

NRC Exam 2013

**QUESTION RO 1**

IAW NOP-OP-1002, Conduct of Operations, which of the following indicates the minimum Safe Shutdown staffing requirements during Mode 3?

	Shift Manager	Unit Supervisor	Reactor Operator
A.	1	0	1
B.	0	1	2
C.	1	1	2
D.	1	1	3

NRC Exam 2013

**QUESTION RO 1**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.1.5	
	Importance Rating	2.9*	
K&A: Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.			
<b>Generic</b>			
Explanation: <b>Answer C</b> – IAW NOP-OP-1002 Att 4, Safe Shutdown staffing for Modes 1, 2, & 3 is 1 SM, 1 US, & 2 RO's. A – Incorrect – This is the staffing requirements for Modes 4 & 5 B – Incorrect – Plausible if candidate thinks this is Mode 4 or 5. D – Incorrect – 3 Reactor Operators are not the MINIMUM requirements.			
Technical Reference(s): NOP-OP-1002 Rev 7		Reference Attached: NOP-OP-1002 p 99	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3039-01-K			
Question Source:	Bank # Modified Bank # New	Perry Bank 40118	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	Comprehension or Analysis
10 CFR Part 55 Content:	55.41 55.43	b.10	
Comments: Level of Difficulty = x			

**QUESTION RO 2**

Which one of the following is a responsibility of the Reactor Operator during core alterations?

- A. Monitor SRM count rate and period.
- B. Authorize commencement of fuel movements
- C. Verify required refueling surveillances are current
- D. Ensure the Control Room fuel tag board is maintained current

NRC Exam 2013

QUESTION RO 2

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.1.44	
	Importance Rating	3.9	
<p>K&amp;A: Knowledge of RO duties in the control room during fuel handling such as responding to alarms from the fuel handling area, communication with the fuel storage facility, systems operated from the control room in support of fueling operations, and supporting instrumentation.</p>			
<b>Generic</b>			
<p>Explanation: <b>Answer A</b> – Per IOI-9 monitor core reactivity.                  B and D – Incorrect – These are the responsibility of the Unit Supervisor.                  C – incorrect – This is the responsibility of the Refueling Supervisor and the Fuel Handling Supervisor.</p>			
Technical Reference(s): IOI-009 Rev. 29		Reference Attached: IOI-009 p 6	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3035-12(LP)-E			
Question Source:	Bank # Modified Bank # New	Perry 2009	
Question History:	Previous NRC Exam Perry 2009 #RO-2		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 3**

A dollar sign (\$) step that does not meet the Acceptance Criteria in a Surveillance test constitutes a failure \_\_\_\_\_.

- A. to adequately prevent preconditioning
- B. of the preventive maintenance program
- C. to comply with the applicable Tech Spec LCO
- D. to meet the requirements of the Surveillance Program

NRC Exam 2013

QUESTION RO 3

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.2.12	
	Importance Rating	3.7	
K&A: Knowledge of surveillance procedures.			
<b>Generic</b>			
<p>Explanation: <b>Answer C</b> – Per NOP-WM-2003, WM Surveillance Process, a (\$) sign step is a surveillance requirement from Tech Specs. TS SR 3.0.1 states that failure to meet the surveillance is failure to meet the LCO.</p> <p>A – Incorrect - Preconditioning is a term used to describe the act of operating a piece of equipment prior to performing the surveillance and may be selected by the candidate due to its association with surveillances.</p> <p>B – Incorrect - Not necessarily impacted by the PM program but could be selected by the candidate due to possibly degraded equipment causing failure to meet acceptance criteria.</p> <p>D – Incorrect - Failure to meet acceptance criteria does not impact the Surveillance Program but may be selected by the candidate due to its reference to surveillances. The Surveillance Program (per NOP-WM-2003) includes aspects of scheduling surveillances, updating databases, tracking surveillances, etc.</p>			
Technical Reference(s): NOP-WM-2003 Rev 7, PAP-0500 Rev 7 & TS SR 3.0.1		Reference Attached: NOP-WM-2003 pp 26-28, PAP-0500 p 77 & TS SR p 3.0-4	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-04-T			
Question Source:	Bank # Modified Bank # New	Clinton 2007	
Question History:	Previous NRC Exam Clinton 2007 # RO 19		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41 b.10 55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 4**

The plant was operating at 85% power and 100% loadline, when following occurred:

- APRM 'A' failed upscale.
- AFDL in Control alarm (ARI-H13-P680-004-E9) was received.
- The immediate actions for AFDL in Control were completed.

The plant is currently stable with the following conditions:

- JP LOOP TOT FLOW (Loop A) B33-R612A reading 26 Mlb/hr
- JP LOOP TOT FLOW (Loop B) B33-R612B reading 37 Mlb/hr
- TOTAL JP FLOW B33-R613(R) reading 63 Mlb/hr

Which of the following Technical Specification LCO(s) if any are not being met?

- A. only 3.4.2 Flow Control Valves.
- B. only 3.4.1 Recirculation Loops Operating.
- C. all Technical Specification LCO are being met.
- D. 3.4.1 Recirculation Loops Operating and 3.4.2 Flow Control Valves.



**QUESTION RO 5**

You are performing a housekeeping walk-down and observe only a red ty-wrap on valve P43-F523A, NCC A HX DRAIN.  
P43-F523A is in the open position  
NCC A heat exchanger is in dry layup.

Based on this information, you should \_\_\_\_\_

- A. close P43-F523A and remove the ty-wrap
- B. report your finding to the Work Week Manager
- C. notify the Control Room to ensure personnel safety
- D. review eSOMS to determine if P43-F523A has an active Danger tag

NRC Exam 2013

**QUESTION RO 5**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.2.14	
	Importance Rating	3.9	
K&A: Knowledge of the process for controlling equipment configuration or status.			
<b>Generic</b>			
<p>Explanation: <b>Answer C</b> – IAW NOP-OP-1001 Clearance/Tagging Program, A Component Found With A Red Ty-Wrap Attached Is To Be Treated As A Red Tagged Component Until Proven Otherwise. Prompt notification of the Control Room is necessary for personnel safety.</p> <p>A – Incorrect – Since The Valve Is Open And The Component Is To Be Treated As A Red Tagged Component, This Would Be A Violation Of The Tagging Program.</p> <p>B – Incorrect – This is the wrong person to contact in this instance.</p> <p>D – Incorrect – This is the responsibility of the Clearance Authority</p>			
Technical Reference(s): NOP-OP-1001 Rev 19		Reference Attached: NOP-OP-1001 p 121	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3304-01-D.5			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.10	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 6**

A discharge of Waste Sample Tank (WST) A is in progress in accordance with SVI-G50-T5266, Liquid Radwaste Release Permit

Annunciator H13-P906-0001-A3, RW DISCH ISOL RADWASTE TO ESW PRCS RAD MON HI alarms.

Based on this information, \_\_\_\_\_.

- A. an additional ESW pump will need to be started
- B. an additional Service Water pump will need to be started
- C. the RADWASTE HI FLW DISCH HDR FCV, G50-F153 will isolate automatically
- D. the RADWASTE HI FLW DISCH HDR FCV, G50-F153 will need to be manually isolated

NRC Exam 2013

QUESTION RO 6

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.3.5	
	Importance Rating	2.9	
K&A: Ability to use radiation monitoring systems, such as fixed radiation monitors and alarms, portable survey instruments, personnel monitoring equipment, etc.			
<b>Generic</b>			
<p>Explanation: <b>Answer C</b> – Per ARI-H13-P906-01-A3 the G50-F153 valve will automatically isolate on a high radiation condition on the Radwaste to ESW PRCS Rad Monitor.</p> <p>A – Incorrect – misconception, Per ARI-H13-P970-01-A8 the G50-F153 valve will automatically isolate on a low discharge tunnel flow. The G50 SVI requires running an ESW pump during discharges to ensure no low flow condition exists during times of high cooling tower makeup.</p> <p>B – Incorrect – misconception - Per ARI-H13-P970-01-A8 the G50-F153 valve will automatically isolate on a low discharge tunnel flow. The Subsequent Actions of the ARI is to start an additional pump if necessary.</p> <p>D – Incorrect – The G50-F153 valve will automatically isolate – manual isolation not necessary.</p>			
Technical Reference(s): ARI-H13-P906-001 Rev 4		Reference Attached: ARI-H13-P906-001 p 5	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-D17-F			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41	b.11	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 7**

You are required to make a Drywell Entry at 12% reactor power.

Since this is a considered a Very High Radiation Area, you must obtain \_\_\_\_\_.

1. RP Manager written approval
2. Operations Unit Supervisor approval
3. Operations Shift Manager approval
4. Director of Site Operations approval

- A. 1, 2, & 3
- B. 2, 3, & 4
- C. 1, 2, & 4
- D. 1, 3, & 4

NRC Exam 2013

QUESTION RO 7

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.3.13	
	Importance Rating	3.4	
<p>K&amp;A: Knowledge of radiological safety procedures pertaining to licensed operator duties, such as response to radiation monitor alarms, containment entry requirements, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc.</p>			
<b>Generic</b>			
<p>Explanation: <b>Answer D</b> – RPM, SM and DSO approval is required for LHRA entry IAW NOP-OP-4101 A, B, &amp; C – Incorrect – The Unit Supervisor’s approval is not required.</p>			
Technical Reference(s): NOP-OP-4101 Rev 8		Reference Attached: NOP-OP-4101 p 18	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3039-03-F			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.12	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 8**

Which of the following require notification to the Federal Aviation Administration (FAA)?

- 1) Unit 2 cooling top red flashing beacons burned out
- 2) Seven days since last notification to FAA
- 3) TEC helicopter pad lights out
- 4) Met tower upper light out
- 5) Unit 1 cooling tower middle red steady beacons off
- 6) Microwave tower flashing lights off

- A. 1, 2, & 5
- B. 1, 4, & 6
- C. 2, 3, & 5
- D. 3, 4, & 6

NRC Exam 2013

**QUESTION RO 8**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.4.30	
	Importance Rating	2.7	
<p>K&amp;A: Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.</p>			
<b>Generic</b>			
<p>Explanation: <b>Answer B</b> – IAW OAI-0201, notification to the FAA is required for items 1, 4 &amp; 6 only.</p> <p>A – Incorrect – Notifications must be made every 15 days. And middle steady burning light failure need not be reported.</p> <p>C – Incorrect - Notifications must be made every 15 days. The TEC helicopter pad lights are not covered. And middle steady burning light failure need not be reported.</p> <p>D - The TEC helicopter pad lights are not covered.</p>			
<p>Technical Reference(s): OAI-0201 Rev 30, PDB-C08 Rev 1, &amp; PERS</p>		<p>Reference Attached: OAI-0201 pp 51-52 &amp; PDB-C08 p 1</p>	
<p>Proposed references to be provided to applicants during examination: None</p>			
<p>Learning Objective (As available): OT-3039-01-A</p>			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.10	
	55.43		
<p>Comments: Level of Difficulty = x</p>			

NRC Exam 2013

**QUESTION RO 9**

The plant is operating at 80% power when the following occurs:

Annunciator H13-P680-08-B6, LOAD SET RUNBACK STATOR CLG alarms

The condition that caused this alarm was \_\_\_\_\_.

- A. Stator cooling water inlet flow to main generator at 530 gpm
- B. Stator cooling water inlet temperature element fails to 85°C
- C. Stator cooling water outlet from main generator temperature is 76°C
- D. Stator cooling water inlet pressure to the main generator at 40 psig

NRC Exam 2013

QUESTION RO 9

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.4.46	
	Importance Rating	4.2	
K&A: Ability to verify that the alarms are consistent with the plant conditions.			
<b>Generic</b>			
<p>Explanation: <b>Answer D</b> – SWC inlet pressure to the main generator &lt; 42.5 will cause this alarm.</p> <p>A – Incorrect – The low inlet water flow (&lt;531 gpm) causes H2 Seal/STATOR CLG TRBL alarm not the LOAD SET RUNBACK STATOR CLG alarm</p> <p>B – Incorrect – The high inlet water temperature causes H2 Seal/STATOR CLG TRBL alarm not the LOAD SET RUNBACK STATOR CLG alarm</p> <p>C – Incorrect – The inlet temperature setpoint is &gt;81°C not the outlet temperature. The outlet temp gives local alarm causing causes H2 Seal/STATOR CLG TRBL alarm not the LOAD SET RUNBACK STATOR CLG alarm</p>			
Technical Reference(s): ARI-H13-P680-08 Rev 13		Reference Attached: ARI-H13-P680-08 p 21	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-N43-I.1			
Question Source:	Bank # Modified Bank # New	LaSalle 2006	
Question History:	Previous NRC Exam LaSalle 2006 # RO-74		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41 b.10 55.43		
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 10**

You are the Field Supervisor.

- At 09:58 a Chemistry Tech reported an explosion in the Chemistry Lab.
- At 10:03 the Security Shift Supervisor notified the Shift Manager that the explosion in the Chemistry Lab was a result of Hostile Action within the plant
- At 10:09 the Shift Manager declared a Site Area Emergency
- The Shift Manager has called for activation of the OSC at the alternate location.

You must report to (1).

The latest time the OSC should be declared Operational to meet the goal is (2).

	<u>(1)</u>	<u>(2)</u>
A.	TSC @ SB-603'	10:58
B.	TSC @ SB-603'	11:09
C.	Unit 2 Control Room	10:58
D.	Unit 2 Control Room	11:09

NRC Exam 2013

QUESTION RO 10

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	3	
	Group #		
	K/A#	2.4.42	
	Importance Rating	2.6	
K&A: Knowledge of emergency response facilities.			
<b>Generic</b>			
<p>Explanation: <b>Answer D</b> – The alternate location for the OSC is the Unit 2 control room for people on site. Sixty minutes from the time the event is <u>declared</u> is the goal for declaring the OSC Operational.</p> <p>A – Incorrect – Wrong location for the alternate OSC and incorrect time.</p> <p>B – Incorrect – Wrong location for the alternate OSC</p> <p>C – Incorrect – Wrong time for meeting the goal</p>			
Technical Reference(s): EPI-A7 Rev 21		Reference Attached: EPI-A7 p 6	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): EPL-0804-01 & EPL-0815-01-4 & -6			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41	b.10	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 11**

The plant was operating at 100% power when reactor power unexpectedly decreased. ONI-C51, Unplanned Change in Reactor Power or Reactivity, has been entered.

Plant conditions have stabilized with reactor power at 90%.

The following changes in Recirculation System parameters occurred:

- Total Core Flow has decreased
- Core Plate d/p has decreased
- Loop A & B Flow has slightly increased
- Loop A Total Jet Pump Flow has decreased
- Loop B Total Jet Pump Flow has increased

Which of the following has occurred based on these plant conditions?

- A. A Jet Pump Riser in Loop A has failed.
- B. Flow Control Valve A has drifted closed.
- C. A vortexing event in Loop A has occurred.
- D. Loop A Discharge Valve has drifted closed.

NRC Exam 2013

QUESTION RO 11

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295001	AK3.02
	Importance Rating	3.7	
K&A: Knowledge of the reasons for the following responses as they apply to Partial Or Complete Loss Of Forced Core Flow Circulation: Reactor power response			
<b>Partial or Complete Loss of Forced Core Flow Circulation / 1 &amp; 4</b>			
<p>Explanation: <b>Answer A</b> – The reason reactor power decreased is that recirc flow lowered on the A side as a result of a failed JP riser.</p> <p>B – Incorrect – If this had occurred, Loop A flow would have decreased, not increased slightly.</p> <p>C – Incorrect - If this had occurred, reactor power would have increased and return to the pre-transient value, not decreased and stabilized.</p> <p>D – Incorrect –If this had occurred, Loop A flow would have decreased and recirc pump would have tripped, not increased slightly</p>			
Technical Reference(s): ONI-C51 Rev J & SEN-105		Reference Attached: ONI-C51 - partial	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-B33-C.9			
Question Source:	Bank # Modified Bank # New	Perry 2005	
Question History:	Previous NRC Exam Perry 2005 # RO-75		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.5	
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 12**

The plant is operating at rated power with the following electrical lineup:

- Buses EH11 and EH13 are on their Preferred Source.
- Bus EH12 is on its Alternate Preferred Source.

Annunciator 2H13-P870-01-D4, INTERBUS XFMR LH-2-A LOCKOUT RELAY alarmed.

What is the status of the Emergency Diesel Generators (EDG's) two minutes after INTERBUS XFMR LH-2-A LOCKOUT RELAY alarm is received?

