                                                                                        | ndamental Knowledge<br>on or Analysis                                                                                                                                                                                     | X                                                                                                                                      |                                                                                               |

10 CFR Part 55 Content:

| ES-401                               | Sample<br>Que: | Written Examination<br>stion Worksheet          | Fo                  | rm ES-401-6 (R8, S1)           |
|--------------------------------------|----------------|-------------------------------------------------|---------------------|--------------------------------|
| Examination Outline Cross-reference: | Level          | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br><br>295023 Ak | SRO<br>1<br>1<br>(2.07<br>3.9_ |

### Proposed Question: S 24

The unit was shutdown six days ago to begin a refueling outage. The refueling cavity is flooded and irradiated fuel moves are in progress. Both doors in the drywell personnel air lock have been open to support drywell inspections. Both standby gas treatment trains have just been declared inoperable because they failed to start during a routine surveillance. What actions must be taken in reference to the irradiated fuel moves?

A. Fuel moves must be stopped until both trains of the standby gas treatment system are returned to service because both standby gas trains are needed to maintain reactor building at a negative 0.25 inch water pressure.

at least

- B. Fuel moves must be stopped until<sup>4</sup>one train of the standby gas treatment system is operable because one standby gas train is capable of maintaining the reactor building at a negative 0.25 inch water pressure.
- C. Fuel moves must be stopped until one drywell personnel air lock door is secure closed to reestablish primary containment.
- D. Fuel moves may continue for the next seven days. If at least one train of standby gas treatment is not returned to an operable condition within this seven day period then fuel movement must be stopped.
- Proposed Answer: B. Fuel moves must be stopped until one train of the standby gas treatment system is operable because one standby gas train is capable of maintaining the reactor building at a negative 0.25 inch water pressure.

### Explanation (Optional):

- A. TS 3.7.B Basis only one train of SGT is required to maintain a 0.25 inch water pressure.
- C. Primary containment is not required in this condition.
- D. TS 3.7.B.2 requires that no irradiated fuel movement take place unless at least one train of SGT available.

Technical Reference(s): TS Proposed references to be provided to applicants during examination: None

Learning Objective: AK2. Knowledge of the interrelations between REFUELING ACCIDENTS and the following: (CFR: 41.7 / 45.8) AK2.07 Standby gas treatment/FRVS 3.6 / 3.9

Question Source: Bank # Modified Bank #

Modified Bank # \_\_\_\_\_ (Note changes or attach parent) New \_\_\_\_X\_\_\_\_ **Question History:** 

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_X\_\_\_ Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 \_\_7\_\_\_ 55.43 \_\_2\_\_\_

| ES-401                                                                                                                    |                                                                                                                           |                                                                           |                                                                          | Sample V<br>Ques                                          | Written Examination<br>stion Worksheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                   | Form ES-401-6 (R8, S                                                                                |
|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Examination O                                                                                                             | outline                                                                                                                   | Cross-re                                                                  | ference:                                                                 | Level                                                     | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | RO<br><br>295014                                  | SRO<br>1<br>1<br>4 AK2.08<br>3.5_                                                                   |
| Proposed Que:<br>The plant i<br>The unit is at 5<br>the core. In ac<br>control rod by _<br>determines tha<br>unknown. The | stion: {<br><b>s &gt; pe</b><br><del>5% pe</del><br>cordar<br><u>(1)</u><br>t the co<br><del>unit</del> _<br><b>plant</b> | 526<br>wor, star<br>nce with <i>i</i><br>. While<br>ontrol roo<br>(2), in | <b>55%, ±</b><br>ting up,<br>AOP-27,<br>being ins<br>dean noi<br>accorda | when a p<br>"Control<br>serted the<br>be more<br>nce with | د جارعی<br>peripheral control rod (0<br>Rod Drift," the operator<br>e control rod stops at po<br>ed from position 24 and<br>technical specifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2-27) is c<br>is FIRST<br>osition 24<br>the caus  | bserved drifting out of<br>required to insert the<br>. Further investigation<br>e of the failure is |
| Α.                                                                                                                        | (1)<br>(2)                                                                                                                | perfor<br>may c<br>perfor                                                 | ming an<br>ontinue t<br>med                                              | individua<br>o operate                                    | I rod scram<br>e provided a new shutde                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | own marg                                          | gin calculation is                                                                                  |
| B.                                                                                                                        | (1)<br>(2)                                                                                                                | using<br>must t                                                           | the rod e<br>be brougi                                                   | mergenc<br>ht to cold                                     | y in notch override swit<br>shutdown in 24 hours                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ch                                                |                                                                                                     |
| C.                                                                                                                        | (1)<br>(2)                                                                                                                | inserti<br>must t<br>the ca                                               | ng a mar<br>be shutdo<br>use of th                                       | nual reac<br>own and o<br>e failure                       | tor scram<br>can not be restarted unl<br>was not a failed control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ess inves<br>rod drive                            | stigation has shown that<br>collet housing                                                          |
| D.                                                                                                                        | (1)<br>(2)                                                                                                                | using t<br>can no                                                         | the rod e<br>ot be rest                                                  | mergenc<br>arted unt                                      | y in notch override swite<br>il the NRC approves res                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ch<br>start.                                      |                                                                                                     |
| Proposed Answ                                                                                                             | er:                                                                                                                       | В.                                                                        | (1)<br>(2)                                                               | using th<br>must be                                       | e rod emergency in not<br>brought to cold shutdo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ch overric<br>wn in 24                            | de switch<br>hours                                                                                  |
| Explanation (Op                                                                                                           | otional)                                                                                                                  | : A.                                                                      | The firs<br>emerge<br>control<br>There is                                | st methoc<br>ency in sv<br>is "STUC<br>s no prov          | l of inserting the control<br>vitch, not individual scra<br>K" then the reactor must<br>ision to allow continued                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | rod is by<br>Im switch<br>at be shu<br>l operatio | using the control rod<br>I. In addition, if a<br>tdown in 24 hours.<br>In.                          |
|                                                                                                                           |                                                                                                                           | В.                                                                        | Correct                                                                  |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | •                                                 |                                                                                                     |
|                                                                                                                           |                                                                                                                           | C&D.                                                                      | A manu<br>drifting.                                                      | al reacto<br>There is                                     | r scram is required if mession of the second s | ore than ifting.                                  | one control rod is                                                                                  |
|                                                                                                                           |                                                                                                                           | In addii                                                                  | tion, this                                                               | is a perip                                                | pheral rod and little pow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | er chang                                          | e is expected.                                                                                      |
| echnical Refere                                                                                                           | ence(s                                                                                                                    | ):AOP-23<br>REACT                                                         | 7, control<br>IVITY Cl                                                   | l rod drift;<br>HANGE*                                    | ; AOP-32, "UNEXPLAIN<br>" TS 3.3.A.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | IED/UNA                                           | NTICIPATED                                                                                          |
| roposed refere                                                                                                            | nces to                                                                                                                   | be prov                                                                   | ided to a                                                                | pplicants                                                 | during examination:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | None                                              |                                                                                                     |
| earning Objecti                                                                                                           | ve:                                                                                                                       | AK2. Ki<br>ADDITI                                                         | nowledge<br>ON and t                                                     | e of the ir<br>the follow                                 | nterrelations between IN<br>/ing: (CFR: 41.7 / 45.8)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | IADVER1<br>AK2.08 F                               | TENT REACTIVITY                                                                                     |