- A. All three EDG's are running and loaded.
- B. All three EDG's remain in standby status.
- C. Division 2 EDG is running loaded and Division 1 and 3 EDG's remain in standby status.
- D. Division 2 EDG remains in standby status and Division 1 and 3 EDG's are running loaded.

NRC Exam 2013

**QUESTION RO 12**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295003	AA1.02
	Importance Rating	4.2*	
K&A: Knowledge of the operational implications of the following concepts as they apply to partial or complete loss of A.C. Power: Emergency generators			
<b>Partial or Complete Loss of AC / 6</b>			
Explanation: <b>Answer C</b> – Tie bus TH21 has lost power from LH2A, so Division 2 DG starts and powers EH12. A – Incorrect – Plausible if loss of both LH1A & LH2A B – Incorrect – Div 2 DG will auto start on loss of power to EH12 D – Incorrect – Plausible if loss of tie bus TH11			
Technical Reference(s): ARI-2H13-P870-01 Rev 6		Reference Attached: ARI-2H13-P870-01 p 39	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-R10-C.8 & OT-COMBINED-R48_48-F.10, 11, & 12			
Question Source:	Bank # Modified Bank # New	Perry 2007	
Question History:	Previous NRC Exam Perry 2007 # RO-12		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 13**

The plant is operating in EOP-1A, Level Power Control with the following conditions:

- RHR A pump is operating in Suppression Pool Cooling
- A loss of bus ED-1-A occurs
- RHR B & C pumps have tripped and can not be restarted
- The US determined Emergency Depressurization is required

Based on this information, you would perform Emergency Depressurization by \_\_\_\_\_.

- A. arming and depressing both ADS A pushbuttons on P601
- B. arming and depressing both ADS B pushbuttons on P601
- C. individually operating the ADS SRV control switches on P601
- D. individually operating the ADS SRV control switches on P631

NRC Exam 2013

QUESTION RO 13

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295004	AA2.04
	Importance Rating	3.2	
K&A: Ability to determine and/or interpret the following as they apply to Partial Or Complete Loss Of D.C. Power: System lineups			
<b>Partial or Total Loss of DC Pwr / 6</b>			
<p>Explanation: <b>Answer D</b> – Bus ED-1A powers the ADS A solenoids. Since the A solenoids have no power, and no RHR pumps are running on the B side, the SRV's must be operated individually from P631.</p> <p>A – Incorrect - plausible; even though a RHR pump is running, the A solenoids have no power.</p> <p>B – Incorrect - plausible; even though the B solenoids have power no RHR pump is running,</p> <p>C – Incorrect - plausible; if misconception about which solenoids are powered from which bus</p>			
Technical Reference(s): ONI-B21-1 Rev 11, ELI-R42 Rev 8, Dwgs 208-011 Sh 4 Rev M. Sheet 5 Rev J,		Reference Attached: ONI-B21-1 p 12, ELI-R42 pp 3-4, Dwgs 208-011 Sh 4. (partial) Sheet 5 (partial)	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-B21C-C			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41	b.10	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 14**

The reactor is operating at 40% power.

A Main Turbine trip occurs due to actuation of the Main Generator lockout relay.

The reactor does not automatically scram.

Which one of the following describes the Reactor Protection System response in accordance with Technical Specifications 3.3.1.1, RPS Instrumentation?

- A. RPS Instrumentation is OPERABLE; no Required Action(s) need to be completed.
- B. RPS Instrumentation Turbine Stop Valve Closure trip only is INOPERABLE, Required Action(s) need to be completed.
- C. RPS Instrumentation Turbine Stop Valve Closure and Turbine Control Valve Fast Closure trips are INOPERABLE; Required Action(s) need to be completed.
- D. RPS Instrumentation Turbine Stop Valve Closure and Turbine Control Valve Fast Closure trips are not required to be OPERABLE, no Required Action(s) need to be completed.

NRC Exam 2013

**QUESTION RO 14**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295005	2.2.37
	Importance Rating	3.6	
K&A: Ability to determine operability and/or availability of safety related equipment.			
<b>Main Turbine Generator Trip / 3</b>			
<p>Explanation: <b>Answer C</b> – Since reactor power is &gt;38%, both stop valve and control valve scram signals should have been generated. Because both trips did not occur, they are both inop.</p> <p>A – Incorrect – RPS is not operable with trips not occurring at 40% power.</p> <p>B – Incorrect – TCV trip also needs to be operable at &gt;30% RTP</p> <p>D – Incorrect – The TSV &amp; TCV trips need to be operable at &gt;30% RTP</p>			
Technical Reference(s): TS 3.3.1.1-1 Table		Reference Attached: TS 3.3.1.1-1	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-07-F			
Question Source:	Bank # Modified Bank # New	Perry Audit 2003	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 b.7 55.43		
Comments: Level of Difficulty = x – The TS table is part of the Applicability statement.			

NRC Exam 2013

**QUESTION RO 15**

The plant was operating at 50% power when the following occurred:

- The Mode Switch was placed in Shutdown
- All Control Rods inserted except one, which is stuck fully withdrawn
- RPV level lowered to 140 inches then recovered using feedwater
- SRM's and IRM's have been inserted

Shutdown criteria is   (1)  . Entry into   (2)   is required.

- |    | <u>  (1)  </u> | <u>  (2)  </u>              |
|----|----------------|-----------------------------|
| A. | met            | EOP-1A, Level Power Control |
| B. | met            | ONI-C71-1, Reactor Scram    |
| C. | <u>not met</u> | EOP-1A, Level Power Control |
| D. | <u>not met</u> | ONI-C71-1, Reactor Scram    |

NRC Exam 2013

QUESTION RO 15

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295006	AK1.03
	Importance Rating	3.7	
K&A: Knowledge of the operational implications of the following concepts as they apply to SCRAM: Reactivity control			
<b>SCRAM / 1</b>			
<p>Explanation: <b>Answer B</b> – IAW EOP Bases, one rod out meets the criteria for SHUTDOWN. Since IRM's and SRM's are inserted, Rx power is not unknown. Entry into ONI-C71-1 is required.</p> <p>A – Incorrect – Entry into EOP-1A is not required.</p> <p>C – Incorrect – Shutdown criteria is met</p> <p>D- Incorrect – Shutdown criteria is met and entry into EOP-1A is not required.</p>			
Technical Reference(s): EOP Bases Rev 3 , ONI-C71-1 Rev 16, EOP-1 Chart Rev D, & EOP-1A Chart Rev D		Reference Attached: EOP Bases pp 46-47 & ONI-C71-1 pp 3 & 6	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3035-01(LP)-A.1 & OT-3402-11-B			
Question Source:	Bank # Modified Bank # New	Clinton 2002	
Question History:	Previous NRC Exam Clinton 2002 # RO-46		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.10	
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 16**

SVI-P57-T2001, Safety-Related Instrument Air Motor Operated Valve Operability Test was in progress with P57-F015A in the closed position when the following occurred:

- A fire occurred in the Control Room
- Immediate actions per ONI-C61 were taken
- SVI-P57-T2001 was suspended as is
- The Unit Supervisor directed you to perform Control Room Isolation per IOI-11.
- You placed the Remote Shutdown switches for valves P57-F015A, CNTMT ADS SUPPLY OTBD ISOL VALVE, and P57-F020A, DW ADS SUPPLY OTBD ISOL VALVE, to EMERGENCY.

After placing the Remote Shutdown Switches in EMERGENCY, the position of P57-F015A is  (1)  and the position of P57-F020A is  (2) ?

- |    | <u> (1) </u> | <u> (2) </u> |
|----|--------------|--------------|
| A. | open         | open         |
| B. | open         | shut         |
| C. | shut         | open         |
| D. | shut         | shut         |



NRC Exam 2013

**QUESTION RO 17**

The plant was operating at rated power when a complete loss of Nuclear Closed Cooling Water occurred.

The reason the reactor must be scrammed expeditiously because the \_\_\_\_.

- A. operating CRD pump will automatically trip
- B. Reactor Recirculation pumps must be secured IAW SOI-B33
- C. Reactor Recirculation Hydraulic Power Units automatically trip
- D. loss of NCC will result in Drywell temperature exceeding the scram setpoint

NRC Exam 2013

QUESTION RO 17

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295018	AK3.02
	Importance Rating	3.3	
K&A: Knowledge of the reasons for the following responses as they apply to Partial Or Complete Loss Of Component Cooling Water: Reactor power reduction			
<b>Partial or Total Loss of CCW / 8</b>			
<p>Explanation: <b>Answer B</b> – IAW ONI-P43, the plant is scrammed in anticipation of loss of cooling to Recirc Pumps. Following the scram, the recirc pumps are secured.</p> <p>A – Incorrect – The CRD pump will trip on high temperature after a period of time not automatically on a loss of NCC.</p> <p>C – Incorrect – Misconception that HPU's are cooled by NCC.</p> <p>D – Incorrect – Misconception that the Rx will scram on high DW temperature vs. pressure. The loss of NCC will result in the loss of DW cooling and the slow rise in DW temperature and pressure.</p>			
Technical Reference(s): ONI-P43 Rev 11		Reference Attached: ONI-P43 pp 4 and 5	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3035-16(LP)-A.3 & OT-COMBINED-B33-N.1			
Question Source:	Bank # Modified Bank # New	River Bend 2007	
Question History:	Previous NRC Exam River Bend 2007 #RO-7		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41 b.5 55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 18**

The plant is operating at 100% power. The Safety Related Instrument Air Compressor is out of service due to a failed motor.

Air pressures as indicated on ADS AIR STRG PRESS, 1P57-R026A and 1P57-R026B, are 155 psig and slowly lowering.

The if ADS air pressure continues to lower, the \_\_ (1) \_\_ MSIV's will be affected. Restore air pressure using \_\_ (2) \_\_.

- |    | __ (1) __ | __ (2) __              |
|----|-----------|------------------------|
| A. | inboard   | Instrument Air (P52)   |
| B. | inboard   | portable air cylinders |
| C. | outboard  | Instrument Air (P52)   |
| D. | outboard  | portable air cylinders |



NRC Exam 2013

**QUESTION RO 19**

The plant is in a refuel outage with a full core offload in progress with the following conditions:

- The RHR A System is providing Shutdown Cooling
- The RHR B System is lined up for Fuel Pool Cooling Assist.
- Temperatures in the vessel and the spent fuel pools are stable.

A loss of RPS B then occurs.

The reactor coolant temperature will \_\_(1)\_\_. The Spent Fuel Pool temperature will \_\_(2)\_\_.

- |    | __(1)__                | __(2)__                |
|----|------------------------|------------------------|
| A. | rise                   | rise                   |
| B. | rise                   | remain fairly constant |
| C. | remain fairly constant | remain fairly constant |
| D. | remain fairly constant | rise                   |

NRC Exam 2013

QUESTION RO 19

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295021	AK2.05
	Importance Rating	2.7	
K&A: Knowledge of the interrelations between Loss Of Shutdown Cooling and the following: Fuel pool cooling and cleanup system			
<b>Loss of Shutdown Cooling / 4</b>			
<p>Explanation: <b>Answer B</b> – A loss of either RPS bus will cause the SDC suction valves to isolate. This will cause a rise in Rx coolant temperature. However, a loss of RPS does not affect the Fuel Pool Cooling Assist mode of RHR and the spent fuel pool temperatures will remain fairly constant.</p> <p>A – Incorrect – cooling is not lost to SFP – temperatures will remain stable.</p> <p>C – Incorrect – The loss of RPS will cause a loss of SDC.</p> <p>D – Incorrect – The loss of RPS will cause a loss of SDC and no loss of cooling to the SFP.</p>			
Technical Reference(s): SOI-E12 Rev 57 & ONI-C71-2 Rev 8		Reference Attached: SOI-E12 pp 50-53 & ONI-C71-2 pp 9 & 12	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3035-03(LP)-A.1			
Question Source:	Bank # Modified Bank # New	Columbia 2003	
Question History:	Previous NRC Exam Columbia 2003 #RO-56		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 20**

The plant is in a refuel outage with fuel shuffle in progress.

The Refuel SRO informs the control room that bubbles are seen rising from a fuel bundle after it was bumped against the RPV.

Area Radiation Monitor 1D21-K083, Upper Pool Area indicates a HIGH alarm.

1D21-K083 has a red placard with white lettering affixed to it.

This placard identifies that an alarm on this monitor may be a potential \_\_\_\_ entry condition.

- A. Emergency Plan (E-Plan)
- B. Off-Normal Instruction (ONI)
- C. Emergency Operating Procedure (EOP)
- D. Offsite Dose Calculation Manual (ODCM)

NRC Exam 2013

QUESTION RO 20

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295023	2.4.41
	Importance Rating	2.9	
K&A: Knowledge of the emergency action level thresholds and classifications.			
<b>Refueling Acc / 8</b>			
<p>Explanation: <b>Answer A</b> – IAW PAP-0524, a ‘red background placards with white lettering’ are used to identify an E-Plan entry condition.</p> <p>B – Incorrect – While an alarm on this rad monitor may trigger an ONI entry, there are no placards that indicate an ONI entry condition.</p> <p>C – Incorrect – EOP entry condition placards are orange with white letters</p> <p>D – Incorrect – Plausible since this is a radiation monitor. However, there are no placards in the control room that indicate entry into the ODCM</p>			
Technical Reference(s): PAP-0524 Rev 10		Reference Attached: PAP-0524 pp 13-14	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3039			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.10	
	55.43		
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 21**

The maximum internal design pressure of the drywell is \_\_(1)\_\_ and is based on \_\_(2)\_\_.

- |    | __(1)__ | __(2)__  |
|----|---------|--|
| A. | 21 psig | a large break LOCA inside drywell                |
| B. | 21 psig | condensing steam in containment following a LOCA |
| C. | 30 psig | a large break LOCA inside drywell                |
| D. | 30 psig | condensing steam in containment following a LOCA |

NRC Exam 2013

QUESTION RO 21

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295024	EK1.01
	Importance Rating	4.1	
K&A: Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE: Drywell integrity; Plant-Specific			
<b>High Drywell Pressure / 5</b>			
<p>Explanation: <b>Answer C</b> – The USAR design pressure of the drywell is 30 psig based on a large break LOCA.</p> <p>A – Incorrect – 21 psid is the external to internal differential pressure limit. And condensing steam following a LOCA is the bases for the 21 psid.</p> <p>B – Incorrect – 21 psid is the external to internal differential pressure limit.</p> <p>D – Incorrect – Condensing steam following a LOCA is the bases for the 21 psid not the 30 psig</p>			
Technical Reference(s): SDM-T23 Rev 12, USAR Table 6.2-1 Rev 14, USAR Table 6.2-6 Rev 12, & USAR 6.2.7.3.3 Rev 12		Reference Attached: SDM-T23 p 5, USAR Table 6.2-1 p 154, USAR Table 6.2-6 p 161, & USAR p 6.2-139	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-T23-D			
Question Source:	Bank # Modified Bank # New	River Bend 2003	
Question History:	Previous NRC Exam River Bend 2003		
Question Cognitive Level:	Memory or Fundamental Knowledge    x Comprehension or Analysis		
10 CFR Part 55 Content:	55.41    b.9 55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 22**

The following plant conditions exist:

- Reactor scrammed on high reactor pressure
- MSIV's isolated
- RPV water level 230 inches
- RPV pressure 900 psig
- Suppression Pool temperature 105°F
- Suppression Pool level 22 ft

Lowering \_\_\_\_ would challenge the margin to the Heat Capacity Limit (HCL).

- A. RPV pressure to 700 psig
- B. RPV water level to 200 inches
- C. Suppression Pool temperature to 90°F
- D. Suppression Pool water level to 18.0 feet

NRC Exam 2013

QUESTION RO 22

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295026	EK2.06
	Importance Rating	3.5	
K&A: Knowledge of the interrelations between Suppression Pool High Water Temperature and the following: Suppression pool level			
<b>Suppression Pool High Water Temp. / 5</b>			
Explanation: <b>Answer D</b> – Lowering SP level reduces the margin to HCL. A & C – Incorrect – These actions raise the margin to HCL B – Incorrect – this has no effect on HCL			
Technical Reference(s): EOP-SPI Supplement Rev 3		Reference Attached: EOP-SPI Supplement p 8	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3432-06-C.1.B			
Question Source:	Bank # Modified Bank # New	Perry 2003	
Question History:	Previous NRC Exam Perry 2003 #RO-27		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41 b.7 55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 23**

The following conditions exist:

- The reactor was scrammed from rated power
- An ATWS is in progress
- Suppression Pool level is 15 feet 5 inches lowering 1 inch per minute
- RPV level is - 8 and lowering 1 inch per minute
- Drywell temperature is 280°F and rising 2°F per minute
- Containment temperature is 150°F and rising 3°F per minute

Per the EOP Bases, without anticipatory action, Emergency Depressurization will first be required based on \_\_\_\_\_.