Evel: Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

55.41 \_\_7\_\_ 55.43 \_\_2, 5\_

| S-401                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Sample<br>Que                                                                                                                                                                                                                                                                                                                       | Written Examination<br>stion Worksheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Form                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Form ES-401-6 (R8, S1)                                                                                                                                                                                                                                                                |  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Examination Outlir                                                                                                                                                    | ne Cross-referend                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ce: Level                                                                                                                                                                                                                                                                                                                           | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | RO<br><br>295019 2.4.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SRO<br>1<br>2<br>1<br>3.6_                                                                                                                                                                                                                                                            |  |  |
| Proposed Question                                                                                                                                                     | n: S32                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                       |  |  |
| The plant was ope<br>occurred. The follo                                                                                                                              | erating at 100% po<br>owing annunciato                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ower with a<br>ors are alarr                                                                                                                                                                                                                                                                                                        | normal plant line up. S                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Several minutes a                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ago a transient                                                                                                                                                                                                                                                                       |  |  |
| SERV AIR<br>SERV AIR<br>SCRAM A<br>ROD DRIF<br><del>RSGS MA</del><br>RWM ROI<br>CNDSR V                                                                               | HDR PRESS LC<br>HDR ISOL VLV<br>IR HDR PRESS I<br>T<br><del>T</del><br><del>LFUNCTION ~</del><br>D BLOCK<br>AC LO                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | )<br>CLOSED<br>HI OR LO                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                       |  |  |
|                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                       |  |  |
| What system is <u>ca</u><br>A. Th                                                                                                                                     | using the degrad                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ing plant cc<br>em has dec                                                                                                                                                                                                                                                                                                          | onditions and what oper<br>graded and the reactor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | rator action is req<br>water recirculatio                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | uired.<br>on (RWR) pumps                                                                                                                                                                                                                                                              |  |  |
| What system is <u>ca</u><br>A. Th<br>mu<br>B. Th<br>be                                                                                                                | using the degrad<br>ne service air syst<br>ust be tripped bec<br>ne instrument air s<br>ecause at least on                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ing plant co<br>em has deg<br>cause of a l<br>system has<br>e control ro                                                                                                                                                                                                                                                            | proditions and what open<br>graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | uired.<br>on (RWR) pumps<br>is required                                                                                                                                                                                                                                               |  |  |
| What system is <u>ca</u><br>A. Th<br>B. Th<br>be<br>C. Th<br>be                                                                                                       | using the degrad<br>ne service air syst<br>ust be tripped bed<br>ne instrument air s<br>cause at least on<br>ne running control<br>cause at least on                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | em has deg<br>cause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded                                                                                                                                                                                                                                 | proditions and what open<br>graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>pump has tripped and a<br>od has started to drift.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor s<br>atched to look for                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.                                                                                                                                                                                                      |  |  |
| What system is <u>ca</u><br>A. Th<br>B. Th<br>be<br>C. Th<br>be<br><b>'</b> D. <del>Th</del>                                                                          | using the degrad<br>ne service air syst<br>ust be tripped bec<br>ne instrument air s<br>cause at least on<br>ne running control<br>cause at least on<br>ne condenser has                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | em has deg<br>cause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded                                                                                                                                                                                                                                 | graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>oump has tripped and a<br>od has started to drift.<br>operators must be disp                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor s<br>atched to look fo                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.                                                                                                                                                                                                      |  |  |
| What system is <u>ca</u><br>A. Th<br>B. Th<br>be<br>C. Th<br>be<br>D. <del>Th</del><br>and The initiating <del>c</del><br>calve must be clos                          | using the degrad<br>ne service air syst<br>ust be tripped bec<br>ne instrument air s<br>cause at least on<br>the running control<br>cause at least on<br>the condenser has<br>vacuse<br>to improve co                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ing plant co<br>em has deg<br>cause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded<br>degraded<br>of condense<br>ndonser va                                                                                                                                                                        | graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>oump has tripped and a<br>od has started to drift.<br>operators must be disp<br>مرا مالی ال                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor s<br>atched to look for<br>denser water box                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.<br>cair admission                                                                                                                                                                                    |  |  |
| What system is <u>ca</u><br>A. Th<br>B. Th<br>be<br>C. Th<br>be<br>D. <del>Th</del><br>and The initiating e<br>valve must be clos<br>D. Th<br>red                     | using the degrad<br>he service air syst<br>ust be tripped bec<br>he instrument air s<br>cause at least on<br>he running control<br>cause at least on<br>he condenser has<br>vecondenser has vecondenser has<br>vecondenser has vecondenser has<br>vecondenser has vecondenser has vecondense                                                                                                                        | ing plant co<br>em has deg<br>cause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded<br>def<br>ef condense<br>ndenser va<br>was a loss<br>t least one                                                                                                                                                | graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>oump has tripped and a<br>od has started to drift.<br>operators must be disp<br>مرا مال مالية<br>er vacuum and the con<br>cuum.<br>of condenser vacuum<br>control rod has begun to                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor s<br>atched to look for<br>denser water boot<br>and a manually re<br>to drift in.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.<br>cair admission<br>eactor scram is                                                                                                                                                                 |  |  |
| A. Th<br>B. Th<br>B. Th<br>C. Th<br>C. Th<br>D. <del>Th</del><br>and The initiating e<br>valve must be clos<br>D. Th<br>rec<br>Proposed Answer:                       | using the degrad<br>ne service air syst<br>ust be tripped become<br>instrument air s<br>cause at least on<br>the running control<br>cause at least on<br>the condenser has<br>condenser has<br>condenser has<br>condenser has<br>condenser has<br>condenser has<br>the condenser has<br>condenser has<br>the condenser has<br>condenser has<br>the condenser has<br>the condense has the condense has<br>the condense has the condense has<br>the condense has the condense has the condense has the condense<br>the condense has the conde                                                                                                                     | em has deg<br>ause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded<br>of condense<br>ndenser va<br>was a loss<br>t least one<br>instrumen<br>uired becau                                                                                                                                            | anditions and what oper<br>graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>oump has tripped and a<br>od has started to drift.<br>operators must be disp<br>and NLOS<br>er vacuum and the con<br>cuum.<br>of condenser vacuum<br>control rod has begun<br>t air system has degrad<br>use at least one control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor s<br>atched to look for<br>denser water box<br>and a manually re<br>to drift in.<br>ded and a manual<br>rod has started to                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.<br>cair admission<br>eactor scram is<br>al reactor scram is<br>o drift.                                                                                                                              |  |  |
| A. Th<br>B. Th<br>B. Th<br>C. Th<br>C. Th<br>D. <del>Th</del><br>and The initiating e<br>valve must be clos<br>D. Th<br>ree<br>Proposed Answer:<br>Explanation (Optio | using the degrad<br>he service air syst<br>ust be tripped become<br>instrument air s<br>cause at least on<br>the running control<br>ecause at least on<br>the condenser has<br>vacuuse at least on<br>vacuuse                                    | em has deg<br>cause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded<br>of condense<br>ndenser va<br>was a loss<br>t least one<br>e instrumen<br>uired becau                                                                                                                                         | graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>oump has tripped and a<br>od has started to drift.<br>operators must be disp<br>and along<br>of condenser vacuum<br>control rod has begun to<br>t air system has degrad<br>use at least one control<br>not have to be tripped b<br>to not close on a loss o                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor scram<br>atched to look for<br>denser water box<br>and a manually re<br>to drift in.<br>ded and a manual<br>rod has started to<br>because the cooling<br>f instrument air.                                                                                                                                                                                                                                                                                                                                                                                                                       | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.<br>cair admission<br>eactor scram is<br>o drift.<br>ng water valves to                                                                                                                               |  |  |
| A. Th<br>B. Th<br>B. Th<br>C. Th<br>C. Th<br>D. <del>Th</del><br>And The initiating e<br>valve must be clos<br>D. Th<br>red<br>Proposed Answer:<br>Explanation (Optio | using the degrad<br>ne service air syst<br>ust be tripped become<br>instrument air s<br>cause at least on<br>the running control<br>cause at least on<br>the condenser has<br>condenser has<br>the condenser has the condenser has<br>the condenser has the condenser has<br>the condenser has the conden                                                                                                                                             | ing plant co<br>em has deg<br>ause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded<br>of condense<br>was a loss<br>t least one<br>e instrumen<br>uired becau<br>e RWR do r<br>se pumps co<br>running co                                                                                             | anditions and what oper<br>graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>oump has tripped and a<br>od has started to drift.<br>operators must be disp<br>and alos<br>er vacuum and the con<br>cuum.<br>of condenser vacuum<br>control rod has begun to<br>t air system has degrad<br>use at least one control<br>not have to be tripped to<br>to not close on a loss o<br>pontrol rod drive pump h<br>will close the pump dis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor scram<br>atched to look for<br>denser water box<br>and a manually re<br>to drift in.<br>ded and a manual<br>rod has started to<br>because the cooli<br>f instrument air.<br>as not tripped. To<br>charge FCV, not                                                                                                                                                                                                                                                                                                                                                                                | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.<br>cair admission<br>eactor scram is<br>al reactor scram is<br>o drift.<br>ng water valves to<br>he loss of<br>trip the pump.                                                                        |  |  |
| A. Th<br>B. Th<br>B. Th<br>C. Th<br>C. Th<br>D. <del>Th</del><br>and The initiating e<br>valve must be clos<br>D. Th<br>red<br>Proposed Answer:<br>Explanation (Optio | using the degrad<br>ne service air syst<br>ust be tripped become instrument air s<br>cause at least on<br>the running control<br>ecause at least on<br>the condenser has<br>condenser has<br>vacue<br>to improve content<br>quired because a<br>B. The<br>req<br>onal): A. The<br>inst<br>D. The<br>condenser has<br>vacue<br>to improve content<br>the condenser has<br>vacue<br>to improve content<br>the content the | em has deg<br>cause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded<br>of condenser<br>was a loss<br>t least one<br>instrumen<br>uired becau<br>e RWR do r<br>se pumps co<br>rument air<br>e loss of con<br>ditions. Lo<br>nission valv                                                             | anditions and what oper<br>graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>oump has tripped and a<br>od has started to drift.<br>operators must be disp<br>and allos<br>er vacuum and the con<br>cuum.<br>of condenser vacuum<br>control rod has begun<br>t air system has degrad<br>use at least one control<br>not have to be tripped b<br>to not close on a loss of<br>portrol rod drive pump h<br>will close the pump dis<br>indenser vacuum is not<br>iss of vacuum is caused<br>we opening due to the k                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor scram<br>atched to look for<br>denser water box<br>and a manually re-<br>to drift in.<br>ded and a manual<br>rod has started to<br>because the cooli<br>f instrument air.<br>as not tripped. To<br>charge FCV, not<br>causing the degred<br>by the condens<br>boss of instrument                                                                                                                                                                                                                                                                                                                 | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.<br>cair admission<br>eactor scram is<br>al reactor scram is<br>o drift.<br>ng water valves to<br>he loss of<br>trip the pump.<br>raded plant<br>er water box air<br>air.                             |  |  |
| A. Th<br>B. Th<br>B. Th<br>C. Th<br>C. Th<br>D. <del>Th</del><br>and The initiating e<br>valve must be clos<br>D. Th<br>rec<br>Proposed Answer:<br>Explanation (Optio | using the degrad<br>ne service air syst<br>ust be tripped become instrument air s<br>acause at least on<br>the running control<br>acause at least on<br>the condenser has<br>condenser has<br>condenser has<br>the condenser has<br>bed to improve co<br>the initiating event<br>quired because a<br>B. The<br>req<br>onal): A. The<br>inst<br>D. The<br>corr<br>adr<br>ce(s):AOP-12 LC<br>VACUUM; of                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ing plant co<br>em has deg<br>ause of a l<br>system has<br>e control ro<br>rod drive p<br>e control ro<br>degraded<br>of condense<br>rod<br>of condense<br>rod<br>at least one<br>e instrumen<br>uired becau<br>e RWR do r<br>se pumps co<br>running co<br>running co<br>rument air<br>e loss of con<br>ditions. Lo<br>nission valv | anditions and what oper<br>graded and the reactor<br>oss of cooling water to<br>degraded and a manu<br>od has started to drift.<br>oump has tripped and a<br>od has started to drift.<br>operators must be disp<br>and oLO:<br>er vacuum and the con<br>cuum.<br>of condenser vacuum<br>control rod has begun to<br>t air system has degrad<br>use at least one control<br>not have to be tripped to<br>to not close on a loss of<br>pontrol rod drive pump h<br>will close the pump dis<br>indenser vacuum is not<br>ss of vacuum is caused<br>te opening due to the lo<br>ot the control rod the pump dis<br>indenser vacuum is not<br>ss of vacuum is caused<br>to the lose the pump dis<br>indenser vacuum is not<br>ss of vacuum is caused<br>to the lose the pump dis<br>indenser vacuum is not<br>ss of vacuum is caused<br>to the lose the pump dis<br>indenser vacuum is not<br>the caused to the lose the pump dis<br>indenser vacuum is caused<br>to the lose the pump dis<br>indenser vacuum is not to the lose the pump dis<br>indenser vacuum is caused<br>to the lose the pump dis<br>indenser vacuum dis<br>indenser vacuum dis<br>indenser vacuum dis<br>indenser vacuum dis<br>in | rator action is req<br>water recirculation<br>the pump motor.<br>al reactor scram<br>manual reactor scram<br>atched to look for<br>denser water box<br>and a manually re<br>to drift in.<br>ded and a manually re<br>to drift in. | uired.<br>on (RWR) pumps<br>is required<br>scram is required<br>r a vacuum leak.<br>cair admission<br>eactor scram is<br>al reactor scram is<br>o drift.<br>ng water valves to<br>he loss of<br>trip the pump.<br>raded plant<br>er water box air<br>air.<br>ONDENSER<br>E AIR SYSTEM |  |  |

| Question Source:                                                                       | Bank #<br>Modified Bank # (No<br>NewX                                                                       | te changes or attach parent)                                      |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| Question History:<br>(Optional - Questions validate<br>the NRC; failure to provide the | Last NRC Exam<br>d at the facility since 10/95 will generally<br>information will necessitate a detailed re | _<br>undergo less rigorous review by<br>eview of every question.) |
| Question Cognitive Level:                                                              | Memory or Fundamental Knowledge<br>Comprehension or Analysis                                                | X                                                                 |
| 10 CFR Part 55 Content:                                                                | 55.41<br>55.43                                                                                              |                                                                   |

Comments:

•

| ES-401                                                                              |                                                                                                                                                                                                 |                                                                                 | Sample<br>Que                                       | Written Examination<br>stion Worksheet                                                                  | For                                                                                              | m ES-401-6 (R8, S1)                                                                |                    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------|
| Examination                                                                         | Outline C                                                                                                                                                                                       | ross-referenc                                                                   | e: Level                                            | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                         | RO<br><br>295032 K2.<br>_3.5_                                                                    | SRO<br>1<br>01<br>3.6_                                                             |                    |
| Proposed Qu                                                                         | estion: S                                                                                                                                                                                       | 38                                                                              |                                                     |                                                                                                         |                                                                                                  |                                                                                    |                    |
| The unit is op<br>Operation (LC<br>cooling (RCIC<br>and installs te<br>TS LCO be ei | erating a<br>CO) in eff<br>D ventilat<br>O ventilat | t 100% power<br>ect. The shift<br>tion system.<br>house fans, u<br>r this work? | . There an<br>manager<br>This work r<br>sing non e  | re no Technical Specific<br>has just approved work<br>emoves the RCIC venti<br>emergency power, to be   | ation (TS) Lim<br>on the reactor<br>lation fans, clo<br>placed <del>in</del> the<br><b>unsid</b> | iting Conditions for<br>core isolation<br>ses the fan dampers<br>door ways. Must a |                    |
| Α.                                                                                  | No.                                                                                                                                                                                             | A TS LCO is                                                                     | not requi                                           | red because the RCIC                                                                                    | ventilation dam                                                                                  | pers are in the fail                                                               |                    |
| В.                                                                                  | No.                                                                                                                                                                                             | A TS LCO is                                                                     | not requi                                           | red because the RCIC v                                                                                  | ventilation system                                                                               | em is not required                                                                 |                    |
| C.                                                                                  | Yes.                                                                                                                                                                                            | for the oper<br>A <del>-7 day</del> TS                                          | ability of R<br>LCO is rec                          | CIC.<br>uired for RCIC because                                                                          | e the normal ve                                                                                  | entilation, powered                                                                |                    |
| D.                                                                                  | Yes.                                                                                                                                                                                            | by emergen<br>A <del>24 hour T</del>                                            | cy powe <mark>r</mark> ,<br>S LCO <del>shi</del>    | is inoperable.<br><del>Itdown</del> is required <del>beca</del>                                         | <del>use RGIC is in</del>                                                                        | operable:                                                                          |                    |
| Proposed Ans                                                                        | swer:                                                                                                                                                                                           | C. Yes                                                                          | A 7 da<br>power                                     | y TS LCO is required b<br>ed by emergency powe                                                          | Scievedory Co<br>ecause the noi<br>r, is inoperable                                              | mlsimment 2 bec<br>mal ventilation, <del>14</del><br>2. <b>vs</b>                  | aus<br>L Ri<br>Dan |
| Explanation (                                                                       | Optional)                                                                                                                                                                                       | : TS Definitio<br>to support th<br>ventilation is<br>operable. If               | ns require<br>le RCIC sy<br>not opera<br>RCIC is ir | that all necessary atten<br>/stem. Since the norma<br>.ble, RCIC is not operat<br>loperable a 7 day LCO | ded support sy<br>II, emergency p<br>Ie. RCIC may<br>is required.(TS                             | stems are operable<br>powered RCIC<br>be available but not<br>3.5.E)               |                    |
| Technical Ref                                                                       | erence(s                                                                                                                                                                                        | s): TS :                                                                        | 3.5.E, Defi                                         | nitions                                                                                                 |                                                                                                  |                                                                                    |                    |
| Proposed refe                                                                       | erences te                                                                                                                                                                                      | o be provided                                                                   | to applica                                          | nts during examination:                                                                                 | None                                                                                             |                                                                                    |                    |
| Learning Obje                                                                       | ective:                                                                                                                                                                                         | EK2. Knowl<br>CONTAINM<br>EK2.01 Area                                           | edge of the<br>ENT ARE/<br>t/room coo               | e interrelations between<br>A TEMPERATURE and<br>llers 3.5 / 3.6                                        | HIGH SECON the following:                                                                        | IDARY<br>(CFR: 41.7 / 45.8)                                                        |                    |
| Question Sou                                                                        | rce:                                                                                                                                                                                            | Ban<br>Moc<br>New                                                               | k #<br>ified Bank                                   | #(No                                                                                                    | te changes or                                                                                    | attach parent)                                                                     |                    |
| Question Hist<br>(Optional - Qu<br>the NRC; failu                                   | ory:<br>lestions v<br>re to pro                                                                                                                                                                 | Last<br>validated at th<br>vide the inforr                                      | NRC Exa<br>e facility si<br>nation will             | m<br>nce 10/95 will generally<br>necessitate a detailed r                                               | undergo less i<br>eview of every                                                                 | rigorous review by question.)                                                      |                    |
| Question Cog                                                                        | nitive Lev                                                                                                                                                                                      | vel: Mer<br>Con                                                                 | nory or Fui<br>prehensio                            | ndamental Knowledge<br>n or Analysis                                                                    | x                                                                                                |                                                                                    |                    |
|                                                                                     | 5 Conte                                                                                                                                                                                         | nt: 55.4                                                                        | 1                                                   |                                                                                                         |                                                                                                  |                                                                                    |                    |

V<sub>o</sub>v

| ES-401                                                             |                                                    | Si                                  | ample<br>Que                   | Written Examination<br>stion Worksheet                                    |                                            | Form ES-401-6 (R8, S <sup>-</sup>                                        |
|--------------------------------------------------------------------|----------------------------------------------------|-------------------------------------|--------------------------------|---------------------------------------------------------------------------|--------------------------------------------|--------------------------------------------------------------------------|
| Examination Outli                                                  | ine Cross-refe                                     | rence:                              | Level                          | Tier #<br>Group #<br>K/A #<br>Importance Rating                           | RO<br><br>295032<br>_3.5_                  | SRO<br>1<br>2<br>Ek2.01<br>3.6_                                          |
| Proposed Questic                                                   | on: S39                                            |                                     |                                |                                                                           |                                            |                                                                          |
| Several minutes a isolation valve (Me failed to close and present. | ngo the reactor<br>OV-15) and su<br>all other plan | r water cl<br>ipply out<br>t equipm | leanup<br>board i<br>ient op   | (RWCU) suction pipe f<br>solation valve (MOV-18<br>erated as designed. Th | ailed betwe<br>3). The inb<br>ne following | een the supply inboard<br>oard isolation valve<br>g plant conditions are |
| Reactor power<br>Reactor level                                     |                                                    | 0%<br>200 inch                      | nes                            | (manual scram)                                                            |                                            |                                                                          |
| Reactor pressure                                                   |                                                    | 700 psig                            | )                              | (Emergency Depress                                                        | urization in                               | p <b>r</b> ogress)                                                       |
| RWCU                                                               |                                                    |                                     |                                |                                                                           |                                            |                                                                          |
| Heat Exchanger R<br>"A" RWCU Pump  <br>"B" RWCU Pump               | loom Tempera<br>Room Temper<br>Room Temper         | ature<br>rature<br>rature           | 200°F<br>220°F<br>200°F        |                                                                           |                                            |                                                                          |
| Heat Exchanger A<br>"A" RWCU Pump a                                | rea Radiation<br>area                              |                                     | 1020 m<br>1150 m               | ır/hr<br>ır/hr                                                            |                                            |                                                                          |
| The shift manager<br>emergency declara                             | declared a sit<br>ation was mad                    | e area e<br>le becau                | merger<br>se plan              | ncy and all notifications<br>t conditions represent                       | were mad                                   | e. The site area                                                         |
| A. al                                                              | oss of the con                                     | tainment                            | t barrie                       | r and a potential loss o                                                  | f the reacto                               | r coolant system                                                         |
| B. an                                                              | actual or imm                                      | linent su                           | bstantia                       | al core degradation or r                                                  | nelting with                               | a potential for loss of                                                  |
| C. al<br>D. al<br>im                                               | oss of the prin<br>oss of the con<br>minent substa | nary cont<br>tainment<br>ntial core | tainmei<br>t barrie<br>e degra | nt with a potential loss of and a loss of the reac addition or melting.   | of the seco<br>tor coolant                 | ndary containment.<br>system barrier with                                |
| Proposed Answer:                                                   | A. a                                               | a loss of<br>coolant s              | the cor                        | ntainment barrier and a<br>barrier.                                       | potential lo                               | oss of the reactor                                                       |
| Explanation (Option                                                | nal): A. F                                         | For the p<br>considere              | urpose<br>ed a fis             | of the EALs the secon<br>sion product barrier (IA                         | dary contai<br>P2.2, page                  | nment is not<br>7). Therefore,                                           |
|                                                                    | р.<br>В. Т                                         | orimary c<br>This conc              | ontainr<br>dition d            | nent is failed.<br>oes not represent subs                                 | tantial core                               | degradation because                                                      |
|                                                                    | C. F                                               | all other p<br>For the pr           | plant eo<br>urpose             | uipment functioned as<br>of the EALs the second                           | designed.<br>dary contai                   | nment is not                                                             |
|                                                                    |                                                    |                                     | ou a lis                       | sion product partier (IA                                                  | rz.z, page                                 | 7)                                                                       |

D. This condition is not true because adequate core cooling will be able to be maintained through core submergence.

Technical Reference(s):

Emergency Plan implementing Procedures / Volume 2, IAP-2.

Proposed references to be provided to applicants during examination: EOP-5/6

Learning Objective: EK3. Knowledge of the reasons for the following responses as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS: (CFR: 41.5 / 45.6) EK3.05 Emergency plan 3.6 / 4.5\*

Question Source:

Question History:

Bank # Modified Bank # (Note changes or attach parent) New

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

**Question Cognitive Level:** Memory or Fundamental Knowledge Comprehension or Analysis 10 CFR Part 55 Content: 55.41

55.43

5

4

| ES-401                               | Sample<br>Que | Written Examination<br>stion Worksheet          | Form E                          | ES-401-6 (R8, S1)      |
|--------------------------------------|---------------|-------------------------------------------------|---------------------------------|------------------------|
| Examination Outline Cross-reference: | Level         | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br><br>261000 A3.01<br>_3.2_ | SRO<br>2<br>1<br>_3.3_ |

 $\Delta$ 

### Proposed Question: S44

The Unit is operating at 100% power with the "A" standby gas treatment train out of service when the "B" RPS bus is lost. The following conditions are present after the loss of the "B" RPS bus.

| Drywell Temperature is     | 130°F                           |
|----------------------------|---------------------------------|
| Drywell Pressure is        | 2.1 psig                        |
| Torus Water Temperature is | 72°F                            |
| Torus Pressure is          | 0.1 psig                        |
| Torus Level is             | 13.98 Feet                      |
| Drywell and Torus Oxygen   | 2.1                             |
| Concentration              | 9.5 volume percent              |
| Reactor Building to        | ·                               |
| Outside dP                 | 0.1 inches water                |
| SGTS Train B               | ON with a flow rate of 1000 cfm |
|                            |                                 |

Based on these conditions what operator actions are required (after the "A" RPS bus is restored).

- A. Reopen the reactor building closed loop cooling Drywell Cooler B Inlet valve to ensure that the drywell pressure remains below 2.7 pisg.
- B. Declare the "B" SBGT inoperable and enter the Technical Specification Limiting Condition for Operation.
- C. Vent the Torus to maintain drywell to torus differential pressure within the Technical Specification allowable values.
- D. Start drywell makeup using CAD Train A to maintain the oxygen concentration within the Technical Specification allowable value.

Proposed Answer: B Declare the "B" SBGT inoperable and enter the TS Limiting Condition for Operation

Explanation (Optional):

- A. The Drywell Cooler valves do not go closed on a loss of RPS.
- B. SBGT is malfunctioning and because of the low flow it can not maintain 0.25 inches water dP in secondary containment.
- C. Differential pressure is 2.0, allowable by TS (> 1.7 psid)
- D. The Oxygen concentration is allowable by TS (less than 4.0 volume Percent)

Technical Reference(s):TS 3.7, OP-37, Containment Atmosphere Dilution System, AOP-60 Loss of RPS bus B Power

Proposed references to be provided to applicants during examination: None

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

**Question History:** 

Memory or Fundamental Knowledge \_ Comprehension or Analysis \_

10 CFR Part 55 Content:

55.43 \_\_\_\_\_

55.41 \_5\_\_\_

|                                                                                                                                                    | Questic                                                                                                                                                | on Worksheet                                                                                  | Form                                                                         | ES-401-6 (R8, S1                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Examination Outline C                                                                                                                              | ross-reference: Level<br>T<br>to 80% k<br>howeveel                                                                                                     | ⁻ier #<br>àroup #<br>√A #<br>mportance Rating                                                 | RO<br><br>202002 A2.0<br>_3.1                                                | SRO<br>_2_<br>_1_<br>_3.3_                                                         |
| Proposed Question:S <sup>4</sup><br>The unit is a <u>full powe</u><br>OP-27, Recirculation S<br>feedwater pump trips,<br>conditions <u>(1)</u> and | by the "A" reactor recircula<br>D The "A" reactor recircula<br>System. While the "A" react<br>which results in reactor wat<br>procedure (2) will be us | ✓<br>tion pump scoop tul<br>tor recirculation pum<br>ter level decreasing<br>sed.             | Defwas "locked u<br>Ip scoop tube "lo<br>to 195 inches. E                    | <b>Per</b><br>p," <del>normally using</del><br>cked up," the "B"<br>Based on these |
| A. (1) On<br>(2) AC                                                                                                                                | ly the "B" reactor recirculation<br>P-1, "Reactor Scram."                                                                                              | on pump will run ba                                                                           | ck to 44%                                                                    |                                                                                    |
| B. (1) Bo<br>(2) AC                                                                                                                                | th the A & B reactor recircul<br>P-42, "Feedwater Malfuncti                                                                                            | lation pumps will rur<br>ion (Lowering Feed)                                                  | ) back to 44%<br>vater Flow)"                                                |                                                                                    |
| C. (1) On<br>(2) AC                                                                                                                                | ly the "A" reactor recirculation<br>P-8, "Loss or Reduction of I                                                                                       | on pump will trip<br>Reactor Coolant Flc                                                      | w"                                                                           |                                                                                    |
| D. (1) Bot<br>(2) AO                                                                                                                               | th the A & B reactor recircul                                                                                                                          | ation pumps will trip<br>Reactor Coolant Flc                                                  |                                                                              |                                                                                    |
| Proposed Answer:                                                                                                                                   | B. (1) Both the A & B<br>(2) AOP-42, "Feed                                                                                                             | 3 reactor recirculatio                                                                        | n pumps will run<br>Lowering Feedw                                           | back to 44%<br>vater Flow)"                                                        |
| Explanation (Optional):                                                                                                                            | Procedure OP-27, Recircu<br>TUBE AUTO UNLOCK co<br>recirculation pump to run t<br>then the reactor will stabili                                        | ulation System has t<br>introl switch in ON.<br>back if a FW pump i<br>ize at a low power le  | he operator plac<br>This will allow a<br>s lost. If both pu<br>wel.          | e the SCOOP<br>locked up reactor<br>mps run back                                   |
| echnical Reference(s                                                                                                                               | ):OP-27, "Reactor Recircula                                                                                                                            | ation System, SDLP                                                                            | -021, SDLP-33                                                                |                                                                                    |
| Proposed references to                                                                                                                             | be provided to applicants                                                                                                                              | during examination:                                                                           | None                                                                         |                                                                                    |
| earning Objective:                                                                                                                                 | A2. Ability to (a) predict the<br>FLOW CONTROL SYSTE<br>procedures to correct, con<br>conditions or operations: A<br>3.1 / 3.3                         | e impacts of the folk<br>M ; and (b) based o<br>trol, or mitigate the<br>A2.09 †Recirculation | owing on the REO<br>n those predictio<br>consequences of<br>n flow mismatch: | CIRCULATION<br>ns, use<br>f those abnormal<br>Plant-Specific                       |
| uestion Source:                                                                                                                                    | Bank #<br>Modified Bank #<br>New                                                                                                                       | (No                                                                                           | te changes or at                                                             | ach parent)                                                                        |
| Question History:<br>Optional - Questions v                                                                                                        | Last NRC Exam<br>alidated at the facility since                                                                                                        | 10/95 will generally                                                                          | undergo less rig                                                             | orous review by                                                                    |
| ie INHU; failure to prov                                                                                                                           | nde the information will nec                                                                                                                           | essitate a detailed r                                                                         | eview of every qu                                                            | Jestion.)                                                                          |

 $\Delta$ 

Comprehension or Analysis

\_\_X\_\_

10 CFR Part 55 Content:

55.41 \_\_5\_\_\_ 55.43 \_\_5\_\_\_

|                                                                                                                                                                  | Sample<br>Que                                                                                                            | Written Examination<br>estion Worksheet                                                                                        | Form                                                                                     | ES-401-6 (R8, S1)                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|                                                                                                                                                                  |                                                                                                                          |                                                                                                                                |                                                                                          |                                                                                  |
| Examination Outline Cros                                                                                                                                         | s-reference: Level                                                                                                       |                                                                                                                                | RO                                                                                       | SRO                                                                              |
|                                                                                                                                                                  |                                                                                                                          | Tier #                                                                                                                         | 2                                                                                        | 2                                                                                |
|                                                                                                                                                                  |                                                                                                                          | Group #                                                                                                                        | 1                                                                                        | 1                                                                                |
|                                                                                                                                                                  |                                                                                                                          | K/A #<br>Importance Deting                                                                                                     | 211000 K2.01                                                                             | 0.4                                                                              |
|                                                                                                                                                                  |                                                                                                                          | imponance hailing                                                                                                              | _2.9_                                                                                    | _3.1_                                                                            |
| Proposed Question: S51                                                                                                                                           | 100                                                                                                                      | maintenance                                                                                                                    |                                                                                          |                                                                                  |
| The plant is in day 2 of a 5<br>standby liquid control (SB<br>service. As part of the <del>by</del><br><del>MCC-162, and MCC-166</del><br>How would these MCC(s) | 7 day Technical Spe<br>LC) system window.<br>Sem window. Maint<br>from service for brea<br>effect SBLC and <del>ho</del> | cification limiting condit<br>The "B" SBLC pump a<br>enance has requested<br>aker inspections. This a<br>wwwould the TS LCO cl | ion for operation<br>and "B" SQUIB va<br>to remove MCC-<br>activity is schedul<br>nange. | (LCO) for the "B"<br>lve i <u>s out of</u><br>52, MCC-156,<br>ed to take 2 days. |
| A MOO 150                                                                                                                                                        | ho                                                                                                                       | ω<br>DIC auma incacadala                                                                                                       | •                                                                                        | 、                                                                                |
| A. WUU-152                                                                                                                                                       | will render the "A"                                                                                                      | SBLC pump moperable                                                                                                            |                                                                                          | <br>Д.                                                                           |
| Enter a 24                                                                                                                                                       | hour LCO for redu                                                                                                        | idant SBLC equipment                                                                                                           | inoperable.                                                                              | . yr                                                                             |
|                                                                                                                                                                  |                                                                                                                          |                                                                                                                                |                                                                                          | Kar                                                                              |
| B. MCC-156                                                                                                                                                       | , will render the "A" \$                                                                                                 | SBLC pump inoperable                                                                                                           |                                                                                          | Ø                                                                                |
| <del>MCC-166</del>                                                                                                                                               | , will render the "B" (                                                                                                  | SBLC pump inoperable                                                                                                           |                                                                                          | 1. P                                                                             |
| Enter a 24                                                                                                                                                       | hour LCO for redui                                                                                                       | ndant SBLC equipment                                                                                                           | inoperable.                                                                              | 7                                                                                |
| IS 2                                                                                                                                                             | . will not effect                                                                                                        | A pump operability                                                                                                             |                                                                                          |                                                                                  |
| C. MCC-162                                                                                                                                                       | , will render the "B" :                                                                                                  | BLC pump inoperable                                                                                                            | aarabla                                                                                  |                                                                                  |
| No additic                                                                                                                                                       | mal TS I CO must be                                                                                                      | antered                                                                                                                        |                                                                                          |                                                                                  |
|                                                                                                                                                                  |                                                                                                                          | in P                                                                                                                           |                                                                                          |                                                                                  |
| D. MCC-152                                                                                                                                                       | will render the "B" (                                                                                                    | BLC pump inoperable                                                                                                            |                                                                                          |                                                                                  |
| M <del>CG-156</del>                                                                                                                                              | will render the "B" (                                                                                                    | BLC SQUIB valve iner                                                                                                           | ə <del>erab</del> le                                                                     |                                                                                  |
| No additio                                                                                                                                                       | nal TS LCO must be                                                                                                       | e entered.                                                                                                                     |                                                                                          |                                                                                  |
|                                                                                                                                                                  |                                                                                                                          |                                                                                                                                |                                                                                          |                                                                                  |
| Proposed Answer: A. M                                                                                                                                            | CC-152, will render                                                                                                      | the "A" SBLC purity inc                                                                                                        | perable                                                                                  |                                                                                  |
| M                                                                                                                                                                | CC-162, will render                                                                                                      | the "B" SBLC pump ino                                                                                                          | perable                                                                                  |                                                                                  |
| E                                                                                                                                                                | nter a 24 hour LCO i                                                                                                     | or redundant SBLC eq                                                                                                           | ulpment inoperab                                                                         | le.                                                                              |
| Explanation (Optional): M                                                                                                                                        | CC-152 inon "A" nur                                                                                                      | nn and SOLIIR                                                                                                                  | $\mathbf{N}$                                                                             |                                                                                  |
| лраналон (орлона). М<br>М                                                                                                                                        | CC-162 inop "B" pu                                                                                                       | np and SQUIB                                                                                                                   | $\mathbf{X}$                                                                             |                                                                                  |
|                                                                                                                                                                  |                                                                                                                          | np and o doib                                                                                                                  |                                                                                          |                                                                                  |
| R                                                                                                                                                                | emoving both pump                                                                                                        | s from service requires                                                                                                        | a 24 hour LCO.                                                                           |                                                                                  |
| factoria di Distanta di S                                                                                                                                        |                                                                                                                          |                                                                                                                                |                                                                                          |                                                                                  |
| ecnnical Heference(s):                                                                                                                                           | SDLP-11, "SE                                                                                                             | L″, TS 3.4                                                                                                                     |                                                                                          |                                                                                  |
|                                                                                                                                                                  | provided to applica                                                                                                      | nts during examination                                                                                                         | : None                                                                                   |                                                                                  |
| Proposed references to be                                                                                                                                        |                                                                                                                          | <u> </u>                                                                                                                       |                                                                                          |                                                                                  |
| Proposed references to be                                                                                                                                        |                                                                                                                          | ·                                                                                                                              |                                                                                          |                                                                                  |
| Proposed references to be<br>_earning Objective:                                                                                                                 | K2. Knowledg<br>K2.01 SBLC p                                                                                             | e of electrical power su<br>pumps 2.9* / 3.1*                                                                                  | pplies to the follo                                                                      | wing (CFR: 41.7)                                                                 |
| Proposed references to be<br>Learning Objective:                                                                                                                 | K2. Knowledg<br>K2.01 SBLC p<br>Bank #                                                                                   | e of electrical power su<br>pumps 2.9* / 3.1*                                                                                  | pplies to the follo                                                                      | wing (CFR: 41.7)                                                                 |
| Proposed references to be<br>.earning Objective:<br>Question Source:                                                                                             | K2. Knowledg<br>K2.01 SBLC p<br>Bank #<br>Modified Bank<br>New                                                           | e of electrical power su<br>pumps 2.9* / 3.1*                                                                                  | pplies to the follo<br>ote changes or at                                                 | wing (CFR: 41.7)<br>tach parent)                                                 |

l

10th

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

**Question Cognitive Level:** 

Memory or Fundamental Knowledge \_\_\_\_\_ Comprehension or Analysis \_\_\_\_\_

10 CFR Part 55 Content:

55.41 \_\_7\_\_ 55.43 \_\_2\_\_

Comments:

A. Uneffected, NO SLC components are powered from MCC-152 B. ", This is the power supply for & SBCC pump which is already inopenable

D. Both SLC Subsystem 140p More restriction LCO must be endered D. Both SLC System inp however existing LCO is adequete.

| ES-401                               | Sample Ques | Written Examination<br>stion Worksheet          | Form E                          | ES-401-6 <u>(</u> R8, S1) |
|--------------------------------------|-------------|-------------------------------------------------|---------------------------------|---------------------------|
| Examination Outline Cross-reference: | Level       | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br><br>215004 K2.01<br>_2.6_ | SRO<br>2<br>1<br>_2.8_    |
| Proposed Question: S53               |             |                                                 |                                 |                           |

a Spiral pattern around the "A" source range monitor (SRM). Each SRM has two fuel assembles around it, except "A" which has 10, and all SRMs are indicating greater than 3 count per second. There are no "dunking detectors" inserted into the core. Two minutes ago the System "B" 24/48 volt DC battery and chargers were removed from service for planned outage work. What effect does this have on the core reload?