- A. RPV level
- B. Drywell temperature
- C. Suppression Pool level
- D. Containment temperature

NRC Exam 2013

QUESTION RO 23

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295027	EK3.01
	Importance Rating	3.7	
K&A: Knowledge of the reasons for the following responses as they apply to High Containment Temperature (Mark III Containment Only): Emergency depressurization: Mark-III			
<b>High Containment Temperature / 5</b>			
<p>Explanation: <b>Answer D</b> – ED is required prior to exceeding 185°F in containment. Based on a 150°F initial temp and rising 3°F per minute, it will be approximately 11 ½ minutes until ED is required.</p> <p>A – Incorrect – Based on initial RPV level of -8 inches and lowering 1 inch per min, it will be approximately 17 minutes before ED can be performed.</p> <p>B – Incorrect – Based on initial DW temp of 280°F and rising 2°F per minute, it will be approximately 25 minutes before ED is required</p> <p>C – Incorrect – Based on initial SP level of 15 feet 5 inches lowering 1 inch per minute, it will be approximately 14 minutes before ED is required.</p>			
Technical Reference(s): EOP-2 Chart (Partial) Rev B & EOP Bases Rev 3		Reference Attached: EOP-2 Chart (Partial) & EOP Bases p 38	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): x			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41	b.5	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 24**

The plant is operating in EOP-2 Primary Containment Control. The following alarms have been received:

- DRYWELL AVERAGE TEMP A HI – H13-P601-20-F3
- DRYWELL AVERAGE TEMP B HI – H13-P601-17-F5

The Unit Supervisor has directed the BOP Operator to operate all available Drywell cooling.

Then electrical power is lost to the solenoid for the LW DW CLG COOLER SEL VLV, P43-F025 (NCC Supply Valve) for the Lower DW Cooler.

The Drywell Ventilation system will respond to the loss of electrical power to the solenoid as follows:

- A. The LW DW CLG COOLER SEL VLV fails to the A cooling coil
- B. The LW DW CLG COOLER SEL VLV fails to the B cooling coil
- C. The LW DW CLG TEMP TEMP CONT Valve, P43-F365 automatically opens
- D. The LW DW CLG COOLER SEL VLV fails shut isolating NCC to the DW Cooler

NRC Exam 2013

QUESTION RO 24

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295028	EA1.01
	Importance Rating	3.9	
K&A: Ability to operate and/or monitor the following as they apply to HIGH DRYWELL TEMPERATURE: Drywell ventilation system			
<b>High Drywell Temperature / 5</b>			
Explanation: <b>Answer B</b> – On a loss of electrical power to the 3-way selector valve, it will fail to the B cooling coil position.			
A – Incorrect – Loss of electrical power or instrument air causes the valve to fail to the B coil.			
C – Incorrect – The temp control valve is a MOV and is not affected by loss of power to the selector valve.			
D – Incorrect – The selector valve is a 3-way valve that fails to the B position, not closed.			
Technical Reference(s): OT-Combined-M13 lesson plan Rev 3 & PDB-H027 Rev 0		Reference Attached: OT-Combined-M13 lesson plan p 13 & PDB-H027 p 10	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): x			
Question Source:	Bank # Modified Bank # New	Perry 2009	
Question History:	Previous NRC Exam Perry 2009 # RO-25		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 25**

Plant Conditions are as follows:

- Reactor Power 0%, with 2 rods at position 12
- Reactor pressure 900 psig
- Reactor water level 210"
- Suppression Pool temperature 100°F
- Suppression Pool level 14.0 feet
- Drywell pressure 2.5 psig
- Containment pressure 2.0 psig
- Containment temperature 110°F

What action is required to be performed?

- A. Inject Boron
- B. Emergency Depressurize
- C. Commence Controlled Cooldown
- D. Anticipate Emergency Depressurization

NRC Exam 2013

QUESTION RO 25

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295030	EA2.01
	Importance Rating	4.1*	
K&A: Ability to determine and/or interpret the following as they apply to Low Suppression Pool Water Level: Suppression pool level			
<b>Low Suppression Pool Wtr Lvl / 5</b>			
Explanation: <b>Answer B</b> – At 14.25' SP level ED is required. A – Incorrect – Boron injection required with SP temp 110°F or >4% power C & D – Incorrect – Can not Cooldown or anticipate Emergency Depressurization in an ATWS ( 2 rods at position 12)			
Technical Reference(s): EOP-2 Bases Rev 1		Reference Attached: EOP-2 Bases p 37	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3402-05-C.1			
Question Source:	Bank # Modified Bank # New	Perry 2007-2	
Question History:	Previous NRC Exam Perry 2007-2 #RO-16		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.10	
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 26**

The plant is operating at rated power with the following conditions:

- At 09:15, the Unit Supervisor declares, 1B21-N0673C (RPV LVL 2) INOP so Maintenance can work on the transmitter.
- At 09:45, 1B21-N0673L (RPV LVL 2) fails upscale and the Shift Engineer determines that HPCS initiation capability has been lost
- At 09:50, a loss of Feed Water occurs causing RPV level to lower
- At 09:51, the HPCS Manual Initiation pushbutton is armed and depressed

The HPCS system must be declared Inoperable by \_\_ (1) \_\_.

When the Manual Initiation pushbutton is armed and depressed, HPCS \_\_ (2) \_\_ inject.

- |    | __ (1) __ | __ (2) __ |
|----|-----------|-----------|
| A. | 10:15     | will      |
| B. | 10:15     | will not  |
| C. | 10:45     | will      |
| D. | 10:45     | will not  |

NRC Exam 2013

**QUESTION RO 26**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295031	2.2.36
	Importance Rating	3.1	
K&A: Ability to analyze the effect of maintenance activities, such as degraded power sources, on the status of limiting conditions for operations.			
<b>Reactor Low Water Level / 2</b>			
<p>Explanation: <b>Answer C</b> – When the determination is made that HPCS initiation capability has been lost, the RA is to declare HPCS system INOP in 1 hour. The Manual initiation will work regardless of auto initiation capability.</p> <p>A – Incorrect – One hour is allowed to declare HPCS System INOP.</p> <p>B – Incorrect – One hour is allowed to declare HPCS System INOP. HPCS will inject. The Manual initiation will work regardless of auto initiation capability.</p> <p>D – Incorrect – HPCS will inject. The Manual initiation will work regardless of auto initiation capability.</p>			
Technical Reference(s): TS 3.3.5.1, DWG 208-065 Sh 03 Rev P, PDB-I04 Rev 13, & PDB-I05 Rev 9		Reference Attached: TS 3.3.5.1 pp 3.3-32, 33, & 41, DWG 208-065 Sh 03 Partial, & PDB-I04 p11, & PDB-I05 p 12	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-07-F and OT-COMBINED-E22A-K.1 & F.2			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41	b.10	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 27**

The plant was operating at 75% rated power when the following occurred:

- The Rx was manually scrammed
- Little rod motion occurred
- The BOP operator initiated Standby Liquid Control
- SLC pump B is tagged out
- SLC Storage tank level is 4860 gallons per SPDS
- SLC Storage tank boron concentration is 2.85%

The minimum amount of time to inject the Cold Shutdown Weight of Boron into the reactor is approximately \_\_\_\_ minutes.

- A. 54
- B. 57
- C. 108
- D. 113

NRC Exam 2013

QUESTION RO 27

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295037	EK1.05
	Importance Rating	3.4	
<p>K&amp;A: Knowledge of the operational implications of the following concepts as they apply to Scram Condition Present And Reactor Power Above APRM Downscale Or Unknown: Cold shutdown boron weight; Plant-Specific</p>			
<p><b>SCRAM Condition Present and Power Above APRM Downscale or Unknown / 1</b></p>			
<p>Explanation: <b>Answer C</b> – The Cold S/D Weight of Boron is defined in the EOP Bases as the contents of the SLC Storage tank. 202 gallons must be subtracted from the SPDS reading of 4860 gallons to get the usable volume. Since 1 SLC pump is tagged out it will take ~108 minutes @ 43 gpm (the capacity of 1 SLC pump) to inject the volume of the SLC tank</p> <p>A – Incorrect – this is the time for 2 SLC pumps injecting.</p> <p>B – Incorrect – This is the time for 2 SLC pumps if the 202 gallons is not subtracted from the SPDS value</p> <p>D – Incorrect – This is the time if the 202 gallons is not subtracted from the SPDS value.</p>			
<p>Technical Reference(s): EOP-Bases Rev 3, LP-OT-COMBINED-C41 Rev 1, &amp; PYBP-POS-0030 Rev 1</p>		<p>Reference Attached: EOP-Bases pp 47 &amp; 58, LP-OT-COMBINED-C41 p 10, &amp; PYBP-POS-0030 p11</p>	
<p>Proposed references to be provided to applicants during examination: None</p>			
<p>Learning Objective (As available): OT-COMBINED-C41 OT-3402-03-D.2</p>			
Question Source:	Bank # Modified Bank # New	Vermont Yankee 2005	
Question History:	Previous NRC Exam Vermont Yankee 2005 #RO-18		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.8	
<p>Comments: Level of Difficulty = x</p>			

**QUESTION RO 28**

The plant was operating at 100% power with Annulus Exhaust Gas Treatment System Fan B in operation.

The following conditions are present:

- A steam leak in the annulus
- ALERT and HIGH alarms on ANN EXH B GAS Radiation Monitor, 1D17-K697B
- The Shift Manager has declared an ALERT (HA-1) based on dose rate at the site boundary

Entry into EOP(s)   (1)   is required.

Monitor the   (2)   Plant Vent Radiation Monitor to track release rate.

- |    | <u>  (1)  </u>  | <u>  (2)  </u> |
|----|---|----------------|
| A. | Secondary Containment Control, EOP-03 <u>only</u>   | Unit 1         |
| B. | Secondary Containment Control, EOP-03 <u>and</u><br>Radioactivity Release Control, EOP-05 | Unit 1         |
| C. | Secondary Containment Control, EOP-03 <u>only</u>   | Unit 2         |
| D. | Secondary Containment Control, EOP-03 <u>and</u><br>Radioactivity Release Control EOP-05  | Unit 2         |

NRC Exam 2013

QUESTION RO 28

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	295038	2.4.1
	Importance Rating	4.6	
K&A: Knowledge of EOP entry conditions and immediate action steps.			
<b>High Off-site Release Rate / 9</b>			
<p>Explanation: <b>Answer D</b> – Since the SM declared the Alert on Dose at site boundary entry into EOP-5 is required. With AEGTS rad monitor in alarm (HIGH) entry into EOP-3 is required. With AEGTS B fan in operation, the Unit 2 plant vent is the correct release point.</p> <p>A – Incorrect – EOP-5 needs to be entered, too and incorrect plant vent.</p> <p>B – Incorrect – Incorrect plant vent.</p> <p>C – Incorrect – EOP-5 needs to be entered, too.</p>			
Technical Reference(s): EOP-03 & EOP 5 chart Rev C 912-0605 Rev W and EPI-A1 rev 25		Reference Attached: EOP-03 & EOP 5 chart partial, 912-0605 Partial, and EPI-A1 p 48	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3402-15-B & 17-B and OT-COMBINED-M15-B			
Question Source:	Bank # Modified Bank # New	Perry 2009	
Question History:	Previous NRC Exam Perry 2009 #RO-29		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.10	
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 29**

Overall command responsibility for a fire in the Water Treatment Building resides with \_\_ (1) \_\_.

Overall command responsibility for a fire in the Owner Controlled Area that affects Plant safety resides with \_\_ (2) \_\_.

\_\_ (1) \_\_

\_\_ (2) \_\_

- |    |                                     |                                     |
|----|-------------------------------------|-------------------------------------|
| A. | Fire Brigade Leader                 | Fire Brigade Leader                 |
| B. | Fire Brigade Leader                 | Responding Off-Site Fire Department |
| C. | Responding Off-Site Fire Department | Fire Brigade Leader                 |
| D. | Responding Off-Site Fire Department | Responding Off-Site Fire Department |

NRC Exam 2013

QUESTION RO 29

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	600000	AK1.02
	Importance Rating	2.9	
K&A: Knowledge of the operation applications of the following concepts as they apply to Plant Fire On Site: Fire Fighting			
<b>Plant Fire On Site / 8</b>			
<p>Explanation: <b>Answer A</b> – IAW ONI-P54, the FBL is responsible for fire fighting in the protected area. For fires in the OCA, the FBL is responsible for fires that affect plant safety.</p> <p>B – Incorrect – The responding offsite fire department is responsible for fires in the OCA that do not affect plant safety or operability are not affected.</p> <p>C – Incorrect – FBL is responsible for fire fighting in the protected area.</p> <p>D – Incorrect – FBL is responsible for fire fighting in the protected area. The responding offsite fire department is responsible for fires in the OCA that do not affect plant safety or operability are not affected.</p>			
Technical Reference(s): ONI-P54 Rev 16		Reference Attached: ONI-P54 pp 23 & 38	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3035-05(LP)-A.9			
Question Source:	Bank # Modified Bank # New	Perry Audit 2009	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	x	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 30**

The plant was operating at rated power with the following conditions:

- ONI-S11, Hi/Low Voltage, was entered due to Degraded Grid condition
- Annunciator VOLTS TO HERTZ RATIO HI, H13-P680-0009-B2 just alarmed

What is the consequence if this alarm does not clear within a minute?

- A. The Main Generator Voltage Regulator shifts to manual only
- B. The reactor will automatically scram on a main turbine trip
- C. The operator needs to take the Main Generator Voltage Regulator to RAISE to clear the alarm
- D. The Main Generator Voltage Regulator will automatically raise generator voltage to the clear alarm

NRC Exam 2013

QUESTION RO 30

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	1	
	K/A#	700000	AK2.06
	Importance Rating	3.9	
K&A: Knowledge of the interrelations between Generator Voltage And Electric Grid Disturbances and the following: Reactor power			
<b>Generator Voltage and Electric Grid Disturbances / 6</b>			
<p>Explanation: <b>Answer B</b> – The turbine will trip due to a generator trip. With the plant at rated power a turbine trip will cause a reactor scram.</p> <p>A – Incorrect – The voltage regulator will shift to manual, but that is not the only thing that will happen</p> <p>C – Incorrect – Going to RAISE on the voltage regulator will only exacerbate the problem.</p> <p>D – Incorrect – The voltage regulator automatically lowers generator voltage.</p>			
Technical Reference(s): ARI-H13-P680 -09 Rev 11 & ONI-S11 Rev 9		Reference Attached: ARI-H13-P680-09 p 17 & ONI-S11 p 3	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-N41_N51-F			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.5	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 31**

The plant is operating at rated power following conditions:

- The Reactor Recirculation System FCV's indicate 73% open.
- RFPT A trips and RPV level momentarily lowers to 185 inches before being restored to normal
- Five minutes later RFPT B trips and RPV level lowers to 140 inches before being restored to normal with the Motor Feed Pump.

Currently, the Reactor Recirculation Pumps are in \_\_ (1) \_\_ and the Flow Control Valves are at \_\_ (2) \_\_ open.