- A. The core reload may continue; however, fuel may only be moved in the core quadrants where the "A" & "B" SRMs are located.
- B. The core reload may continue unrestricted because there are still two operable SRMs in the core.
- C. The core reload must be stopped until the "A" SRM has its power restored.
- D. The core reload must be stopped until the "B" or "D" SRM has its power restored.

Proposed Answer: D. The core reload must be stopped until the "B" or "D" SRM has its power restored.

Explanation (Optional): Loss of the "B" 24 VDC battery removed the "B" & "D" SRM from service. TS 3.10 B require that during core loading there are at least two SRMs operable. One in the quadrant where fuel is being moved and one in an adjacent quadrant. Since the core loading is around the "A" detector, the core loading must be stopped until power is restored to the "B" or "D" detector in an adjacent quadrant.

Technical Reference(s): SDLP-07B, TS 3.10

Proposed references to be provided to applicants during examination: Core Loading Map  $\sqrt{2}$ 

Learning Objective: K2. Knowledge of electrical power supplies to the following: (CFR: 41.7) K2.01 SRM channels/detectors 2.6/2.8

Question Source:

Bank # \_\_\_\_\_ Modified Bank # \_\_\_\_\_ (Note changes or attach parent) New X

Question History: Last NRC Exam

55.4**1** 7

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

\_x\_\_

55.43 \_\_2\_\_

| ES-401                              | Sample Que | Written Examination<br>stion Worksheet          | Form ES-401-6 (R8, S1)           |                        |  |
|-------------------------------------|------------|-------------------------------------------------|----------------------------------|------------------------|--|
| Examination Outline Cross-reference | : Level    | Tier #<br>Group #<br>K/A #<br>Importance Rating | RO<br><br>290002 2.1.11<br>_3.0_ | SRO<br>2<br>3<br>_3.8_ |  |

Proposed Question: S83

A 3D Monicore Periodic Log has just printed out. The following is a summary of information that is listed on the log.

| POWER MWT   | 2530   |         |
|-------------|--------|---------|
| POWER MWE   | 855    |         |
| FLOW MLB/HR | 75.453 |         |
| MFLCPR      | 0.938  | 37-24   |
| MFLPD       | 1.020  | 41-24-6 |
| MAPRAT      | 0.919  | 39-22-4 |
| PCRAT       | 1.004  | 15-32-4 |
| LOAD LINE   | 101.3% | ,<br>D  |

Based on this information what is the required actions by Technical Specification?

- A. MFLPD is greater than 1.0, action must be taken within 15 minutes to reduce MFLPD less than 1.0 and if not corrected in 2 hours be less than 25% power in the next 4 hours.
- B. MFLCPR is less than1.0, action must be taken within 15 minutes to increase MFLCPR greater than 1.0 and if not corrected in 2 hours be less than 25% power in the next 4 hours.
- C. PCRAT is greater than 1.0, action must be taken within 15 minutes to decrease PCRAT less than 1.0 and if not corrected in 2 hours be less than 25% power in the next 4 hours.
- D. Reactor thermal power has exceed the licensed thermal power limit, action must be taken within the next hour to reduce the shift average thermal power below the licensed thermal power limit.
- Proposed Answer: A. MFLPD is greater than 1.0, action must be taken within 15 minutes to reduce MFLPD less than 1.0 and if not corrected in 2 hours be less than 25% power in the next 4 hours.

Explanation (Optional): A.

- TS 3.5.I
- B. MFLCPR of less than 1.0 is in compliance with Technical Specifications.
   C. PCRAT is not in Technical Specifications. This is a measure of how close the pin power is to the preconditioned threshold and may be
  - above 1.0.
- D. 2536 MWT is less than the licensed thermal power limit in the license.

Technical Reference(s): Technical Specification 3.5.I, SDLP-09B

Proposed references to be provided to applicants during examination: None

Learning Objective: 2.1.11 Knowledge of less than one hour technical specification action statements for systems. RO 3.0/SRO 3.8

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

\_\_X\_\_

10 CFR Part 55 Content:

55.41 \_\_\_\_\_ 55.43 \_\_2\_\_

ES-401

# Sample Written Examination **Question Worksheet**

| Examination Outline Cross-reference: | Level             | RO       | SRO                             |
|--------------------------------------|-------------------|----------|---------------------------------|
|                                      | Tier #            | <u> </u> | 3                               |
|                                      | Group #<br>K/A #  | 2.1.6    | · · · · · · · · · · · · · · · · |
|                                      | Importance Rating |          | _4.3                            |

## Proposed Question: S84

The shift manager was notified via phone that the "A" reactor water recirculation (RWR) pump vibration annunciator alarmed and drywell pressure was increasing. Two minutes later when the shift manager enters the control room he observes that the reactor has scrammed on high drywell pressure and the crew is carrying out the following actions.

The control room supervisor (CRS) and senior nuclear operator (SNO) are at the 09-4 panel trying to isolate the "A" RWR pump.

The nuclear control operator #1 (NCO#1) is at the 09-3 panel performing manipulations on the high pressure coolant injection system.

The NCO 2 is on the phone with radiation protection.

The controller is directing CRS & SNO actions using EOP-2, "RPV Control" and EOP-4, "Primary Containment Control."

Given these conditions what actions must the shift manager take?

Implement the EOPs and have the NCO 2 full fill the emergency director position. ⁄Α. Maintain acoste .f

Overview the control room and direct the CRS to implement the EOPs and have the B. controller perform STA duties.

- Maintain oversite of independent Assessor.
- -Overview-the control room and provide direction to the controller as he directs ĸС. implementation of the EOPs
- Perform STA duties of monitoring core cooling, containment and reactivity control. D. Implement the EOPs and full fill the emergency director position . Overview the control room and direct the CRS to implement the EOPs

and have the controller perform STA duties.

**Proposed Answer:** B.

Explanation (Optional):

- Α. The NCO 2 is not a qualified
- The controller duties do not involve line supervision of operators C. and he is also required to be independent of the control room staff.
- D. The controller is available to act as the STA. He must be directed to this capacity.

Technical Reference(s):

AP-12.03 Administration of Operations

Proposed references to be provided to applicants during examination: None

Learning Objective:

2.1.6, Ability to supervisor and assume a management role during plant transients and upset conditions.

EO 46.02 and 46.03j,

Question Source:

Bank # \_\_\_\_\_ (Note changes or attach parent) New \_\_\_\_X\_\_\_

Question History: Last NRC Exam

55.41

55.43 \_\_\_\_5\_\_\_

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_\_X\_

10 CFR Part 55 Content:

ES-401

## Sample Written Examination Question Worksheet

Form ES-401-6 (R8, S1)

| Examination Outline Cross-reference: | Level             | RO     | SRO   |
|--------------------------------------|-------------------|--------|-------|
|                                      | Tier #            |        | 3     |
|                                      | Group #           |        |       |
|                                      | K/A #             | 2.1.34 |       |
|                                      | Importance Rating | _2.3_  | _2.9_ |

Proposed Question: S86

At the time of a reactor startup reactor coolant water had the following analysis:

Reactor Water Chloride ion 0.1 ppm Reactor Water Conductivity 3 micromho/cm

Twelve hours after placing the reactor in the power operating condition the levels have changed to:

Reactor Water Chloride ion 0.08 ppm Reactor Water Conductivity 6 microhmo/cm

Which one of the following requirements will apply?

- A. The reactor must be placed in cold shutdown within 24 hours with water quality brought within limits for shutdown.
- B. Operation may continue unless chemistry continues to degrade or steaming rate decreases below 100,000 lb/hr.
- C. Unless conductivity improves in the next 12 hours, the plant must be placed in cold shutdown within the following 24 hours.
- D. Unless chloride ion concentration improves in the next 12 hours, the plant must be placed in cold shutdown within the following 24 hours.

| Proposed Answer: | C. | Unless conductivity improves in the next 12 hours, the plant must |
|------------------|----|-------------------------------------------------------------------|
|                  |    | be placed in cold shutdown within the following 24 hours.         |

Explanation (Optional): Reactor water chloride is within limits. The reactor water conductivity is not and has not been, however, it is within the limits of 10 microhmo/cm (1.1.A.2) and has 12 hours left to get within 5 microhoms/cm or be in cold shutdown in the following 24 hours.

Technical Reference(s):

AP-01.04 TECH SPEC RELATED REQUIREMENTS, LISTS, AND TABLES\* Section 5

Proposed references to be provided to applicants during examination: AP-01.04 TECH SPEC RELATED REQUIREMENTS, LISTS, AND TABLES\* Section 5

Learning Objective: 2.1.34 Ability to maintain primary and secondary plant chemistry within allowable limits. RO 2.3 / SRO 2.9

The following changes have been made to the question to improve the clarity:

Twelve hours after reaching full power the levels have changed to:

was changed to

Twelve hours after placing the reactor in the power operating condition the levels have changed to:

Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge \_\_\_\_\_ Comprehension or Analysis \_\_\_\_>

10 CFR Part 55 Content:

55.41 <u>55.43 55.43</u>

|                                            |                                                                   |                                                                                                     | Question Work                                                                            | sheet                                            | F0                                             | rm ES-401-6 (R8                         |
|--------------------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------|-----------------------------------------|
| Examination C                              | Dutline Ci                                                        | ross-reference:                                                                                     | Level<br>Tier #<br>Group #<br>K/A #<br>Importan                                          | ce Rating                                        | RO<br><br>2.2.19                               | SRO<br>3<br>                            |
| Proposed Que                               | estion: S8                                                        | 37                                                                                                  |                                                                                          |                                                  |                                                |                                         |
| The "A" residu<br>for a 2 day pla          | al heat ro<br>nned <del>eys</del>                                 | emoval (RHR) pi<br><del>stem outage</del> wind<br>witenance LCO                                     | ump and associate<br>dow. The following                                                  | equipment h<br>tasks are lis                     | as just been<br>ted as minor                   | taken out of ser<br>maintenance.        |
| Chang<br>Obtair<br>Build<br>Repla<br>Repai | ge chart r<br>n an oil sa<br>scaffoldir<br>ce 2 darr<br>ring a Ga | ecorder pens for<br>ample from the ",<br>ag around the "A'<br>aged bolts on th<br>i-tronics phone r | RHR flow recorde<br>A" RHR motor.<br>' RHR pump.<br>e RHR pump flang<br>near the RHR pum | er.<br>je.<br>p.                                 |                                                |                                         |
| Can this work                              | be releas                                                         | sed to be perform                                                                                   | ned as minor main                                                                        | tenance?                                         | Consumed .                                     |                                         |
| Α.                                         | Yes                                                               | all work listed o                                                                                   | an be performed a                                                                        | is minor beca                                    | use they me                                    | e <del>t the minor</del>                |
| B.                                         | No                                                                | repair of the Ga                                                                                    | ai-tronics phone ca                                                                      | n not be perf                                    | ormed under                                    | minor maintena                          |
| C.                                         | No                                                                | replacement of                                                                                      | the 2 damaged bo                                                                         | olts on the RH                                   | IR pump flan                                   | ge can not be                           |
| D.                                         | No                                                                | building scaffol<br>maintenance                                                                     | ding around the RI                                                                       | -IR pump car<br><del>ding is near s</del>        | not be perfo<br>afety related                  | rmed under min<br>equipment.            |
| Proposed Ans                               | wer: C.                                                           | No replace<br>be perf<br>bounda                                                                     | ment of the 2 dam<br>ormed under mino<br>rry.                                            | aged bolts or<br>r maintenanc                    | n the RHR pu<br>e because th                   | Imp flange can r<br>is is a code clas   |
| Explanation (C                             | Optional):                                                        | AP-10.01 states<br>components that<br>PID. In addition                                              | s that Minor Mainte<br>at require parts/ma<br>n this should be a I                       | enance can ne<br>terials replac<br>SI code class | ot be used fo<br>ement shall I<br>s 3 boundary | r work on Cat I o<br>be identified on a |
| Technical Re                               | ference(                                                          | (s): AP10.(                                                                                         | 01pp 70                                                                                  |                                                  |                                                |                                         |
| Proposed refe                              | rences to                                                         | be provided to a                                                                                    | applicants during e                                                                      | xamination:                                      | None                                           |                                         |
| Learning Obje                              | ctive:                                                            | 2.2.19 Knowled                                                                                      | lge of maintenance                                                                       | work order i                                     | requirements                                   |                                         |
| Question Sour                              | ce:                                                               | Bank #<br>Modifie<br>New                                                                            | d Bank #                                                                                 | (Not                                             | e changes or                                   | attach parent)                          |
| Question Histo                             | ory:                                                              | Last NF                                                                                             | RC Exam _                                                                                |                                                  | -                                              |                                         |

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

55.41 55.43 55.45

\_\_5\_\_ \_13\_\_

10 CFR Part 55 Content:

| ES-401                               | Sample<br>Que | Written Examination<br>stion Worksheet | Form ES-401-6 (R8, S1 |          |
|--------------------------------------|---------------|----------------------------------------|-----------------------|----------|
| Examination Outline Cross-reference: | Level         | Tier #                                 | RO                    | SRO<br>3 |
|                                      |               | K/A #<br>Importance Rating             | 2.2.21                |          |

#### Proposed Question: S88

During testing of the "A" core spray system the pump flow was determined to be 4200 gpm at a vessel pressure of 113psi. The Technical Specification required flow is 4265 gpm at a vessel pressure of 113 psi. Engineering determined that the this condition does not increase core damage frequency and there is no increase in peak clad temperature if a design basis loss of coolant accident were to occur. Based on this information engineering has concluded that "A" core spray pump is operable. Is the "A" core spray system operable?

- A. The system is operable based on the engineering analysis. No compensatory measures are required.
- B. The system is operable but degraded and no compensatory measure are required.
- C. The system is not operable because engineering analysis cannot be used to justify operability in this case.
- D. The system is not operable until a 10 CFR 50.59 evaluation is performed.

Proposed Answer: C. The system is not operable because engineering analysis cannot be used to justify operability in this case.

Explanation (Optional) Engineering analysis can not be used alone to justify operability when the system does not meet TS requirements. The system must be declared inoperable and the system fixed or TS must be change (approval by the NRC). The 50.59 will identify that NRC approval is required.

Technical Reference(s): AP-03.11 pp 39

Proposed references to be provided to applicants during examination: None

Learning Objective: Knowledge of pre and post maintenance operability requirements. RO 2.3 / SRO 3.5

Question Source: Bank # INPO 8615

A small leak was discovered in a welded non-isolable joint within the class 2 piping boundary of the HPCI system. The IST engineer was consulted to determine operability. It was determined using engineering judgment that a complete failure of the weld would not pose a significant hazard and therefore the engineer concluded that the system was still operable. Is the HPCI system operable?

The system is not operable because engineering judgment cannot be used to justify operability in this case.

The system is operable but degraded and compensatory measures are required.

The system is operable but degraded and compensatory measures are not required.

The system is not operable until a 50.59 evaluation has been completed.

Reference: ...G2.2.21

Question History: Last NRC Exam (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

 Question Cognitive Level:
 Memory or Fundamental Knowledge
 X\_\_\_\_\_

 Comprehension or Analysis
 \_\_\_\_\_\_

10 CFR Part 55 Content:

55.41 \_\_\_\_\_ 55.43 \_\_2, 3\_

| ES-401                                                                                            |                                                                                                                            | Sample<br>Que                                                           | Written Examination stion Worksheet                                                                                                                            | F                                                                                                      | orm ES-401-6 (R8, S1                                                                                         |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Examination Outline (                                                                             | Cross-reference:                                                                                                           | Level                                                                   | Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                                | RO<br>2.2.20                                                                                           | SRO<br>3<br>                                                                                                 |
| Proposed Question: S                                                                              | 89                                                                                                                         |                                                                         |                                                                                                                                                                |                                                                                                        |                                                                                                              |
| Several hours ago an<br>developed. Which on<br>modification for troubl                            | event occurred.<br>e of the troublesl<br>eshooting.                                                                        | The pla<br>nooting i                                                    | nt is still at power and tems listed below must                                                                                                                | troublesho                                                                                             | ooting plan has been<br>d as a temporary                                                                     |
| A. Install<br>turbin<br>B. Install<br>C. Install<br>D. <b>Charg</b> , <del>Cyolir</del><br>Contre | ling a drain hose<br>e lube oil cooler.<br>ling a chart record<br>ation of jumpers<br>leg the feedwater<br>b <del>l.</del> | to suppo<br>der on th<br>in accor<br>level <del>cor</del>               | ort flushing the out of se<br>ne feedwater level conte<br>dance with a surveillan<br>htrol-switch between the                                                  | ervice <del>A1-</del> rea<br>rol system in<br>ce procedur<br><del>ce clomont</del><br>V a-d <b>6</b> ' | actor feedwater pump<br>strument loop.<br>e.<br><del>and single elemen</del> t<br><b>psi hon</b> .           |
| Proposed Answer:                                                                                  | B. Installi                                                                                                                | ng a cha                                                                | art recorder on the feed                                                                                                                                       | water level o                                                                                          | control system                                                                                               |
| Explanation (Optional)                                                                            | ): A. The <del>A'</del><br>step 2.<br>C. Actions<br>the sys<br>require<br>D. By mov<br>system                              | Cooler<br>5<br>s perforr<br>tem is ro<br>a tempo<br>ving the<br>. OP-2/ | is out of service and is<br>ned to facilitate an instr<br>estored immediately fol<br>orary modification.<br>switch this does not alt<br>A has you maintain the | therefore ex<br>rument calib<br>lowing the a<br>er the design                                          | ccluded via AP-05.02,<br>ration or test, provided<br>ctivity does not<br>n of the feedwater<br>her position. |
| Technical Reference(s                                                                             | s):OP-2A FEEDW                                                                                                             | ATER S                                                                  | SYSTEM                                                                                                                                                         |                                                                                                        | ~ ~ Ø                                                                                                        |
| Proposed references t                                                                             | o be provided to                                                                                                           | applicar                                                                | nts during examination:                                                                                                                                        | None                                                                                                   |                                                                                                              |
| _earning Objective:                                                                               | Knowledge of t<br>3.3                                                                                                      | he proce                                                                | ess for managing troub                                                                                                                                         | eshooting a                                                                                            | ctivities. RO 2.2 / SRC                                                                                      |
| Question Source:                                                                                  | Bank #<br>Modifie                                                                                                          | d Bank                                                                  | # INPO 2539                                                                                                                                                    |                                                                                                        |                                                                                                              |
| WHICH ONE (1) of the                                                                              | e following is a Te                                                                                                        | emporan                                                                 | y Modification?                                                                                                                                                |                                                                                                        |                                                                                                              |
| Connecting cables fror naintenance support.                                                       | n a 480v Motor C                                                                                                           | Control C                                                               | Center (MCC) to a temp                                                                                                                                         | orary power                                                                                            | panel for outage                                                                                             |
| Performing a channel outomatic actuation.                                                         | calibration proced                                                                                                         | lure, wh                                                                | ich requires installing ju                                                                                                                                     | Impers to el                                                                                           | ectrically bypass                                                                                            |
| blank flange is instal                                                                            | led on a line whil                                                                                                         | e rerouti                                                               | ing the line under an ac                                                                                                                                       | proved Wor                                                                                             | k Order.                                                                                                     |

V or

Maintenance technicians installing a temporary drain hose to support changing oil in a pump.

 Question History:
 Last NRC Exam

 (Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis |  |  |
|---------------------------|--------------------------------------------------------------|--|--|
| 10 CFR Part 55 Content:   | 55.41<br>55.433                                              |  |  |

Comments:

Are you in compliance with your FSAR analysis in operating in single element control. Is your transient / accident analysis performed in single or three element control? If in three element are you bounded?

| ES-401                                                   |                                                             | Sample \<br>Ques                     | Written Examination<br>stion Worksheet                                      | Fo                                                            | rm ES-401-6 (R8, S1)                                            |
|----------------------------------------------------------|-------------------------------------------------------------|--------------------------------------|-----------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------|
| Examination Outline C                                    | Cross-reference:                                            | Level                                | Tier #<br>Group #<br>K/A #                                                  | RO<br>                                                        | SRO<br>3<br>                                                    |
|                                                          |                                                             |                                      | Importance Rating                                                           |                                                               | _3.7_                                                           |
| Proposed Question: S                                     | 90                                                          |                                      |                                                                             |                                                               |                                                                 |
| What is the Technical<br>1 <del>0% valve open when</del> | Specification bas<br>above-29% rate                         | sis for the                          | e turbine <u>stop</u> valve cl<br>?                                         | osure scram tr                                                | ip signal, <del>at less than</del>                              |
| A. This s<br>neutro                                      | cram protects the<br>on flux, heat flux a                   | e minimu<br>and pres                 | Im critical power ratio<br>sure increase due to a                           | safety limit by<br>a load rejectior                           | anticipating the<br>which exceeds the                           |
| B. This s<br>neutro                                      | cram protects the<br>on flux, heat flux a                   | e minimu<br>and pres                 | im critical power ratio<br>sure increase due to a                           | safety limit by<br>a rapid closure                            | anticipating the<br>of these valves                             |
| C. This s                                                | cram protects the                                           | valves a<br>reactor                  | vessel high pressure                                                        | safety limit by                                               | anticipating the                                                |
| press<br>D. This s<br>anticip                            | ure increase due<br>cram protects the<br>pating the neutror | to a rapi<br>e fuel fro<br>n flux du | d closure of these val<br>m exceeding the linea<br>e to the rapid valve clo | ves.<br>Ir heat generat<br>Dsure.                             | se GFy<br>ion rate¶imit by                                      |
| Proposed Answer:                                         | B. This so<br>anticipa<br>rapid c                           | ram pro<br>ating the<br>losure of    | tects the minimum crit<br>pressure, neutron flu<br>i these valves without   | tical power ration<br>x, and heat flux<br>turbine bypass      | o safety limit by<br>k increase due to a<br>s valves available. |
| Explanation (Optional)                                   | B. Correc                                                   | v EHC h<br>t                         | eader pressure protec                                                       | cts against a lo                                              | ad reject.                                                      |
|                                                          | closure                                                     | event w                              | ith out scram will hav                                                      | e a larger effect                                             | t on the safety limit                                           |
|                                                          | D. This so<br>provide<br>not dise                           | ram doe<br>the pro<br>cussed i       | tection against LHGR                                                        | tween the MSI<br>ux and LHGR,<br>, not this scram<br>-y לוהגל | however the APRM<br>n. In addition, this is                     |
| Technical Reference(s                                    | s): Techni                                                  | cal Spec                             | ifications page 19                                                          |                                                               |                                                                 |
| Proposed references t                                    | o be provided to                                            | applican                             | ts during examination                                                       | : None                                                        |                                                                 |
| Learning Objective:                                      | Knowledge of b<br>operations and                            | ases in<br>safety li                 | technical specificatior mits.                                               | as for limiting c                                             | onditions for                                                   |
| Question Source:                                         | Bank #<br>Modifie<br>New                                    | d Bank a                             | # (No                                                                       | ote changes or                                                | attach parent)                                                  |
| Question History:                                        | Last NF                                                     | RC Exan                              | n                                                                           |                                                               |                                                                 |
| the NRC; failure to pro                                  | validated at the fa                                         | icility sin                          | ce 10/95 will generally<br>ecessitate a detailed                            | y undergo less<br>review of even                              | rigorous review by<br>( guestion.)                              |

| Question Cognitive Level: | Memory or Fundamental Knowledge | X |
|---------------------------|---------------------------------|---|
|                           |                                 |   |