	__ (1) __	__ (2) __
A.	Slow Speed	17%
B.	Slow Speed	48%
C.	OFF	17%
D.	OFF	48%

NRC Exam 2013

QUESTION RO 31

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	2	
	K/A#	295009	AK3.01
	Importance Rating	3.2	
K&A: Knowledge of the reasons for the following responses as they apply to Low Reactor Water Level: Recirculation pump run back; Plant-Specific			
<b>Low Reactor Water Level / 2</b>			
<p>Explanation: <b>Answer A</b> – The reason the FCVs runback is a signal is generated when RPV level goes below L4 concurrent with a trip of the first RFPT in order to lower Rx power. Without operator action, the runback can not be reset. Then, the Recirc Pumps automatically shift to Slow speed due to RPV level lowering to 177" (L3) after the scram or FW flow &lt; 3.43 MLBM/hr for 15 seconds. They do not trip to Off until an RPV level of +130" (L2).</p> <p>B – Incorrect – This is the flow rate not the valve position.</p> <p>C – Incorrect – Pumps will not trip to off until level lowers to L2.</p> <p>D – Incorrect - Pumps will not trip to off until level lowers to L2 and, 48% is the flow rate not the valve position.</p>			
Technical Reference(s): SDM-B33 Rev 9 and ARI-H13-P680-04 Rev 18		Reference Attached: SDM-B33 pp 27 & 44 and ARI-H13-P680-04 pp 9 & 47	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-B33-E.2 & E.6			
Question Source:	Bank #	INL-2376	
	Modified Bank #		
	New		
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41	b.5	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 32**

At 09:00 The plant was manually scrammed due to a small steam leak in the drywell. And the following DW parameters were noted:

- DW Temperature 140°F
- DW Pressure 1.5 psig

At 09:10 the A Upper DW Cooling Fan M13-C003A tripped. And the following DW parameters were noted:

- DW Temperature 140°F
- DW Pressure 1.8 psig

Without taking operator actions, the B Upper DW Cooling Fan, M13-C003B \_\_\_\_\_.

- A. will start and DW temperature can be maintained below EOP-2 entry condition
- B. will start and DW temperature cannot be maintained below EOP-2 entry condition
- C. will not start and DW temperature can be maintained below EOP-2 entry condition
- D. will not start and DW temperature cannot be maintained below EOP-2 entry condition

NRC Exam 2013

QUESTION RO 32

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	2	
	K/A#	295012	AK3.01
	Importance Rating	3.5	
K&A: Knowledge of the reasons for the following responses as they apply to High Drywell Temperature: Increased drywell cooling			
<b>High Drywell Temperature / 5</b>			
<p>Explanation: <b>Answer B</b> – The standby DW cooling fan starts with a low flow in the running fan. With DW pressure &gt;1.68 psig, NCC has been isolated. Without NCC, DW temperature will rise to the EOP-2 entry condition of 145°F.</p> <p>A – Incorrect – Since NCC is isolated, the DW temperature will rise due to the steam leak.</p> <p>C – Incorrect – The standby fan will auto start but DW temperature will continue to rise due to the loss of NCC.</p> <p>D – Incorrect – The standby fan will auto start.</p>			
Technical Reference(s): ARI-H13-P800-03 Rev 9, OAI-1703 Rev 14, & EOP-2 Chart Rev B		Reference Attached: ARI-H13-P800-03 p 49, OAI-1703 p 24, & EOP-2 Chart partial	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-M13-F, & L.2 and OT-3402-08-A			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41	b.5	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 33**

Plant conditions as follows:

- Reactor power 100%
- Suppression Pool Level 18.1 ft
- Suppression Pool Temperature 85°F

Then, two SRVs inadvertently open due to an I&C SVI.

One minute after the SRVs open, the Reactor Operator updates the crew that Suppression Pool temperature by ICS indicates 90°F.

Following the crew update, how much time remains for the operators to close the SRVs, before a reactor scram is required to be inserted IAW Perry Technical Specifications?

- A. 1 minute
- B. 3 minutes
- C. 4 minutes
- D. 5 minutes

NRC Exam 2013

QUESTION RO 33

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	2	
	K/A#	295013	AA1.02
	Importance Rating	3.9	
K&A: Ability to operate and/or monitor the following as they apply to High Suppression Pool Temperature: Systems that add heat to the suppression pool			
<b>High Suppression Pool Temp. / 5</b>			
<p>Explanation: <b>Answer C</b> – The pool heat-up rate can be determined to be 5 °F/minute. Five (5) minutes total time puts the pool temperature at 110°F. This is 4 minutes after the announcement is made. EOP-02 requires that EOP-01 be entered, and thus the reactor scrammed, prior to exceeding 110°F. TS 3.6.2.1 requires Mode Switch in shutdown immediately when &gt; 110°F</p> <p>A – Incorrect – This time corresponds to the OAI-1703 Margins and Limits Scram Required time.</p> <p>B – Incorrect – This time corresponds to the TS LCO for pool temperature during testing which adds heat to the pool - from the initial SRV opening.</p> <p>D – Incorrect – This time corresponds to 115°F in the pool.</p>			
Technical Reference(s): EOP-2 Chart Rev B, ONI-B21-1 Rev 11 & TS 3.6.2.1		Reference Attached: EOP-2 Chart (partial), ONI-B21-1 p 4 & TS 3.6.2.1 pp 3.6-36 & 37	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3402-06-C.2			
Question Source:	Bank # Modified Bank # New	RQL-16027	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.5	
Comments: Level of Difficulty = x			

**QUESTION RO 34**

A plant transient is in progress. The following indications are observed:

- A Reactor Scram signal is present
- Pressure set at 940 psig
- NO control rods have inserted into the core
- Reactor power is approximately 100%
- The MSIVs are open
- The main turbine is online
- Recirculation pumps are in FAST speed
- Reactor water level is 196 inches

The EOP's direct the operator to down-shift then trip the Recirc pumps.

Which ONE of the following describes the consequences of tripping the Reactor Recirculation pumps rather than down shifting first?

- A. A level transient may result in a turbine trip causing Bypass Valves and SRV's to open.
- B. A level transient may result in a turbine trip causing Bypass valves to open. Bypass valves will control reactor pressure at pressure set.
- C. Tripping the recirculation pumps will rapidly increase vessel water level, resulting in a large power increase and possible fuel damage.
- D. Tripping the recirculation pumps will result in an immediate power reduction, with a subsequent decrease in reactor pressure, and level lowering to level 2.

NRC Exam 2013

QUESTION RO 34

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	2	
	K/A#	295015	AA2.01
	Importance Rating	4.1*	
K&A: Ability to determine and/or interpret the following as they apply to Incomplete Scram: Reactor power			
<b>Incomplete SCRAM / 1</b>			
<p>Explanation: <b>Answer A</b> – IAW the EOP bases, if Recirc Pumps are tripped from high power, the resultant changes in steam flow, Rx pressure, and RPV level may cause a turbine trip. Since power is above the capacity of the BPV's, SRV's RPV pressure will increase until SRV's open.</p> <p>B – Incorrect – Since the Rx power is &gt; the capacity of the BPV's, Rx pressure will increase causing SRV's to open.</p> <p>C – Incorrect – Tripping the recirc pumps results in a power decrease due to the void coefficient.</p> <p>D – Incorrect – RPV level will initially rise due to tripping the Recirc pumps and RPV pressure will not decrease without inserting rods or injecting boron.</p>			
Technical Reference(s): EOP-01A Bases Rev 4		Reference Attached: EOP-01A Bases p 14	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3402-03-C			
Question Source:	Bank # Modified Bank # New	INL-0828	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge    x Comprehension or Analysis		
10 CFR Part 55 Content:	55.41    b.10 55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 35**

The plant scrammed yesterday following a 16 month run. The following conditions exist:

- RHR "A" is operating in Shutdown Cooling
- RPV water level is 230 inches
- Reactor coolant temperature is 130°F and stable
- Reactor Recirculation Pump B is operating

Subsequently, a loss of RPS Bus A occurs.

It is estimated that RPS Bus A can be recovered in two hours.

The effect on Shutdown Cooling is that   (1)   isolation occurs?

And, in order to comply with Technical Specifications you will   (2)  .

- |    | <u>  (1)  </u>                 | <u>  (2)  </u>   |
|----|--------------------------------|--|
| A. | <u>only</u> a Division 1       | monitor reactor coolant temperature and pressure once per hour                 |
| B. | <u>only</u> a Division 1       | verify two alternate methods of decay heat removal are available within 1 hour |
| C. | <u>both</u> a Division 1 and 2 | monitor reactor coolant temperature and pressure once per hour                 |
| D. | <u>both</u> a Division 1 and 2 | verify two alternate methods of decay heat removal are available within 1 hour |

NRC Exam 2013

QUESTION RO 35

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	2	
	K/A#	295020	2.2.38
	Importance Rating	3.6	
K&A: Knowledge of conditions and limitations in the facility license			
<b>Inadvertent Cont. Isolation / 5 &amp; 7</b>			
<p>Explanation: <b>Answer D</b> – A loss of either RPS bus will cause both E12-F008 &amp; E12-F009 to isolate. This will cause a loss of both RHR SDC subsystems. IAW TS 3.4.10 Condition A, one method of alternate decay heat removal is necessary for each INOP RHR system. With the common suction isolated, both loops of RHR are INOP.</p> <p>A – Incorrect – Both divisions isolate. Circulation by an alternate method is only required if Recirc Pump not running.</p> <p>B – Incorrect – Both divisions isolate.</p> <p>C – Incorrect – Circulation by an alternate method is only required if Recirc Pump not running.</p>			
Technical Reference(s): TS 3.4.10, Dwg 302-642 Rev HH, & ONI-C71-2 Rev 8		Reference Attached: TS 3.4.10 pp 3.4-24 & 25, Dwg 302-642 (partial), & ONI-C71-2 pp 5, 8, & 9	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-08-B & OT-COMBINED-E12-F			
Question Source:	Bank # Modified Bank # New	Perry 2007	
Question History:	Previous NRC Exam Perry 2007 SRO-17		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 36**

The EOP-3, Secondary Containment Control Maximum Safe Operating Conditions for \_\_\_\_\_.

- A. Area Temperature is based on personnel access only
- B. HVAC  $\Delta T$  is based on equipment qualifications only
- C. Area Water Level is based on equipment qualifications and personnel access
- D. Area Radiation Level is based on personnel access and equipment qualifications

**Discussed this question with Mike Bielby on 12/12/12. This question missed the K/A and will be replaced.**

NRC Exam 2013

**QUESTION RO 36**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	2	
	K/A#	295032	EK1.01
	Importance Rating	3.6	
K&A: Knowledge of the operational implications of the following concepts as they apply to High Secondary Containment Area Temperature: Personnel protection			
<b>High Secondary Containment Area Temperature / 5</b>			
Explanation: <b>Answer D</b> – IAW EOP-3, the Area Radiation Level MSOC is based on both personnel access (safety) and equipment qualifications. A – Incorrect – The MSOC for are temp is for equipment qualifications only. B – Incorrect – There is no MSOC for ΔT. C – Incorrect – The MSOC for area water level is for equipment qualifications only.			
Technical Reference(s): EOP-3 Bases Rev 3		Reference Attached: EOP-3 Bases pp 25-26	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3402-17-C			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.9	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 37**

The plant is operating at 96% power in coast-down for a refueling outage with the following condition present:

- The IFTS tube blank flange has been removed
- Testing of IFTS is in progress
- AEGT Fan A, M15-C001A is running
- FHB HVAC SUPP Fan B, M40-C001B is running.
- FHB HVAC EXH Fans, M40-C002A & C, are running

A seismic event then occurs resulting in the following annunciators alarming:

- ANNULUS EXH FAN A FLOW LOW, H13-P800-01-A1
- AIRBORNE RAD P804, H13-P680-07-A10,
- COM AREA & PRCS MON P906, H13-P680-08-A4
- COMMON AIRBORNE P902, H13-P680-08-A1
- FHB Evacuation Alarm, H13-P902-01-B1

NLO reports AEGTS A flow is 1600 CFM

The following radiation monitors have HIGH alarms locked in:

- FUEL PREP POOL, D21-K322
- SPENT FUEL POOL, D21-K332
- ANN EXH A GAS 1D17-K697A
- FHB VENT EXH GAS, D17-K716

What is the configuration of the AEGTS and FHB ventilation fans?

	AEGT Fan	FHB HVAC EXH Fans A & C	FHB HVAC SUPP Fan B
A.	A running	running	tripped
B.	B running	running	tripped
C.	A running	tripped	running
D.	B running	tripped	running

NRC Exam 2013

QUESTION RO 37

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	1	
	Group #	2	
	K/A#	295033	EK2.02
	Importance Rating	3.8	
K&A: Knowledge of the interrelations between HIGH SECONDARY Containment Area Radiation Levels and the following: Process radiation monitoring system			
<b>High Secondary Containment Area Radiation Levels / 9</b>			
<p>Explanation: <b>Answer A</b> – AEGT A is running. There is no high rad trip on AEGTS. FHB exhaust fans are running and the supply fan trips on high rads.</p> <p>B – Incorrect – The AEGT low flow alarm comes in at 1650 cfm and the opposite fan starts at 1500 cfm. So the AEGT B fan is not running.</p> <p>C – Incorrect – The FHB exhaust fans do not trip on hi rads, but the supply fan does.</p> <p>D – Incorrect – The AEGT low flow alarm comes in at 1650 cfm and the opposite fan starts at 1500 cfm. So the AEGT B fan is not running. The FHB exhaust fans do not trip on hi rads, but the supply fan does.</p>			
Technical Reference(s): ARI-H13-P902-01 Rev 5, ARI-H13-P680-08 Rev 13, ARI-H13-P800-01 Rev 7, & ARI-H13-P680-07 Rev 20		Reference Attached: ARI-H13-P902-01 p 7, & ARI-H13-P800-01 p 5	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-M15-E, OT-COMBINED-M40-B.4			
Question Source:	Bank # Modified Bank # New	Clinton 2002	
Question History:	Previous NRC Exam Clinton 2002 # RO-69		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7 & b.11	
Comments: Level of Difficulty = x			

**QUESTION RO 38**

The following plant conditions exist:

- A Loss of Coolant Accident has occurred
- The RPV is depressurized
- All control rods are fully inserted
- LPCI A, B, and C are injecting into the reactor at 6800 gpm (each)
- RPV water level is 20 inches and rising rapidly

Subsequently, LPCI A System flow and pump amps are observed to be rising significantly and discharge pressure has lowered.

LPCI B and C parameters are stable within their normal indications.

Which one of the following describes the condition of the LPCI A Pump, including guidance for continued operation?

The LPCI A Pump is \_\_\_\_\_.

- A. cavitating and may be secured since adequate core cooling exists
- B. running out and may be secured since adequate core cooling exists
- C. cavitating and should not be secured since adequate core cooling does not exist
- D. running out and should not be secured since adequate core cooling does not exist

NRC Exam 2013

QUESTION RO 38

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	203000	A2.12
	Importance Rating	2.6*	
K&A: Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI Injection Mode (Plant Specific): Pump runout			
<b>RHR/LPCI; Injection Mode</b>			
<p>Explanation: <b>Answer B</b> – High current, high flow, and low discharge pressure are indications of pump runout. The pump may be secured since adequate core cooling exists with RPV level &gt; TAF and rising rapidly.</p> <p>A – Incorrect – Cavitation characteristics would include fluctuations in pump amps and discharge pressure.</p> <p>C – Incorrect – Cavitation characteristics would include fluctuations in pump amps and discharge pressure. The LPCI pump may be secured since adequate core cooling exists and further operation of the pump may cause damage.</p> <p>D – Incorrect – The LPCI pump may be secured since adequate core cooling exists and further operation of the pump may cause damage.</p>			
Technical Reference(s): SOI-E12 Rev 57, OT-3303-02 Lesson Plan Rev 4, and EOP-Bases Rev 3		Reference Attached: SOI-E12 pp 7-8, OT-3303-02 Lesson Plan pp 89-90, and EOP-Bases p 34	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3303-03-02.7 & OT-COMBINED-E12-H			
Question Source:	Bank # Modified Bank # New	Perry 2003	
Question History:	Previous NRC Exam Perry 2003 #RO-41		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	x	
Comments: Level of Difficulty = x			

**QUESTION RO 39**

RHR A is running in Refuel Mode Shutdown Cooling.

During performance of a surveillance test, an isolation signal was inadvertently inserted that resulted in the following:

- E12-F008, SHUTDOWN COOLING INBD SUCT ISOL Valve automatically isolates
- E12-F009, SHUTDOWN COOLING INBD SUCT ISOL Valve automatically isolates
- E12-F037A, RHR UPPER POOL COOLING ISOL Valve automatically isolates
- E12-F006A, RHR A SHUTDOWN CLG SUCT Valve remains open

Which of the following isolation signals would not result in this valve lineup?

- A. High Drywell Pressure
- B. High Reactor Pressure
- C. Low Reactor Water Level
- D. High RHR Room Temperature

NRC Exam 2013

**QUESTION RO 39**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	205000	A3.01
	Importance Rating	3.2	
K&A: Ability to monitor automatic operations of the Shutdown Cooling System (RHR Shutdown Cooling Mode) including: Valve operation			
<b>Shutdown Cooling</b>			
Explanation: <b>Answer A</b> – A high DW pressure signal is the only isolation signal that will not isolate the SDC valves. B, C, & D – Incorrect – All of these signals isolate the SDC INBD suct, OTBD suct, & Upper pool isol valves			
Technical Reference(s): OAI-1703 rev 14 & PYBP-POS-027 Rev 2		Reference Attached: OAI-1703 pp 24-25 & PYBP-POS-027 p 18	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-E12-F			
Question Source:	Bank # Modified Bank # New	Grand Gulf 2008	
Question History:	Previous NRC Exam Grand Gulf 2008 #RO-51		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 40**

The plant was operating at rated power.