.
## Comprehension or Analysis

10 CFR Part 55 Content:

55.41 \_\_\_\_ 55.43 \_\_2\_

| <u></u>                                                    |                                                        | Qu                                                                                                  | estion Worksheet                                                                                                                                      | FC                                                                                                     | rm_ES-401-6 (H8, S1                                                                                                    |
|------------------------------------------------------------|--------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Examination Ou                                             | tline Cross                                            | -reference: Leve                                                                                    | l<br>Tier #<br>Group #<br>K/A #<br>Importance Rating                                                                                                  | RO<br>2.2.32                                                                                           | SRO<br>3<br>                                                                                                           |
| Proposed Quest                                             | ion: S91                                               |                                                                                                     |                                                                                                                                                       |                                                                                                        |                                                                                                                        |
| Which one of the Specification.                            | e following                                            | activities would co                                                                                 | nstitute a core alteration                                                                                                                            | n as defined in                                                                                        | Technical                                                                                                              |
| A.<br>B.<br>C.<br>D.                                       | Withdrawal<br>Friction tes<br>Replaceme<br>Running tra | of source range r<br>t <del>ing of control roat</del><br>ent of a local powe<br>aversing in-core pr | nonitors (SRM) to verify<br>Withdrawl of a c<br>r range monitor (LPRM)<br>obes through LPRM stri                                                      | proper signal<br>on hol mod (<br>string.<br>ings to verify p                                           | to noise ratio.<br>محسم من الح 48 .<br>العندانية<br>roper operation.                                                   |
| Proposed Answe                                             | er: C.                                                 | Replacement                                                                                         | t of a local power range                                                                                                                              | monitor (LPR                                                                                           | И) string.                                                                                                             |
| Explanation (Opt                                           | ional): All<br>nor<br>the                              | other answers car<br>mal means. The c<br>removal of the LP                                          | be accomplished by m<br>only item that is not perf<br>RM string.                                                                                      | oving the com<br>ormed under i                                                                         | ponents via their<br>is normal means is                                                                                |
|                                                            | TS                                                     | 1.B Core Alteratio                                                                                  | n The act of moving an<br>the core support plate<br>the shroud. Normal of<br>control rod drive hydr<br>core alteration. Norn<br>instrumentation is no | ny component<br>e, below the up<br>control rod mo<br>raulic system i<br>nal movement<br>t defined as a | in the region above<br>oper grid and within<br>vement with the<br>s not defined as a<br>of in-core<br>core alteration. |
| Technical Refere                                           | nce(s):TS                                              | 1.B                                                                                                 |                                                                                                                                                       |                                                                                                        |                                                                                                                        |
| Proposed referer                                           | nces to be j                                           | provided to applica                                                                                 | ants during examination                                                                                                                               | : None                                                                                                 |                                                                                                                        |
| Learning Objectiv                                          | /e: 2.2.                                               | .32 Knowledge of                                                                                    | the effects of alteration                                                                                                                             | s on core conf                                                                                         | iguration.                                                                                                             |
| Question Source                                            | :                                                      | Bank #<br>Modified Banl<br>New                                                                      | k # (No                                                                                                                                               | ote changes or                                                                                         | attach parent)                                                                                                         |
| Question History:<br>Optional - Quest<br>he NRC; failure t | ions valida<br>o provide t                             | Last NRC Exa<br>ted at the facility s<br>he information will                                        | am<br>ince 10/95 will generally<br>I necessitate a detailed I                                                                                         | <br>/ undergo less<br>review of ever                                                                   | rigorous review by<br>y question.)                                                                                     |
| Question Cognitiv                                          | ve Level:                                              | Memory or Fu<br>Comprehensi                                                                         | indamental Knowledge<br>on or Analysis                                                                                                                | x                                                                                                      |                                                                                                                        |
| 10 CFR Part 55 C                                           | Content:                                               | 55.41<br>55.432, 6_                                                                                 | -                                                                                                                                                     |                                                                                                        |                                                                                                                        |
|                                                            |                                                        |                                                                                                     |                                                                                                                                                       |                                                                                                        |                                                                                                                        |

.

/ p

| ES-401                               | Sample V<br>Ques | Written Examination<br>stion Worksheet |       | Form ES-401-6 (R8, S1) |
|--------------------------------------|------------------|----------------------------------------|-------|------------------------|
| Examination Outline Cross-reference: | Level            | Tier #                                 | RO    | SRO<br>3               |
|                                      |                  | Group #<br>K/A #                       | 2.3.3 |                        |
|                                      |                  | Importance Rating                      |       | _2.9_                  |

Proposed Question: S92

A canal discharge has been ordered. To start the discharge the Auxiliary Operator must obtain the key to open the canal flow control valves. Which one of the individuals listed below controls this key?

- A. The shift manager
- B. The Radwaste Supervisor
- C. Control Room Supervisor
- D. The Security Supervisor

Explanation (Optional): A. The shift manager

Technical Reference(s):OP-49,LIQUID RADIOACTIVE WASTE SYSTEM\*

Proposed references to be provided to applicants during examination: None

Learning Objective: Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g. / waste disposal and handling systems). RO 1.8 / SRO 2.9

Question Source:

Bank # \_\_\_\_\_ (Note changes or attach parent) New \_\_\_\_\_X\_\_\_

Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | x |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.41<br>55.43 4                                             |   |

|                                                      |                                                               | C                                                                                                 | Question Worksheet                                                                                        | • · ·                                                |                                                                |  |
|------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------|--|
|                                                      |                                                               |                                                                                                   |                                                                                                           |                                                      |                                                                |  |
| Examination (                                        | Outline Cross-re                                              | ference: Lev                                                                                      | vel<br>Tier #<br>Group #                                                                                  | RO                                                   | SRO<br>3                                                       |  |
|                                                      |                                                               |                                                                                                   | K/A #<br>Importance Rating                                                                                | 2.3.6                                                |                                                                |  |
| Proposed Que                                         | estion: S93                                                   |                                                                                                   |                                                                                                           |                                                      |                                                                |  |
| A liquid radioa<br>effluent radiat<br>what special a | active waste disc<br>tion monitor is ou<br>actions, if any, m | charge is requ<br>ut of service fo<br>nust be taken t                                             | ired to reduce the waste<br>or maintenance. Who m<br>to start the discharge?                              | e sample tank le<br>ust approve the                  | evel. The radwaste<br>e discharge permit a                     |  |
| Α.                                                   | The radwaste                                                  | supervisor m                                                                                      | ust approve the discharg                                                                                  | ge. The radwa                                        | ste effluent monitor                                           |  |
| В.                                                   | must be retur<br>The general r                                | ned to service<br>nanager <b>J</b> ope                                                            | perore the discharge ca<br>erations must approve th                                                       | an de started.<br>e discharge pe                     | rmit. Discharge flow                                           |  |
| C.                                                   | must be estim<br>The shift man                                | nateronce per<br>ger must app                                                                     | 4 hours during the disch<br>rove the discharge perm                                                       | arge.<br>iit. The radwas                             | ste effluent monitor                                           |  |
| Л                                                    | must be retur                                                 | ned to service                                                                                    | before the discharge ca                                                                                   | an be started.<br>mit. Two tech                      | nically qualified                                              |  |
| U.                                                   | members of t<br>can be started                                | he facility staff<br>d.                                                                           | f must verify the discharg                                                                                | ge line valving                                      | before the discharge                                           |  |
| Proposed Ans                                         | swer: D.                                                      | The shift m<br>qualified m<br>valving bef                                                         | anager must approve th<br>embers of the facility sta<br>ore the discharge can be                          | e discharge pe<br>Iff must verify t<br>e started.    | ermit. Two technica<br>he discharge line                       |  |
| Explanation (                                        | Optional): A.&C.<br>B.                                        | The radwas<br>before the<br>The genera<br>discharge p<br>four hours.                              | ste effluent monitor does<br>discharge starts.<br>al manger - operations is<br>permit and the flow rate o | s not have to be<br>not required to<br>does not have | e returned to service<br>o approve the<br>to be estimated ever |  |
| Technical Ref                                        | ference(s):OP-4                                               | 9, TS Table 2                                                                                     | .1-1                                                                                                      |                                                      |                                                                |  |
| Proposed refe                                        | erences to be pro                                             | ovided to appl                                                                                    | licants during examination                                                                                | on: None                                             |                                                                |  |
| Learning Obje                                        | ective: 2.3.6<br>permi                                        | Knowledge of                                                                                      | f the requirements for re                                                                                 | viewing and ap                                       | proving release                                                |  |
| Question Source:                                     |                                                               | Bank # (Note changes or attach parent)<br>Modified Bank # (Note changes or attach parent)<br>NewX |                                                                                                           |                                                      |                                                                |  |
| Question Hist<br>(Optional - Qu<br>the NRC; failu    | tory:<br>uestions validate<br>ure to provide the              | Last NRC I<br>d at the facilit<br>e information                                                   | Exam<br>y since 10/95 will genera<br>will necessitate a detaile                                           | ally undergo les<br>d review of eve                  | ss rigorous review by<br>ery question.)                        |  |
| Question Cognitive Level:                            |                                                               | Memory or Fundamental Knowledge<br>Comprehension or AnalysisX                                     |                                                                                                           |                                                      |                                                                |  |
| Question Coy                                         |                                                               | 00111p10110                                                                                       |                                                                                                           |                                                      |                                                                |  |