An inadvertent initiation of Low Pressure Core Spray occurred.

The Immediate Actions of ONI-E12-1, Inadvertent Initiation of ECCS or RCIC were performed.

Subsequently, a loss of offsite power occurred coincident with a LOCA.

When power is restored to the divisional buses by the diesel generators, LPCS will \_\_\_\_.

- A. not automatically restart
- B. automatically restart immediately
- C. automatically restart in 10 seconds
- D. automatically restart in 15 seconds

NRC Exam 2013

QUESTION RO 40

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	209001	K2.01
	Importance Rating	3.0	
K&A: Knowledge of electrical power supplies to the following: Pump power			
<b>LPCS</b>			
<p>Explanation: <b>Answer A</b> – The Immediate Action for an inadvertent initiation of LPCS is to override the pump to OFF. Since the LPCS pump has been overridden off, K13 is energized, preventing the pump from restarting.</p> <p>B – Incorrect – This would be true if the pump had not been previously overridden off.</p> <p>C – Incorrect – This is the time allowed for the DG to reenergize the bus.</p> <p>D – Incorrect – This is the ‘normal’ time delay for the LPCS pump to start without a LOOP.</p>			
Technical Reference(s): OT-COMBINED-E21 LP (PowerPoint) Rev 1		Reference Attached: OT-COMBINED-E21 LP (PowerPoint) slides 39-41	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-E21-F			
Question Source:	Bank # Modified Bank # New	Monticello 2009	
Question History:	Previous NRC Exam Monticello 2009 #RO-31		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 41**

The plant was operating at rated power when a LOCA occurred resulting in the following:

- The reactor scrammed
- RPV pressure has dropped to 480 psig
- RPV level is 14 inches and stable
- HPCS and RCIC are injecting to the RPV

Based on these conditions, the LPCS Injection Valve, 1E21-F005 is \_\_ (1) \_\_ and the LPCS Pump Min Flow Valve, 1E21-F011 is \_\_ (2) \_\_.

- |    | __ (1) __ | __ (2) __ |
|----|-----------|-----------|
| A. | open      | closed    |
| B. | open      | open      |
| C. | closed    | closed    |
| D. | closed    | open      |

NRC Exam 2013

QUESTION RO 41

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	209001	A4.03
	Importance Rating	3.7	
K&A: Ability to manually operate and/or monitor in the control room: Injection valves			
<b>LPCS</b>			
<p>Explanation: <b>Answer B</b> – LPCS will initiate and the pump will start when RPV level drops &lt;L1 (16.5"). The Injection valve will open upon system initiation as long as the pressure between the injection valve and the RPV is &lt; 600 psig. However, LPCS will not inject until RPV pressure is &lt; 450 psig. This will cause the min flow valve to be open.</p> <p>A – Incorrect – The min flow valve will be open (no injection flow).</p> <p>C – Incorrect – The Injection valve will be open and the min flow valve will be open.</p> <p>D – Incorrect - The min flow valve will be open (no injection flow).</p>			
Technical Reference(s): SOI-E21 Rev 28		Reference Attached: SOI-E21 p 13	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-E21-F			
Question Source:	Bank # Modified Bank # New	LaSalle 2007	
Question History:	Previous NRC Exam LaSalle 2007 #RO-14		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41 b.7 55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 42**

Which of the following components, if not functioning properly, could result in a water hammer event in the HPCS system?

- A. HPCS Pump Discharge Restricting Orifice, E22-D002
- B. HPCS Pump CST Suction Check Valve, E22-F002
- C. HPCS Testable Check Valve, E22-F005
- D. HPCS Water Leg Pump, E22-C002

NRC Exam 2013

QUESTION RO 42

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	209002	K1.03
	Importance Rating	3.0	
K&A: Knowledge of the physical connections and/or cause-effect relationships between High Pressure Core Spray System (HPCS) and the following: Water leg (jockey) pump; BWR-5,6			
<b>HPCS</b>			
<p>Explanation: <b>Answer D</b> – Per SDM-E22A, the waterleg pump prevents water hammer by keeping the injection filled and pressurized between the pump discharge check valve and the injection valve (F004).</p> <p>A – Incorrect – The HPCS Pump Discharge Restricting Orifice prevents pump runout at low discharge pressures. It will not cause a water hammer.</p> <p>B – Incorrect – The HPCS Pump CST Suction Check Valve prevents cross-connecting the CST and the Suppression Pool. If it malfunctions, it will allow CST pressure to be felt in the HPCS system preventing water hammer.</p> <p>D – Incorrect – A malfunction of the HPCS Testable Check Valve would either allow Rx pressure to be felt in the HPCS system or prevent injection if stuck shut.</p>			
Technical Reference(s): SDM-E22A, Rev. 8		Reference Attached: SDM-E22A, p 4	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-E22A-C.5			
Question Source:	Bank # Modified Bank # New	River Bend, 2008	
Question History:	Previous NRC Exam River Bend, 2008, RO Question 17		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.5	
Comments: Level of Difficulty = x			

**QUESTION RO 43**

Breaker EH1104, 4.16KV TO 480V XFMR EHF-1-A TO BUS EF-1-A, tripped.

Which one of the following has lost power?

- A. Suppression Pool Cleanup Pump, 1G42-C001
- B. Standby Liquid Control Pump A, 1C41-C001A
- C. Reactor Water Cleanup Pump A, 1G33 C001A
- D. Control Complex Chill Water Pump C, P47-C001C

NRC Exam 2013

QUESTION RO 43

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	211000	K2.01
	Importance Rating	2.9	
K&A: Knowledge of electrical power supplies to the following: SBLC pumps			
<b>SLC</b>			
<p>Explanation: <b>Answer B</b> – Standby Liquid Control Pump A, 1C41-C001A is powered from Bus EF-1-A, Breaker EH1104 on Bus EH11 supplies power to Bus EF-1-A</p> <p>A – incorrect – is plausible; powered from F-1-E bus</p> <p>C – incorrect – is plausible; Powered from F-1-C bus</p> <p>D – incorrect – is plausible; powered from EF-2-A Bus</p>			
Technical Reference(s): Dwg 206-021 Rev SSSS		Reference Attached: Dwg 206-021 (partial)	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-R10-J-2 & OT-COMBINED-C41-F-2			
Question Source:	Bank # Modified Bank # New	Perry 2010	
Question History:	Previous NRC Exam Perry 2010 #RO-62		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 44**

RPS B motor-generator output voltage rose to 133 volts over several seconds then returned to normal and remained there.

The status of the CVCW OTBD RETURN MOV ISOL VLV, 1P50-F150 is \_\_ (1) \_\_ and the CVCW INBD RETURN MOV ISOL VALVE, 1P50-F140 is \_\_ (2) \_\_

- |    | __ (1) __ | __ (2) __ |
|----|-----------|-----------|
| A. | open      | open      |
| B. | open      | closed    |
| C. | closed    | open      |
| D. | closed    | closed    |

NRC Exam 2013

QUESTION RO 44

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	212000	K3.02
	Importance Rating	3.7	
K&A: Knowledge of the effect that a loss or malfunction of the Reactor Protection System will have on following: Primary containment isolation system/nuclear steam supply shut-off; Plant-Specific			
<b>RPS</b>			
<p>Explanation: <b>Answer B</b> – A voltage increase <math>\geq 132</math> volts will cause the RPS EPA to trip and deenergizes RPS B Bus. The loss of the B bus will cause the inboard containment isolation valves to close.</p> <p>A – Incorrect – The inboard containment isolation valve will be shut.</p> <p>C – Incorrect – The outboard isolation valves will not be affected by a loss of RPS B, only the inboard valves.</p> <p>C – Incorrect – The outboard isolation valves will not be affected by a loss of RPS B</p>			
Technical Reference(s): TS 3.3.8.2 & ONI-C71-2 Rev 8		Reference Attached: TS 3.3.8.2 p 3.3-79 & ONI-C71-2 pp 5, 7, 9, & 11	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3035-11(LP)-A.2			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.7	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 45**

The plant is operating at rated power with the following:

- RPS Bus 'A' is on its NORMAL power supply
- RPS Bus 'B' is on its ALTERNATE power supply

The main line fuses in the MCC disconnect for RPS MG Set 'A' opened.

Scram solenoid power (white) indicating lights \_\_ (1) \_\_ will extinguish on P680.

The appropriate action before the RPS 'A' half-scram can be reset is to \_\_ (2) \_\_.



- |    |                                  |   |
|----|----------------------------------|---|
|    | __ (1) __                        | __ (2) __   |
| A. | GP 1A, GP 1B,<br>GP 3B and GP 3A | place the MG SET A TRANSFER<br>switch in the ALT A position |
| B. | GP 1A, GP 1B,<br>GP 3B and GP 3A | make RPS MG Set 'A' power<br>available again to RPS Bus 'A' |
| C. | GP 1A, GP 2A,<br>GP 3A and GP 4A | place the MG SET A TRANSFER<br>switch in the ALT A position |
| D. | GP 1A, GP 2A,<br>GP 3A and GP 4A | make RPS MG Set 'A' power<br>available again to RPS Bus 'A' |

NRC Exam 2013

QUESTION RO 45

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	212000	A2.02
	Importance Rating	3.7	
<p>K&amp;A: Ability to (a) predict the impacts of the following on the REACTOR PROTECTION SYSTEM ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: RPS bus power supply failure</p>			
<b>RPS</b>			
<p>Explanation: <b>Answer D</b> – Only one RPS bus can be powered from the alternate power supply at a time due to design of the MG SET TRANSFER switch. Therefore, the only way to reset the 'A' half-scam is by making RPS MG Set 'A' power available again to RPS Bus 'A'. The GP A lights are in the circuits that bring RPS 'A' bus power to all of the 'A' scram solenoids; the GP B lights are in the circuits that bring RPS 'B' bus power to all of the 'B' scram solenoids. When RPS MG Set 'A' tripped (in the stem conditions), de-energizing RPS Bus 'A', all of the 'A' scram solenoid circuits (including the associated power monitoring lights) lost power.</p> <p>A – Incorrect – Cannot put RPS A in Alt position due to switch design, also as discussed above the GP A lights will be extinguished.</p> <p>B - -Incorrect- As discussed above the GP A lights will be extinguished.</p> <p>C – Incorrect - Cannot put RPS A in Alt position due to switch design,</p>			
<p>Technical Reference(s): SOI-C71 Rev. 19, SDM C71, Rev 12</p>		<p>Reference Attached: SOI-C71 p 4, SDM C71, p75</p>	
<p>Proposed references to be provided to applicants during examination: None</p>			
<p>Learning Objective (As available): OT-COMBINED-C71-M</p>			
Question Source:	Bank # Modified Bank # New	Grand Gulf 2010	
Question History:	Previous NRC Exam Grand Gulf 2010 RO #47		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
<p>Comments: Level of Difficulty = x</p>			

**QUESTION RO 46**

The plant is in Mode 2 with a reactor startup in progress, with the following:

- All APRMs are reading 2% power
- IRM B is reading 122 on Range 6
- Annunciator H13-P680-0006-E3 IRM D/H UPSC TRIP/INOP alarms due to IRM H module becoming unplugged

The response of the Reactor Protection System (RPS) and Rod Control and Information System (RC&IS) is to generate a \_\_\_\_\_.

- A. rod block only
- B. half scram only
- C. full reactor scram
- D. rod block and half scram

NRC Exam 2013

QUESTION RO 46

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	215003	K4.02
	Importance Rating	4.0	
K&A: Knowledge of Intermediate Range Monitor (IRM) System design feature(s) and/or interlocks which provide for the following: Reactor SCRAM signals			
<b>IRM</b>			
<p>Explanation: <b>Answer D</b> - IRM B upscale trip (120/125) and RB (108/125) would be in with Mode Switch in STARTUP. IRM H INOP would also cause ½ scram and Rod Block. IRM B and H RPS trips are both in RPS Trip System B and would only give a ½ scram.</p> <p>A – Incorrect – This would be true if IRM B was above 108/125 and below 120/125 and if IRM H INOP was not in.</p> <p>B – Incorrect – With IRM B above trip 120/125 it is also above RB 108/125. IRM H INOP gives RB.</p> <p>C – Incorrect – This would be true if IRM B and H were in different RPS Trip Systems.</p>			
Technical Reference(s): ARI-H13-P680-06 Rev. 8, PDB-I0005 Rev. 9		Reference Attached: ): ARI-H13-P680-06 pp 33 and 71, PDB-I0005 pp 3 and 4	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-C51_IRM-F			
Question Source:	Bank # Modified Bank # New	Nine Mile 2002	
Question History:	Previous NRC Exam Nine Mile 2002 RO #49		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 47**

Regarding Source Range Monitors:

A reduction in SRM detector gas pressure will cause an SRM to read   (1)   and as the  $U_{235}$  coating depletes in an SRM detector, the SRM will read   (2)  .

- |    | <u>  (1)  </u> | <u>  (2)  </u> |
|----|----------------|----------------|
| A. | higher         | lower          |
| B. | higher         | higher         |
| C. | lower          | lower          |
| D. | lower          | higher         |

NRC Exam 2013

QUESTION RO 47

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	215004	K5.01
	Importance Rating	2.6	
K&A: Knowledge of the operational implications of the following concepts as they apply to Source Range Monitor (SRM) System: Detector operation			
<b>Source Range Monitor</b>			
<p>Explanation: <b>Answer C</b> – The decreased gas pressure, in combination with a smaller amount of uranium, makes the detector much less sensitive to thermal neutron interaction and subsequent ionization of the argon gas.</p> <p>A – Incorrect – As gas pressure decreases, the amount of interactions taking place with fission fragments decreases, reducing the output current.</p> <p>B – Incorrect – Decreasing gas pressure, and a smaller amount of uranium, makes the detector much less sensitive to thermal neutron interaction.</p> <p>D – Incorrect – A smaller amount of uranium, makes the detector much less sensitive to thermal neutron interaction.</p>			
Technical Reference(s): SDM OT-COMBINED-C51 IRM Rev 8		Reference Attached: SDM OT-COMBINED-C51 IRM p 3	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): x			
Question Source:	Bank # Modified Bank # New	Monticello 2009	
Question History:	Previous NRC Exam Monticello 2009 #RO-36		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.6	
Comments: Level of Difficulty = x			

**QUESTION RO 48**

The plant is operating at rated power.

Refer to the attached LPRM to APRM Channel Assignment sheet (Attachment 2), SOI-C51 (APRM) for current LPRM status.

The LPRMs that are crossed out are Inoperable.

The current LPRM status results in \_\_\_\_ being Inoperable.

**Worksheet Attached**

- A. no APRM channels
- B. 1 APRM channel
- C. 2 APRM channels
- D. 3 APRM channels

NRC Exam 2013

**QUESTION RO 48**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	215005	K6.03
	Importance Rating	3.1	
K&A: Knowledge of the effect that a loss or malfunction of the following will have on the Average Power Range Monitor/Local Power Range Monitor System: Detector			
<b>APRM / LPRM / OPRM</b>			
<p>Explanation: <b>Answer C</b> – Per SOI-C51(APRM), 14 LPRM detector inputs are required for each APRM and that each APRM channel needs at least 2 LPRM detector inputs from each axial level. APRM B only has 13 operable LPRM detectors and APRM C only has 1 LPRM detector on the C axial level.</p> <p>A &amp; B – Incorrect – APRM B and C are Inop</p> <p>D – Incorrect – Only APRM B and C are Inop.</p>			
Technical Reference(s): SOI-C51(APRM) Rev 11		Reference Attached: SOI-C51(APRM) p 3	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-07-H & OT-COMBINED-C51AP_OPRM-C.2			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		Comprehension or Analysis
			x
10 CFR Part 55 Content:	55.41	b.7	55.43
Comments: Level of Difficulty = x			

**QUESTION RO 49**

The plant is operating in accordance with EOP-1 RPV Control with the following conditions:

- The MSIV's have isolated
- The MFP is being used to control RPV Level
- RCIC is being used to help control RPV pressure IAW EOP-SPI 6.6, RCIC Injection and Pressure Control
- SRVs are being cycled when required for RPV pressure control

What is the response of the RCIC system if Suppression Pool level rises to 18.5 feet due to the operation of RCIC and SRVs?

- A. RCIC suction remains on the CST and RCIC operation remains unchanged
- B. The RCIC First Test Valve To CST, 1E51-F022 and RCIC Second Test Valve To CST, 1E51-F059 close and RCIC runs on minimum flow with suction from the CST
- C. The RCIC Pump Supr Pl Suct Isol, 1E51-F031 opens, the RCIC Pump CST Suction Valve, 1E51-F010 closes, and RCIC pumps from the Suppression Pool to the CST
- D. The RCIC Pump Supr Pl Suct Isol, 1E51-F031 opens, the RCIC Pump CST Suction Valve, 1E51-F010 and the RCIC First Test Valve To CST, 1E51-F022 and RCIC Second Test Valve To CST, 1E51-F059 close and RCIC runs on minimum flow

NRC Exam 2013

QUESTION RO 49

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	217000	A1.07
	Importance Rating	3.3	
K&A: Ability to predict and/or monitor changes in parameters associated with operating the Reactor Core Isolation Cooling System (RCIC) controls including: Suppression pool level			
<b>RCIC</b>			
<p>Explanation: <b>Answer A</b> – &gt; With EOP-SPI performed, the shift from CST to Suppression Pool on a high SP level is bypassed. RCIC will continue to run. (Would shift @ 18.4' if not overridden)</p> <p>B – Incorrect – If EOP-SPI 6.6 were not performed, the test valves would close. The suction will not swap due to the performance of EOP-SPI 6.6. Misconception - the test valves will not close.</p> <p>C – Incorrect – If EOP-SPI 6.6 was not performed, the suction would shift and the test valves would close.</p> <p>D – Incorrect – This is what would happen if EOP-SPI 6.6 was not performed.</p>			
Technical Reference(s): EOP-SPI 6.6 Rev 0		Reference Attached: EOP-SPI 6.6 p 2	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-E51-B.2:			
Question Source:	Bank #	RQL-0266	
	Modified Bank #		
	New		
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41	b.5	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 50**

The following conditions exist:

- The reactor scrammed due to a loss of the feedwater system
- High Pressure Core Spray pump tripped due to a seized shaft
- Reactor Core Isolation Cooling is maintaining RPV level at 30 inches
- Reactor pressure is 870 psig and lowering slowly

Which of the following conditions would not indicate an immediate threat to RCIC's ability to maintain RPV level?

- A. RCIC Turbine Exhaust Diaphragm rupture.
- B. High RCIC steam line flow caused by a steam supply line leak.
- C. A high Steam Tunnel temperature resulting in an MSIV isolation.
- D. High temperatures in RHR A room resulting in a SDC isolation signal.

NRC Exam 2013

**QUESTION RO 50**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	217000	K3.01
	Importance Rating	3.7	
K&A: Knowledge of the effect that a loss or malfunction of the Reactor Core Isolation Cooling System (RCIC) will have on following: Reactor water level			
<b>RCIC</b>			
Explanation: <b>Answer C</b> – The steam tunnel high temperature has a 29 minute time delay to isolate – not an immediate threat. A – Incorrect – An exhaust diaphragm rupture will cause an immediate RCIC turbine trip. B – Incorrect – RCIC will isolate after 8 seconds on a high steam flow – immediate. D – Incorrect – A high temp in the RHR rooms will immediately isolate RCIC.			
Technical Reference(s): ARI's H13-P601-20 Rev 16 & H13-P601-21 Rev 15,		Reference Attached: ARI's H13-P601-20 p 57 & H13-P601-21 pp 19, 33, & 49	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-E51-F.2			
Question Source:	Bank # Modified Bank # New	Perry 2010	
Question History:	Previous NRC Exam Perry 2010 #RO-49		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 51**

The plant scrammed due to a LOCA. Current conditions are as follows:

- RPV water level is - 20 inches and lowering
- DW Pressure is 8 psig and slowly rising

The BOP operator then initiates ADS by arming and depressing the ADS A TIME DELAY LOGIC MANUAL INITIATION and the ADS A INSTANTANEOUS LOGIC MANUAL INITIATION pushbuttons resulting in only four ADS SRV's opening.

Four ADS SRV's opening is an insufficient number of SRVs for \_\_ (1) \_\_.  
The action required to mitigate this situation is \_\_ (2) \_\_.

\_\_ (1) \_\_

\_\_ (2) \_\_

- |    |                            |  |
|----|----------------------------|--|
| A. | decay heat removal         | open additional non-ADS SRV's  |
| B. | Emergency Depressurization | open additional non-ADS SRV's  |
| C. | decay heat removal         | override ADS IAW ONI-E12-1<br>Inadvertent Initiation Of ECCS/RCIC;<br>because misoperation of ADS in<br>automatic is confirmed |
| D. | Emergency Depressurization | override ADS IAW ONI-E12-1<br>Inadvertent Initiation Of ECCS/RCIC;<br>because misoperation of ADS in<br>automatic is confirmed |

NRC Exam 2013

QUESTION RO 51

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	218000	A2.04
	Importance Rating	4.1	
<p>K&amp;A: Ability to (a) predict the impacts of the following on the Automatic Depressurization System ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: ADS failure to initiate</p>			
<b>ADS</b>			
<p>Explanation: <b>Answer B</b> – IAW the EOP bases, the minimum number of SRV’s required for ED (MNSRED) is 5. This is based on MSCP RHR injection makeup. IAW EOP-4-2 ED, open additional SRV’s is the action.</p> <p>A – Incorrect – This is the definition for MNSDHR which is 2 SRV’s.</p> <p>C – Incorrect – This is the definition for MNSDHR which is 2 SRV’s. – overriding ADS would not be appropriate nor required by EOP-4-2.</p> <p>D – Incorrect – Overriding ADS would not be appropriate nor required by EOP-4-2.</p>			
Technical Reference(s): EOP Bases Rev 3		Reference Attached: EOP Bases p 43	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): x			
Question Source:	Bank # Modified Bank # New	Nine Mile 2008	
Question History:	Previous NRC Exam Nine Mile 2008 #SRO-87		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.5	
Comments: Level of Difficulty = x			

**QUESTION RO 52**

The following plant conditions exist:

- Drywell pressure 1.3 psig
- Reactor water level 105 inches
- Main condenser vacuum 25 inches Hg A
- Reactor pressure 75 psig

The system components that isolated based on these plant conditions are the \_\_\_\_\_.

- A. Reactor Water Sample isolation valves, RWCU isolation valves, MSIV's and MSL Drain isolation valves
- B. RWCU isolation valves, MSIV's and MSL Drain isolation valves, RCIC steam supply line isolation valves
- C. MSIV's and MSL Drain isolation valves, NCC Containment & Drywell isolation valves, RWCU isolation valves
- D. RCIC steam supply line isolation valves, Drywell Floor Drain Sump & Containment Drain Sump isolation valves, Reactor Water Sample isolation valves

NRC Exam 2013

QUESTION RO 52

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	223002	A3.02
	Importance Rating	3.5	
K&A: Ability to monitor automatic operations of the Primary Containment Isolation System/Nuclear Steam Supply Shut-Off including: Valve closures			
<b>PCIS/Nuclear Steam Supply Shutoff</b>			
<p>Explanation: <b>Answer A</b> – The RWCU sample and RWCU isolation valves close on a L2 signal. The MSL and MSL Drain valves close on low vacuum (21.5”HgA)</p> <p>B – Incorrect – RCIC steam supply line isolation condition not met (reactor pressure &lt; 60 psig).</p> <p>C – Incorrect – NCC isolation valve isolation conditions not met (RPV level &lt; Level 1 or DW pressure &gt; 1.68 psig).</p> <p>D – Incorrect – RCIC steam supply line isolation condition not met (reactor pressure &lt; 60 psig).</p>			
Technical Reference(s): IOI-18 Rev 12 & ONI-N62 Rev 9		Reference Attached: IOI-18 p 105 & ONI-N62 p 4	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-B21(NS4)-F (multiple)			
Question Source:	Bank # Modified Bank # New	Perry 2001	
Question History:	Previous NRC Exam Perry 2001 #RO-76		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 53**

The plant is in a refueling outage.

- Containment Vessel and Drywell Purge Exhaust System (M14) is operating in REFUEL MODE
- CONT VENT EXH radiation monitor, 1D17-K609B is failed upscale

The following then occurs:

- CONT VENT EXH radiation monitor, 1D17-K609D fails downscale

The Containment Vessel and Drywell Purge Exhaust System.

- A. CNTMT & DW PURGE Isolation Dampers shut
- B. CNTMT PURGE SUPP FAN A & B M14-C001A(B) trip
- C. continues to run in REFUEL MODE with all fans operating
- D. CNTMT & DW PURGE EXH FAN A & B M14-C003A(B) trip

NRC Exam 2013

QUESTION RO 53

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	223002	K3.18
	Importance Rating	3	
K&A: Knowledge of the effect that a loss or malfunction of the Primary Containment Isolation System/Nuclear Steam Supply Shut-Off will have on following: Containment ventilation			
<b>PCIS/Nuclear Steam Supply Shutoff</b>			
Explanation: <b>Answer C</b> – Failures on both the A & D or both B & C rad monitors will isolate M14 and cause the fans to trip. A – Incorrect – Wrong combination of rad monitors to cause damper isolation. B – Incorrect – Wrong combination of rad monitors to cause Supply fans to trip D – Incorrect – Wrong combination of rad monitors to cause Exhaust fans to trip			
Technical Reference(s): ARI-H13-P680-07 Rev 20 & PDB-I05 Rev 9		Reference Attached: ARI-H13-P680-07 pp 67-68 & PDB-I05 p 26	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-M14-F OT-COMBINED-D17A-F			
Question Source:	Bank # Modified Bank # New	Perry 2007-1	
Question History:	Previous NRC Exam Perry 2007 #SRO-17		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 54**

The following conditions exist:

- The reactor scrammed due to a small-break LOCA
- The only available injection source is from the Condensate Transfer system
- To maximize injection, Emergency Depressurization was initiated approximately 20 minutes ago and all ADS SRVs were verified open
- RPV level is -10 inches and rising slowly
- The SRV OPEN annunciator (H13-P601-21-A2) just reset

You have been directed to verify the status of the ADS SRVs.

The ADS SRVs are \_\_\_\_\_.

- A. closed based on stable SRV tailpipe temperatures
- B. closed based on SRV tailpipe temperatures slowly lowering
- C. open based on SRV tailpipe temperatures of approximately 250°F and stable
- D. open based on SRV tailpipe temperatures of approximately 330°F and slowly rising due to decay heat



NRC Exam 2013

**QUESTION RO 55**

You have been directed to perform the field actions for ONI-SPI A-8, LPCS Fire Water.

Connecting the fire hoses to the LPCS system is done at \_\_ (1) \_\_. After ONI-SPI A-8 alignment is complete, commence RPV injection by \_\_ (2) \_\_.

\_\_ (1) \_\_

\_\_ (2) \_\_

- |    |                             |                                  |
|----|-----------------------------|----------------------------------|
| A. | Aux Building 620' East Side | starting the LPCS Pump           |
| B. | Aux Building 620' East Side | opening the LPCS Injection Valve |
| C. | Aux Building 620' West Side | starting the LPCS Pump           |
| D. | Aux Building 620' West Side | opening the LPCS Injection Valve |

NRC Exam 2013

**QUESTION RO 55**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	259002	2.1.30
	Importance Rating	4.4	
K&A: Ability to locate and operate components, including local controls			
<b>Reactor Water Level Control</b>			
<p>Explanation: <b>Answer B</b> – IAW ONI-SPI A-8, the 5” fire hose is connected to LPCS via a flange on Aux 620’ C/07. This is on the east side of the Aux building. This instruction is entered when the LPCS pump is unavailable for injection. Additionally, the LPCS pump breaker is racked out during alignment. Opening the injection valve is the method for adding water to the RPV.</p> <p>A – Incorrect – The LPCS pump breaker is racked out.</p> <p>C – Incorrect – The east side is the location for the HPCS flange connection.</p> <p>D – Incorrect – The east side is the location for the HPCS flange connection. The LPCS pump breaker is racked out.</p>			
Technical Reference(s): ONI-SPI A-8 Rev 2		Reference Attached: ONI-SPI A-8 pp 2, 3, 4	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3402-02-F			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.7	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 56**

A LOCA occurred resulting in fuel damage and elevated radiation levels in the drywell, containment, and annulus.

Subsequently, a fire ignited in **one** the AEGTS **trains** and charcoal beds releasing smoke and contamination into the Intermediate Building.

1D17-K786 & 2D17-K786 (Unit 1 & 2) D17 Plant Vent Radiation Monitors have ALERTS locked in.

1D19-K300 & 2D19-K300 (Unit 1 & 2) D19 Plant Vent Post Accident Radiation Monitors \_\_(1)\_\_\_.

Any release due to the fire will be monitored by the \_\_(2)\_\_\_ Plant Vent D19-K300.

- |    | <u>__(1)___</u>             | <u>__(2)___</u> |
|----|-----------------------------|-----------------|
| A. | are currently running       | Unit 1          |
| B. | are currently running       | Unit 2          |
| C. | need to be manually started | Unit 1          |
| D. | need to be manually started | Unit 2          |

NRC Exam 2013

**QUESTION RO 56**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	261000	K1.04
	Importance Rating	2.5	
K&A: Knowledge of the physical connections and/or cause-effect relationships between Standby Gas Treatment System and the following: High radiation sampling system			
<b>SGTS</b>			
<p>Explanation: <b>Answer B</b> – The D19 will auto start on a LOCA signal <u>or</u> a HIGH from the respective D17 rad monitor. Most areas of the IB exhaust to the Unit 2 plant vent with the exception of areas served by the sub-exhaust van (areas with potential for contamination).</p> <p>A – Incorrect – Only the IB Sub-Exhaust areas go to the Unit 1 plant vent.</p> <p>C – Incorrect – The high level rad monitors start on a L2 LOCA signal. Only the IB Sub-Exhaust areas go to the Unit 1 plant vent.</p> <p>C – Incorrect – The high level rad monitors start on a L2 LOCA signal.</p>			
Technical Reference(s): ODCM Rev 19, SDM-D19 Rev 6, & Dwg 208-056 Sh. 207 Rev L		Reference Attached: ODCM p 33, SDM-D19 pp 31-34, & Dwg 208-056 Sh. 207	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-D19-F & OT-COMBINED-M33-B			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	x
10 CFR Part 55 Content:	55.41	b.5	55.43
Comments: Level of Difficulty = x			

**QUESTION RO 57**

Along with Ashtabula-Erie West 345 KV Line (PY-AT-ERW), which of the following 345KV circuits normally provide power into/out of the Perry Transmission Yard?

1. PY-HA (Hanna)
2. PY-EL (Eastlake)
3. PY-HD (Harding)
4. PY-IL (Inland)

- A. 1, 2, & 3
- B. 1, 2, & 4
- C. 1, 3, & 4
- D. 2, 3, & 4

NRC Exam 2013

QUESTION RO 57

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	262001	K2.01
	Importance Rating	3.3	
K&A: Knowledge of electrical power supplies to the following: Off-site sources of power			
<b>AC Electrical Distribution</b>			
<p>Explanation: <b>Answer D</b> – The PY-HA (Hanna) circuit is connected into the Perry transmission yard, but not connected at the other end (abandoned). All other circuits are connected on both ends.</p> <p>A, B, C – Incorrect – These choices contain the Hanna (PY-HA) circuit which is not connected.</p>			
Technical Reference(s): SDM-R10 Rev 11		Reference Attached: SDM-R10 pp 1 & 92	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-R10-B.1			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.7	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 58**

A reactor startup is in progress with the following conditions:

- Reactor power approximately 16%
- Turbine generator ready to synchronize to the grid

Vital inverter DB-1-A experienced a failure. Additionally, the static transfer switch failed to shift to the Alternate Source resulting in a loss of power to Bus V-1-A.

Based on these conditions, other than scrambling, control rods can \_\_\_\_.