55.43 \_\_2, 5\_\_

|                                                                                                    |                                                                                                       | Sample Write<br>Question                                                                                               | ten Examination<br>h Worksheet                                                                      | FO                                                                   | rm ES-401-6 (R8, S1                                                                              |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Examination O                                                                                      | utline Cross-ref                                                                                      | erence: Level<br>Ti<br>G<br>K                                                                                          | er#<br>roup#<br>'A#                                                                                 | RO<br>2.3.10                                                         | SRO<br>3                                                                                         |
|                                                                                                    |                                                                                                       | In                                                                                                                     | portance Rating                                                                                     | . <u></u>                                                            | _3.3_                                                                                            |
| Proposed Ques                                                                                      | stion: S94                                                                                            |                                                                                                                        | chh                                                                                                 | nul N                                                                |                                                                                                  |
| Power had bee<br>work permit, to<br>rates were obta                                                | n reduced to 60<br>perform mainte<br>lined and used                                                   | 0% and Hydrogen in<br>enance activities on<br>to plan the work act                                                     | iection was <del>turned</del><br>a moisture separate<br>ivities.                                    | off, in accorda<br>or drain <del>line:</del> T<br>Velue              | nce with a radiation<br>he following dose                                                        |
| 100% p<br>60 % p<br>60 % p                                                                         | oower & Hydrog<br>oower & Hydrog<br>oower & Hydrog                                                    | gen injection OPERA<br>gen injection OPERA<br>gen injection OFF                                                        | ATING 1100<br>ATING 800<br>200                                                                      | ) mrem/hr<br>mrem/hr<br>mrem/hr                                      |                                                                                                  |
| The work was o<br>operating. On<br>people entering<br>used to perforn<br><del>moisture separ</del> | completed seve<br>a plant tour you<br>the <del>heater</del> bay<br>n work on the m<br>ator. What acti | eral hours ago, the u<br>notice that the door<br>. They state that th<br>noisture separator ar<br>ons, if any, must be | nit is at 100% power<br>to the heater bay i<br>ey are on the same<br>ad they were told to<br>taken? | er and Hydrog<br>s blocked ope<br>radiation wor<br>clean up the      | en injection is<br>in and there are 2<br>k permit that was<br>area <b>.<del>around the</del></b> |
| А.<br>В.                                                                                           | The activity m<br>to perform the<br>The activity m<br>alarm and the                                   | ay continue because<br>repair work on the r<br>ay continue because<br>workers will leave th                            | they are on the ra<br>moisture separator<br>the workers have<br>ne area if the gener                | diation work p<br>drain-line: dv<br>electronic dos<br>al area dose r | ermit that was used<br>العديد معامد<br>simeters that will<br>ates are significantly              |
| C.                                                                                                 | higher than ex<br>The activity m<br>radiation area                                                    | pected.<br>ust be stopped and .                                                                                        | the <del>heater b</del> ay dool                                                                     | r closed, locke                                                      | ed and posted high                                                                               |
| D.                                                                                                 | The activity m<br>high radiation                                                                      | ust be stopped and area.                                                                                               | the <del>heater</del> bay dool                                                                      | r closed, locke                                                      | ed and posted very                                                                               |
| Proposed Ansv                                                                                      | ver: C.                                                                                               | The activity must and posted high r                                                                                    | be stopped and the adiation area.                                                                   | heater bay do                                                        | oor closed, locked                                                                               |
| Explanation (O                                                                                     | ptional): The u<br>separ<br>contro<br>condit                                                          | nit has returned to p<br>ator have returned to<br>lled as a high rad an<br>ion because power                           | ower. Dose rates i<br>o 1100 mrem/hr. T<br>rea. The personnel<br>is at 100% and Hyd                 | n the area of t<br>he door shoul<br>I RWP are not<br>Irogen injectio | he moisture<br>d be locked and<br>valid for this<br>n is operating.                              |
| Technical Refe                                                                                     | rence(s):AP-0                                                                                         | 7.06 HIGH RADIA <sup>.</sup>                                                                                           | TION AREA CON                                                                                       | TROL, TS 6. <sup>-</sup>                                             | 11                                                                                               |
| Proposed refer                                                                                     | ences to be pro                                                                                       | ovided to applicants                                                                                                   | during examination                                                                                  | : None                                                               |                                                                                                  |
| Learning Object                                                                                    | tive:                                                                                                 | 2.3.11, Ability to p radiation and gua                                                                                 | erform procedure t<br>rd against personne                                                           | o reduce exce<br>el exposure.                                        | ssive levels of                                                                                  |
|                                                                                                    | ce:                                                                                                   | Bank #                                                                                                                 | (N                                                                                                  | ote changes o                                                        |                                                                                                  |

Sample Written Examination

4

Form ES-401-6 (R8, S1)

Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

| Question Cognitive Level: | Memory or Fundamental Knowledge<br>Comprehension or Analysis | X |
|---------------------------|--------------------------------------------------------------|---|
| 10 CFR Part 55 Content:   | 55.41<br>55.434                                              |   |

Comments:

Question History:

Is this door commonly used as a rad door?

| ES-401                          |                       |                                          | S:                                                      | Question Worksheet                               |                                                                                       | F0                                                              | Form ES-401-6 (R8, S1)                                                  |  |
|---------------------------------|-----------------------|------------------------------------------|---------------------------------------------------------|--------------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------|--|
| Examination (                   | Outline C             | Cross-ref                                | erence:                                                 | Level                                            | Tier #<br>Group #<br>K/A #<br>Importance Rating                                       | RO<br><br>2.4.24                                                | SRO<br>3<br><br>_3.7_                                                   |  |
| Proposed Qu                     | estion: S             | 98                                       |                                                         |                                                  |                                                                                       |                                                                 |                                                                         |  |
| The loss of a<br>loss of the pu | n operati<br>Imp resu | ng servic<br>Its in a lo                 | e water p<br>ss of the                                  | oump w<br>service                                | ill result in the stands<br>water system then _                                       | oy pump starting<br>(2)                                         | g on <u>(1)</u> . If the                                                |  |
| Α.                              | (1)<br>(2)            | trip of<br>place f<br>pumps<br>inject i  | the runnin<br>the contro<br>s in pull to<br>into the Tl | ng pum<br>ol switcl<br>lock a<br>BCLC ł          | p<br>hes for the turbine bu<br>nd verify that the eme<br>neader.                      | ilding closed lo<br>ergency service                             | op cooling (TBCLC)<br>water automatically                               |  |
| B.                              | (1)<br>(2)            | trip of<br>manua<br><del>cooler</del>    | the runnir<br>ally scram<br><del>s by mon</del> i       | ng pum<br>the rea<br>itoring (                   | p or low service wate<br>actor and <del>verify that I</del><br>area tomporaturos. 2   | er header press<br><del>SW is suppling</del><br>and place R     | ure 75 psig<br><del>; crescent area room</del><br>BCLC pumps in pull    |  |
| C.                              | (1)<br>(2)            | trip of<br>place t<br>pumps<br>inject i  | the runnin<br>the contro<br>s in pull to<br>into the Ti | ng pum<br>ol switcl<br>o lock a<br>BCLC l        | p<br>hes for the turbine bu<br>nd verify that the emo<br>neader.                      | ilding closed lo<br>ergency service                             | op cooling (TBCLC)<br>water automatically                               |  |
| D.                              | (1)<br>(2)            | trip of<br>manua<br><del>cooler</del>    | the runnir<br>ally scram<br><del>s by moni</del>        | ng pum<br>1 the rea<br>itoring a                 | p or low service wate<br>actor and <del>vorify that f</del><br>area temperatures.     | er header press<br>ESW is suppling                              | ure 85 psig<br><u>, crescent area room</u> ,                            |  |
| Proposed An                     | swer:                 | В.                                       | (1)<br>(2)                                              | trip of<br>75 psig<br>manua<br><del>crosce</del> | the running pump or<br>g<br>ally scram the reactor<br><del>nt area room coolers</del> | low service wa<br>and <del>verify that</del><br>by monitoring : | ter header pressure<br><del>EGW is suppling</del><br>area temperatures, |  |
| Explanation (                   | Optional              | ): The st<br>psig of<br>the rea<br>by mo | andby pu<br>r trip of th<br>actor is so<br>nitoring te  | mp sta<br>e runni<br>cramme<br>empera            | rts at a service water<br>ng pump. IF a comp<br>ed and area temperat<br>tures.        | discharge head<br>lete loss of serv<br>ures in the cres         | ler pressure of 75<br>ice water occurs then<br>cent area is verified    |  |
| Technical Re                    | ference(              | s):                                      | AOP-10                                                  | ), loss (                                        | of service water and (                                                                | OP-42 Service                                                   | Water                                                                   |  |
| Proposed ref                    | erences               | to be pro                                | vided to a                                              | applica                                          | nts during examinatio                                                                 | on: None                                                        | · · · · · · · · · · · · · · · · · · ·                                   |  |
| Learning Obj                    | ective:               | Knowl                                    | edge of lo                                              | oss of c                                         | ooling water procedu                                                                  | ires. RO 3.3 / S                                                | SRO 3.7                                                                 |  |
| Question Sou                    | irce:                 |                                          | Bank #<br>Modifie<br>New                                | d Bank                                           | #(                                                                                    | Note changes o                                                  | r attach parent)                                                        |  |
|                                 |                       |                                          |                                                         |                                                  |                                                                                       |                                                                 |                                                                         |  |

•

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

**Question Cognitive Level:** 

Memory or Fundamental Knowledge \_\_\_\_X\_\_\_ Comprehension or Analysis

10 CFR Part 55 Content:

55.41 \_10\_\_ 55.43 \_\_5\_

| ES-401                     | San           | nple Written Examination<br>Question Worksheet | F      | Form ES-401-6 (R8, S1) |
|----------------------------|---------------|------------------------------------------------|--------|------------------------|
| Examination Outline Cross- | reference: Le | evel<br>Tier #                                 | RO     | SRO<br>3               |
|                            |               | Group #<br>K/A #<br>Importance Bating          | 2.4.48 | 3.8                    |

## Proposed Question: S100

While operating at 90% reactor power, an event causes the following conditions to exist

- OFF GAS LINE PRESS HI annunciator 09-6-1-7 activates. actuales alarming
- OFF GAS LINE TEMP HI annunciator 09-6-1-15 activates. atuates alarming
- Steam Jet Air Ejector Supply Valve (29PCV-107) close.
- Condenser Isolation Valves (38AOV-113A and B) close.

Which one of the following automatic actions could also be expected to occur and what actions must be taken?

- A. MSIV closure due to low Main Steam Line pressure and execute EOP-2, "RPV Control."
- B. Main and Reactor Feed Pump turbine trips on high RPV level and execute AOP-1, "Scram."
- C. RWR pumps trip and ARI initiation due to high RPV pressure and execute EOP-3, "failure to scram."
- D. Turbine Building Ventilation isolation due to high building airborne activity and execute AOP-1, "Scram."

Proposed Answer: D. Turbine Building Ventilation isolation due to high building airborne activity and execute AOP-1, "Scram."

Explanation (Optional):

Technical Reference(s):AOP-4

Proposed references to be provided to applicants during examination: None

Learning Objective: Ability to interpret control room indications to verify the status and operation of system / and understand how operator actions and directives affect plant and system conditions. RO 3.5 / SRO 3.8

Question Source:

## Bank # FitzPatrick Requalification Question Number 27101004B01C Rev. 2

While operating at 90% reactor power, an event causes the following conditions to exist

- OFF GAS LINE PRESS HI annunciator 09-6-1-7 activates.
- OFF GAS LINE TEMP HI annunciator 09-6-1-15 activates.
- Steam Jet Air Ejector Supply Valve (29PCV-107) close.
- Condenser Isolation Valves (38AOV-113A and B) close.

Which one of the following automatic actions could also be expected to occur

- A. MSIV closure due to low Main Steam Line pressure.
- B. Main and Reactor Feed Pump turbine trips on high RPV level.
- C. RWR pumps trip and ARI initiation due to high RPV pressure.
- D. Turbine Building Ventilation isolation due to high building airborne activity.

## Question History: Last NRC Exam

(Optional - Questions validated at the facility since 10/95 will generally undergo less rigorous review by the NRC; failure to provide the information will necessitate a detailed review of every question.)

Question Cognitive Level:

Memory or Fundamental Knowledge Comprehension or Analysis

10 CFR Part 55 Content:

55.41 \_\_\_\_\_ 55.43 \_\_5\_\_