- A. not be inserted or withdrawn
- B. be inserted using In-Timer-Skip
- C. only be inserted or withdrawn by single notch
- D. only be withdrawn using the Continuous Withdraw

NRC Exam 2013

QUESTION RO 58

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	262002	K3.07
	Importance Rating	2.6	
K&A: Knowledge of the effect that a loss or malfunction of the Uninterruptable Power Supply (A.C./D.C.) will have on following: Movement of control rods; Plant-Specific			
<b>UPS (AC/DC)</b>			
Explanation: <b>Answer A</b> – Per ONI-R25-2 if V-1-A is lost the control rods will not be able to be moved except by scram. B, C & D – Incorrect – Per ONI-R25-2 if V-1-A is lost the control rods will not be able to be moved.			
Technical Reference(s): ONI-R25-2 Rev. 10		Reference Attached: ONI-R25-2 p 10	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-R14_R15-A & J.1			
Question Source:	Bank # Modified Bank # New	Nine Mile Point 2 2010	
Question History:	Previous NRC Exam Nine Mile Point 2 2010 RO#6		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

NRC Exam 2013

QUESTION RO 59

Switching requiring defeat of the Kirk Key Interlock will be performed on Bus D-1-A.

The purpose of the Kirk Key Interlock is to \_\_ (1) \_\_. To defeat the Kirk Key Interlock, breakers \_\_ (2) \_\_ must be racked out to Disconnect?

\_\_ (1) \_\_

\_\_ (2) \_\_

- |    |   |  |
|----|---|--|
| A. | prevent removal of the DC Bus Battery Fuses under a load    | D1A08, Reserve Charger Output Breaker and D1A03, Bus D-1-A Main Breaker        |
| B. | prevent paralleling the Normal and Reserve Battery chargers | D1A02, Normal Charger Output Breaker and D1A08, Reserve Charger Output Breaker |
| C. | prevent removal of the DC Bus Battery Fuses under a load    | D1A02, Normal Charger Output Breaker and D1A03, Bus D-1-A Main Breaker         |
| D. | prevent paralleling the Normal and Reserve Battery chargers | D1A08, Reserve Charger Output Breaker and D1A03, Bus D-1-A Main Breaker        |

NRC Exam 2013

**QUESTION RO 59**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	263000	K4.01
	Importance Rating	3.1	
K&A: Knowledge of D.C. Electrical Distribution design feature(s) and/or interlocks which provide for the following: Manual/ automatic transfers of control; Plant-Specific			
<b>DC Electrical Distribution</b>			
<p>Explanation: <b>Answer C</b> – The Kirk Key Interlock prevents removing the battery fuses with any current present. The Normal Charger and the Main Bus breakers must be opened to isolate the battery fuses.</p> <p>A – Incorrect – The reserve charger is isolated when the Main Breaker is opened.</p> <p>B &amp; D – Incorrect – This is not the purpose of the application of the Kirk Key Interlock in this situation. (This is used in the M40 system). The Reserve Charger breaker does not need to be racked out.</p>			
Technical Reference(s): SDM-R42 Rev 8		Reference Attached: SDM-R42 p 13	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-R42-F			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.7	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 60**

The plant was operating at rated power when a large-break LOCA occurred in the drywell resulting in the following conditions

- Drywell Pressure peaked at 8 psig and is currently at 7 psig.
- Reactor Pressure is at 110 psig.
- Reactor Water Level is at 0 (zero) inches.

Which of the following describes the proper load sequencing of the associated equipment after the accident signal is received?

- A. Div 2 DG is ready to load at 13 seconds  
ESW B pump breaker closes at 10 seconds  
RHR C pump breaker closes at 5 seconds
- B. Div 2 DG is ready to load at 10 seconds  
ESW B pump breaker closes at 16 seconds  
RHR B pump breaker closes immediately
- C. ESW B pump breaker closes at 18 seconds  
RHR B pump breaker closes at 5 seconds  
RHR C pump breaker closes at 5 seconds
- D. Div 2 DG is ready to load at 10 seconds  
RHR B pump breaker closes at 5 seconds  
RHR C pump breaker closes immediately

NRC Exam 2013

**QUESTION RO 60**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	264000	K5.06
	Importance Rating	3.4	
K&A: Knowledge of the operational implications of the following concepts as they apply to Emergency Generators (Diesel/Jet): Load sequencing			
<b>EDGs</b>			
<p>Explanation: <b>Answer D</b> – The DG is ready to load 10 sec, RHR B pump starts 5 sec, and RHR C pump starts immediately after the receipt of a LOCA signal. Additionally, ESW pumps start ~18 seconds after a LOCA signal is received.</p> <p>A – Incorrect – This is the timing for Div 3 DG. ESW pump starts 18 seconds after a LOCA signal. RHR C pump starts immediately.</p> <p>B – Incorrect – ESW pump starts 18 seconds after a LOCA signal. RHR B pump starts 5 seconds after a LOCA signal.</p> <p>C – Incorrect – RHR C pump starts immediately after a LOCA signal.</p>			
Technical Reference(s): Lesson Plan E12 Rev 2 & SVI-R43-T5367 Rev 21		Reference Attached: Lesson Plan E12 p 31 & SVI-R43-T5367 pp 129-130	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-R43_R48-H.1			
Question Source:	Bank # Modified Bank # New	Browns Ferry 2008	
Question History:	Previous NRC Exam Browns Ferry 2008 #RO-22		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.5	
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 61**

The HPCS Pump automatically started on a valid demand signal.

The Division 3 Diesel Generator is now running.

Annunciator DG TRIP LUBE OIL PRESS LOW (H13-P601-16-D2) then alarmed.

This alarm indicates a failure or malfunction of the \_\_ (1) \_\_.

The Division 3 Diesel Generator \_\_ (2) \_\_ continue to operate.

- |    | __ (1) __          | __ (2) __ |
|----|--------------------|-----------|
| A. | AC Soak Back Pump  | will      |
| B. | Main Lube Oil Pump | will      |
| C. | AC Soak Back Pump  | will not  |
| D. | Main Lube Oil Pump | will not  |

NRC Exam 2013

QUESTION RO 61

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	264000	K6.03
	Importance Rating	3.5	
K&A: Knowledge of the effect that a loss or malfunction of the following will have on the Emergency Generators (Diesel/Jet) : Lube oil pumps			
<b>EDGs</b>			
<p>Explanation: <b>Answer B</b> – Receipt of this alarm indicates a failure or malfunction of the Main oil pump. The Div 3 DG will trip <u>except</u> during a LOCA when this alarm is received.</p> <p>A – Incorrect – The Soak Back LO pump loss will not cause this alarm.</p> <p>C – Incorrect – The Soak Back pump loss will not cause this alarm. During a LOCA the DG trip is bypassed and the DG will continue to run.</p> <p>D – Incorrect – During a LOCA the DG trip is bypassed and the DG will continue to run.</p>			
Technical Reference(s): ARI-H13-P601-16 Rev 17		Reference Attached: ARI-H13-P601-16 p 39	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-E22B-I.2.2			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	x
10 CFR Part 55 Content:	55.41	b.7	55.43
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 62**

The Unit 2 Service and Instrument Air Compressors (2P51-C001 and 2P52-C001) lost power due to electrical problems.

Unit 1 Service Air Compressor 1P51-C001 is running in Lead.

Subsequently, a malfunction caused the 1P52-F050, SA/IA XCONN VALVE to close.

The 1P52-F050 closed due to \_\_ (1) \_\_.

Air pressure in the Unit 1 Instrument Air System \_\_ (2) \_\_.

\_\_ (1) \_\_

\_\_ (2) \_\_

- |    |   |   |
|----|---|---|
| A. | blown control power fuse for 1P52-F050    | is maintained at normal air pressure                          |
| B. | blown control power fuse for 1P52-F050    | lowers until the Unit 1 Instrument Air Compressor auto starts |
| C. | low Unit 1 Instrument Air Header pressure | is maintained at normal air pressure                          |
| D. | low Unit 1 Instrument Air Header pressure | lowers until the Unit 1 Instrument Air Compressor auto starts |

NRC Exam 2013

QUESTION RO 62

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	300000	K6.07
	Importance Rating	2.5	
K&A: Knowledge of the effect that a loss or malfunction of the following will have on the Instrument Air System: Valves			
<b>Instrument Air</b>			
<p>Explanation: <b>Answer A</b> – The xP52-F050 valve will close on a loss of control power, a loss of breaker control power, or a low pressure in the receiver. A check valve in parallel with the F050 valve allows air pressure to be maintained in the instrument air system.</p> <p>B – Incorrect – Normally one compressor will be able to supply the entire service and instrument air systems. The air pressure will not lower causing the IAC to auto start.</p> <p>C – Incorrect – The auto close of the F050 comes from low pressure in the receiver, not the header.</p> <p>D – Incorrect – The auto close of the F050 comes from low pressure in the receiver, not the header. Normally one compressor will be able to supply the entire service and instrument air systems. The air pressure will not lower causing the IAC to auto start.</p>			
Technical Reference(s): SOI-P51/52 Rev 26 and ONI-P52 Rev 16		Reference Attached: SOI-P51/52 p 4 and ONI-P52 p 17	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-P51_P52-F			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		Comprehension or Analysis
			x
10 CFR Part 55 Content:	55.41	b.7	55.43
Comments: Level of Difficulty = x			

**QUESTION RO 63**

Annunciator NCC SURGE TANK LEVEL HIGH on panel H13-P970 has alarmed.

A leak in the on-service \_\_\_\_ would cause this alarm.

- A. NCC Heat Exchanger, P43-B001B
- B. Containment Vessel Chiller, P50-B001C
- C. Control Rod Drive Hydraulic Pump, C11-C001A
- D. Fuel Pool Cooling Cleanup Heat Exchanger, G41-B001B

NRC Exam 2013

**QUESTION RO 63**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	400000	A1.04
	Importance Rating	2.8	
K&A: Ability to predict and / or monitor changes in parameters associated with operating the CCWS controls including: Surge Tank Level			
<b>Component Cooling Water</b>			
<p>Explanation: <b>Answer D</b> – FPCC HX operates at a higher pressure than NCC and leakage from FPCC to NCC would cause a high surge tank level alarm.</p> <p>A – Incorrect – Service Water operates at a lower pressure (55-60) than NCC (94-123)</p> <p>B – Incorrect – CV chiller operates at a lower pressure (~75) and is gas.</p> <p>C – Incorrect – CRD oil coolers operate a lower pressure (~8)</p>			
Technical Reference(s): ARI-H13-P970-001 rev 16 & SDM-P43 rev 10		Reference Attached: ARI-H13-P970-001 rev p 67 & SDM-P43 p 16	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-P43-B.2			
Question Source:	Bank # Modified Bank # New	Perry Audit 2010	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.5	
Comments: Level of Difficulty = x			

**QUESTION RO 64**

A plant startup is in progress.

The reactor is at the point-of-adding-heat.

When Control Rod 20-25 was fully withdrawn, substitute data was entered for Channel 1 position indication.

Later, Control Rod 20-25 lost its Channel 2 position indication.

To continue the plant startup, first, Control Rod 20-25 \_\_\_\_.

- A. position must be bypassed in both RC&IS RACS cabinets
- B. must be inserted to position 46 from the Operator Control Module
- C. must have Substitute Data entered for Channel 2 position indication
- D. must be inserted using the Single Rod Insertion (SRI) switches on the HCU

NRC Exam 2013

QUESTION RO 64

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	1	
	K/A#	201005	K3.02
	Importance Rating	3.5	
K&A: Knowledge of the effect that a loss or malfunction of the Rod Control And Information System (RCIS) will have on following: Reactor startup; BWR-6			
<b>RCIS</b>			
<p>Explanation: <b>Answer A</b> – Since bad data exists on both Channels 1 and 2, the Rod Pattern Controller (RPC) inserts a rod block. The signals must be bypassed in RACS 1 &amp; 2 to remove the constraints of the RPC.</p> <p>B – Incorrect – Since there is bad data on both channels, the control rod can not be moved from the OCM.</p> <p>C – Incorrect – Cannot enter substitute data from Channel I because it contains substitute data.</p> <p>D – Incorrect – SOI-C11(RCIS) P&amp;L prohibit use Scram Test switches for this condition.</p>			
Technical Reference(s): SOI-C11(RCIS) Rev 28 & SDM-C11(RC&IS) Rev 9		Reference Attached: SOI-C11(RCIS) pp 6, 11, & 12 and SDM-C11(RC&IS) pp 10 & 19	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-C11_RC&IS-C, F, H, M			
Question Source:	Bank # Modified Bank # New	River Bend 2003	
Question History:	Previous NRC Exam River Bend 2003		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 65**

The plant was operating at rated power when initiation of a manual scram resulted in an ATWS.

- The keylock switches for SLC pumps A & B were taken to ON
- Both SQUIB CONTINUITY indicating lights are **off (de-energized)**
- SLC Pump A started normally
- SLC Pump B lost indication and failed to start

Based on the conditions listed above the direct response of the Reactor Water Cleanup System is that \_\_\_\_\_.

- A. only the 1G33-C001A, RWCU Pump tripped
- B. both 1G33-C001A and 1G33-C001B, RWCU Pumps trip
- C. only the 1G33-F001, RWCU SUCT FM CNTMT INBD ISOL isolated
- D. both 1G33-F001, RWCU SUCT FM CNTMT INBD ISOL and 1G33-F004, RWCU SUCT FM CNTMT OTBD ISOL isolated

NRC Exam 2013

QUESTION RO 65

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	204000	K4.04
	Importance Rating	3.5	
K&A: Knowledge of Reactor Water Cleanup System design feature(s) and/or interlocks which provide for the following: System isolation upon-receipt of isolation signals			
<b>RWCU</b>			
<p>Explanation: <b>Answer D</b> – Taking the SLC A pump control switch to ON causes the G33-F004 valve to close and taking the SLC B pump control switch to ON causes the G33-F001 valve to close, even though the B SLC pump failed to start.</p> <p>A &amp; B – Incorrect – The RWCU pumps trip on the F001 / 4 valves closing, not directly from initiation of SLC</p> <p>C – Incorrect – Both F001 &amp; F004 valves automatically close.</p>			
Technical Reference(s): SOI-G33 Rev 33 & SDM-G33 Rev 9		Reference Attached: SOI-G33 pp 5, 32, & 33 & SDM-G33 p 17	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-G33_G36-C.1 & F.1			
Question Source:	Bank # Modified Bank # New	Fermi 2006	
Question History:	Previous NRC Exam Fermi 2006 #RO-66		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 66**

The plant was operating at rated power when the following occurred:

- The reactor was scrammed 20 minutes ago due to a problem with the pressure regulator system
- During the transient, both Reactor Recirculation Pumps tripped off
- Current RPV pressure is 600 psig and stable
- The scram has just been reset
- RPV Bottom Head Drain temperature is 445°F
- RPV Vessel Head Flange temperature is 500°F

Based on these conditions, bulk RPV water temperature is approximately\_\_\_\_ temperature.

- A. 30°F > Bottom Head Drain
- B. 30°F < Vessel Head Flange
- C. 45°F > Bottom Head Drain
- D. 45°F < Vessel Head Flange

NRC Exam 2013

QUESTION RO 66

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	216000	K5.11
	Importance Rating	3.2	
K&A: Knowledge of the operational implications of the following concepts as they apply to Nuclear Boiler Instrumentation: Indicated vessel temperature response during rapid heatups or cooldowns			
<b>Nuclear Boiler Inst.</b>			
<p>Explanation: <b>Answer C</b> – This is a steam table question. The saturated temperature of 600 psig (~615 psia) is ~490°F (489), which is about 45°&gt; the bottom head temp in this case.</p> <p>A – Incorrect – (445+30=475°F) This temperature corresponds to ~ 525 psig.</p> <p>B – Incorrect – (500-30=470°F) This temperature corresponds to ~ 500 psig</p> <p>D – Incorrect – (500-45=455°F) This temperature corresponds to ~ 429 psig</p>			
Technical Reference(s): ABB Steam Tables		Reference Attached: x	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-B21(INST)-C			
Question Source:	Bank #		
	Modified Bank #		
	New	x	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41	b.5	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 67**

The plant has experienced a LOCA and the following plant conditions exist:

- Reactor Level - 25"
- Time Reactor Level below TAF 28 minutes
- Containment Pressure 10 psig
- Containment Hydrogen Concentration 7.5%
- Drywell Hydrogen Concentration 8.5%

The Hydrogen Igniters failed to energize.

As the RO, you have been directed to startup the Combustible Gas Mixing Compressors per the SOI-M51-56 Combustible Gas Control System and Hydrogen Igniters

The Combustible Gas Mixing Compressors should \_\_\_\_\_.

**Reference Provided:**

- A. not be started because Drywell HDOL has been exceeded
- B. be started because level has been below TAF for < 30 minutes
- C. be started because Containment HDOL has not been exceeded
- D. not be started because level has been below TAF for > 15 minutes

NRC Exam 2013

QUESTION RO 67

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	223001	K6.08
	Importance Rating	3.3	
K&A: Knowledge of the effect that a loss or malfunction of the following will have on the Primary Containment System And Auxiliaries: Containment atmospheric control			
<b>Primary CTMT and Aux.</b>			
<p>Explanation: <b>Answer C</b> – Override LPC/L-3 in EOP-1A directs starting hydrogen gas mixing compressors if both DW H2 concentration is &gt; 1% and containment is below HDOL.</p> <p>A – Incorrect – DW HDOL is 9%. As given in stem DW HDOL has not been exceeded.</p> <p>B – Incorrect – The Hydrogen Control Hardcard directs starting the H2 Igniters if &lt;TAF for &lt;30 minutes- it does not address the mixing compressors.</p> <p>D – Incorrect – Perry License Commitments allow 30 min to start H2 igniters – not compressors.</p>			
Technical Reference(s): EOP-1A Bases Rev 4 & EOP-SPI Supplement Rev 3		Reference Attached: EOP-1A Bases pp 32-33 & EOP-SPI Supplement p 10	
Proposed references to be provided to applicants during examination: Modified EOP-SPI Supplement Figure #7 HDOL			
Learning Objective (As available): OT-3402-03-D.2			
Question Source:	Bank # Modified Bank # New	Perry 2009	
Question History:	Previous NRC Exam Perry 2009 #RO-69		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

**QUESTION RO 68**

A Refueling Outage is in progress.

Control Rod 30-31 is selected and withdrawn to position 02.

The Reactor Mode Switch is in the REFUEL position.

Based on the above information, which of the following Refueling Platform operations is prevented automatically?

- A. Inserting a fuel assembly into the RPV with the Main Fuel Hoist
- B. Removing a Control Rod blade from the RPV with the Auxiliary Hoist
- C. Moving the Refueling Platform over the RPV with the Main Fuel Hoist unloaded
- D. Moving the Refueling Platform from IFTS to the RPV with the Main Fuel Hoist unloaded

NRC Exam 2013

QUESTION RO 68

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	234000	A1.03
	Importance Rating	3.4	
K&A: Ability to predict and/or monitor changes in parameters associated with operating the Fuel Handling Equipment controls including: †core reactivity level			
<b>Fuel Handling Equipment</b>			
<p>Explanation: <b>Answer A</b> – HOIST REFUEL INTERLOCK - If at least one Control Rod not full in and the Main Hoist Loaded indicator on the Operating Console is ON and the platform limit switch indicates the Refuel Platform is over the vessel, then power to the fuel hoist motor is interrupted.</p> <p>B, C, &amp; D – Incorrect – None of these operations are prevented automatically.</p>			
Technical Reference(s): SOI-F15 Rev 16		Reference Attached: SOI-F15 p 126	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-F11_F15-F			
Question Source:	Bank #	Modified Bank #	INL-2165
	New		
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.5	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 69**

The plant scrammed two days ago following a 15 month run.  
The cause of the scram was corrected.  
A plant startup was in progress with the following conditions:

- RPV pressure is 940 psig
- Reactor power is 2%
- Main Turbine warm-up in progress

Then, an automatic reactor scram occurred and all control rods fully inserted.

During the transient the following conditions were observed:

- Reactor pressure lowered to 795 psig
- Reactor pressure is currently 935 psig and rising
- Condenser Vacuum is 20.5" HgA and degrading

Based on these conditions, the MSIV's are currently \_\_ (1) \_\_. Reactor pressure is being controlled using \_\_ (2) \_\_.

- |    | __ (1) __ | __ (2) __             |
|----|-----------|-----------------------|
| A. | open      | Turbine Bypass Valves |
| B. | open      | SRV's                 |
| C. | shut      | SRV's                 |
| D. | shut      | RCIC                  |

NRC Exam 2013

QUESTION RO 69

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	239001	A2.08
	Importance Rating	3.6	
<p>K&amp;A: 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: Low condenser vacuum</p>			
<b>Main and Reheat Steam</b>			
<p>Explanation: <b>Answer B</b> – With turbine warmup in progress, the Mode Switch will be in Startup. The MSL 807 psig MSIV closure is bypassed. Therefore, the MSIV's will be open. However, since condenser vacuum is &gt;20 inHgA, the Bypass Valves are closed. The Rx Scram Hardcard tells the operator to stabilize pressure using the BPV's or the SRV's. Pressure control will be on the SRV's.</p> <p>A – Incorrect – BPV's close at 20" HgA.</p> <p>C &amp; D – Incorrect – MSIV's are open.</p>			
<p>Technical Reference(s): OAI-1703 rev 14, ARI-H13-P601-19 Rev 14 &amp; ONI-N62 rev 9</p>		<p>Reference Attached: OAI-1703 p 35, ARI-H13-P601-19 p 7 &amp; ONI-N62 p 4</p>	
<p>Proposed references to be provided to applicants during examination: None</p>			
<p>Learning Objective (As available): OT-COMBINED-B21_N11-F &amp; OT-3402-02-F</p>			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		Comprehension or Analysis
			x
10 CFR Part 55 Content:	55.41	b.5	55.43
<p>Comments: Level of Difficulty = x</p>			

NRC Exam 2013

**QUESTION RO 70**

Plant power was lowered to approximately 50% power between noon and 13:00.

Load Set was not adjusted during the power reduction.

A problem with the Stator Cooling Water Temperature Control Valve caused temperature to rise before being corrected.

Annunciator H13-P680-08-B6, LOAD SET RUNBACK STATOR CLG alarmed.

Below is the Stator Water generator outlet temperature trend.

Time	Temperature	Trend
13:07:00	79.0°C	Rising
13:07:30	79.4°C	Rising
13:08:00	80.0°C	Rising
13:08:30	80.5°C	Rising
13:09:00	81.0°C	Rising
13:09:30	81.4°C	Peak
13:10:00	81.0°C	Lowering
13:10:30	80.4°C	Lowering
13:11:00	80.0°C	Lowering
13:11:30	77.5°C	Lowering
13:12:00	77.3°C	Stable

Based on the data above, generator load at time 13:15 would be approximately \_\_\_\_ MWe

- A. 650
- B. 390
- C. 325
- D. 0

NRC Exam 2013

QUESTION RO 70

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	241000	A3.17
	Importance Rating	3.3	
K&A: Ability to monitor automatic operations of the Reactor/Turbine Pressure Regulating System including: Turbine runback			
<b>Reactor/Turbine Pressure Regulator</b>			
<p>Explanation: <b>Answer A</b> – A SWC runback is initiated when SWC inlet temp is &gt;81°C and stops when either generator load reaches 9900amps (25% load) or the runback signal clears (temp &lt;81°C). Since Load Set was not adjusted during the power reduction, the runback had to runback the load set motor from ~1450 MWe at a rate of 1%/3 seconds. SW temperature was only &gt;81°C for 60 seconds. Therefore the Load set motor was only run back 20%. – No change in generator load.</p> <p>B – Incorrect – This corresponds to the 25% no-liquid cooling load.</p> <p>C – Incorrect – This corresponds to 20% runback if load set were just above generator load when the runback occurred.</p> <p>D – Incorrect – Plausible because if a runback is initiated from high power, the plant will scram on high Rx pressure.</p>			
Technical Reference(s): ARI-H13-P680-08 Rev 13, SDM-N32/C85 Rev 6 & LP OT-COMBINED-N32_C85 Rev 2		Reference Attached: ARI-H13-P680-08 pp 21 and 22, SDM-N32/C85 p 119 & LP OT-COMBINED-N32_C85 pp 9 & 10	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): x			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		Comprehension or Analysis
			x
10 CFR Part 55 Content:	55.41	b.7	55.43
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 71**

The Main Generator synchronization is in the progress IAW IOI-0003, Power Changes.

The following indications are observed on panel H13-P680:

- SYNC SELECT SWITCH is in the S610-PY-TIE position
- MAIN TRANSFORMER (incoming) S11-R013 346 KV
- PY-EL-LINE (running) N41-R120 344 KV
- Synchroscope is stopped at the 6:00 position

Before the S610-PY-TIE breaker can be closed, the operator must go to \_\_ (1) \_\_ on the Auto Voltage Regulator to match voltage. He must also go to \_\_ (2) \_\_ on the Load Selector pushbuttons until the Synchroscope is moving slowly in the \_\_ (3) \_\_ direction.

- |    | __ (1) __ | __ (2) __ | __ (3) __         |
|----|-----------|-----------|-------------------|
| A. | LOWER     | INCREASE  | clockwise         |
| B. | LOWER     | DECREASE  | counter-clockwise |
| C. | RAISE     | DECREASE  | clockwise         |
| D. | RAISE     | INCREASE  | counter-clockwise |

NRC Exam 2013

QUESTION RO 71

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	245000	A4.02
	Importance Rating	3.1	
K&A: Ability to manually operate and/or monitor in the control room: Generator controls			
<b>Main Turbine Gen. / Aux.</b>			
<p>Explanation: <b>Answer A</b> – With voltage on the Main Transformer at 346 Kv and on the EL line at 344 Kv, the voltage regulator needs to be lowered. With the synchroscope stopped, the generator frequency exactly matches the grid frequency. The Load Selector (Load Set) needs to be increased to cause the turbine to go slightly faster than the grid. This will cause the synchroscope to move in the CW direction.</p> <p>B, C, &amp; D – Incorrect – See Answer A explanation.</p>			
Technical Reference(s): IOI-3 Rev 47		Reference Attached: IOI-3 pp 36-38	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-N41_N51-O			
Question Source:	Bank #		
	Modified Bank #	INL-3127	
	New		
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.7	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 72**

The plant was operating at 80% power when the following occurred:

- Annunciator HOT SURGE TANK LEVEL HI, H13-P680-02-E2 alarmed
- Hot Surge Tank level indicates 132” and rising

The first action the Reactor Operator needs to take to restore HST level is to adjust the \_\_ (1) \_\_.  
 The valve(s) that respond(s) to restore HST level is/are \_\_ (2) \_\_.

- |    | __ (1) __  | __ (2) __   |
|----|--|---|
| A. | HOT SURGE TANK LEVEL<br>Controller, 1N21-R475                | <u>only</u> the Hot Surge Tank Level Control<br>Valve, 1N21-F230  |
| B. | HOT SURGE TANK LEVEL<br>Controller, 1N21-R475                | both the Hot Surge Tank Level Control<br>Valve 1N21-F230<br>and the Hot Surge Tank Level Control<br>Bypass Valve, 1N21-F220 |
| C. | HST LVL CV Manual Control<br>switch/potentiometer, 1N21-R708 | <u>only</u> the Hot Surge Tank Level Control<br>Valve, 1N21-F230  |
| D. | HST LVL CV Manual Control<br>switch/potentiometer, 1N21-R708 | both the Hot Surge Tank Level Control<br>Valve 1N21-F230<br>and the Hot Surge Tank Level Control<br>Bypass Valve, 1N21-F220 |

NRC Exam 2013

QUESTION RO 72

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	256000	2.1.32
	Importance Rating	3.8	
K&A: Ability to explain and apply system limits and precautions			
<b>Reactor Condensate</b>			
<p>Explanation: <b>Answer A</b> – Training strategy in the simulator reinforces taking manual control of the HST Level Control with the 1N21-R475 controller. This is reinforced by the ARI. Per SOI-N21 P&amp;L 2.9 the HOT SURGE TANK LEVEL CONTROL 1N21-F230 controller 1N21-R475 controls only the operation of its respective control valve (1N21-F230).</p> <p>B – Incorrect – The 1N21-F475 controller does not change the position of the Hot Surge Tank Level Control Bypass Valve, 1N21-F220.</p> <p>C – Incorrect– The first action ARI says to take is to use the 1N21-F475 controller, not the 1N21-R708 potentiometer.</p> <p>D – Incorrect – The first action ARI says to take is to use the 1N21-F475 controller, not the 1N21-R708 potentiometer. ARI says to control 1N21-F230 valve not both.</p>			
Technical Reference(s): SOI-N21 Rev 21, ARI-H13-P680-02, Rev 10		Reference Attached: SOI-N21 p 5 ARI-H13-P680-02 pp 53 and 54	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT- COMBINED-N21_N61-H			
Question Source:	Bank #		
	Modified Bank #		
	New	x	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	x	
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.10	
	55.43		
Comments: Level of Difficulty = x			

**QUESTION RO 73**

The plant is operating at rated power with HPCS running in CST to CST Mode for a PMT.

A high temperature in the Aux Building exhaust duct results in isolating Aux Building ventilation.

No Aux Building ventilation operating could result in inadequate cooling to the \_\_\_\_\_.

- A. HPCS and RCIC rooms
- B. RCIC and RWCU Pump rooms
- C. HPCS room and the Steam Tunnel
- D. Steam Tunnel and RWCU Pump rooms

NRC Exam 2013

QUESTION RO 73

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	290001	K1.06
	Importance Rating	3.4	
K&A: Knowledge of the physical connections and/or cause-effect relationships between Secondary Containment and the following: Auxiliary building isolation; BWR-6			
<b>Secondary CTMT</b>			
<p>Explanation: <b>Answer D</b> – IAW with EOP-3 Bases, Perry has an expanded functional Secondary Containment which includes the Intermediate Building, Aux building, Annulus, and Steam Tunnel. Aux Building ventilation takes a suction from the steam tunnel and is the only vent supply for the RWCU pump rooms. SOI-M38/47 P&amp;L 2.2, losing AB ventilation may result in inadequate cooling to the steam tunnel and RWCU pump rooms..</p> <p>A – Incorrect – Both HPCS and RCIC have room coolers.</p> <p>B – Incorrect – The RCIC room has its own room cooler supplied from ECC.</p> <p>C – Incorrect – The HPCS room has its own room cooler supplied from HPCS-ESW.</p>			
Technical Reference(s): EOP-3 Bases Rev 3 & SOI-M38/47 Rev 6		Reference Attached: EOP-3 Bases p 7 & SOI-M38/47 p 3	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-M38-H			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		x
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41	b.5	
	55.43		
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 74**

The plant is operating at rated power with the following conditions:

- Control Room HVAC train A is operating in Normal Mode
- Control Room HVAC train B is Standby

A Control Room HVAC High radiation condition was sensed in the supply duct.

IAW SOI-M25/26, Control Room HVAC And Emergency Recirculating System, the BOP Operator has verified that the CONT RM HVAC TRAIN A and B MODE SELECT switches are selected to the same Mode as the current operating Mode of the Control Room HVAC system.

Which of the following system line-ups is correct for the given conditions?

	Supply Fan M25-C001A	Return Fan M25-C002A	Exh Dmpr M25-F130A	Return Damper M25-F110A
A.	On	On	Open	Closed
B.	On	Off	Closed	Closed
C.	Off	On	Closed	Open
D.	Off	Off	Open	Open

NRC Exam 2013

**QUESTION RO 74**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	
	Group #	2	
	K/A#	290003	K1.01
	Importance Rating	3.4	
K&A: Knowledge of the physical connections and/or cause-effect relationships between Control Room HVAC and the following: Radiation monitors			
<b>Control Room HVAC</b>			
<p>Explanation: <b>Answer B</b> – With a High radiation condition was sensed in the supply duct, the CR HVAC system will shift automatically to Emergency Recirc. When in ER, the Supply Fan continues to run, the Return Fan trips, the Exhaust Damper remains closed, and the Recirc Damper closes.</p> <p>A – Incorrect – The Return Fan trips and the Exhaust Damper remains closed.</p> <p>C – Incorrect – The Supply Fan continues to run and the Recirc Damper closes.</p> <p>D – Incorrect – The Supply Fan continues to run, the Exhaust Damper remains closed, and the Recirc Damper closes.</p>			
Technical Reference(s): SOI-M25/26 rev 22 & ARI-H13-P904-02 Rev 10		Reference Attached: SOI-M25/26 p 64 & ARI-H13-P904-02 p 71	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-M25_26-B			
Question Source:	Bank # Modified Bank # New	INL-0552	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43	b.7	
Comments: Level of Difficulty = x			

NRC Exam 2013

**QUESTION RO 75**

The plant was operating at 100% rated power when a failure of both Pressure Regulators occurred causing the following annunciators to alarm:

- RX PRESS HI. H13-P680-0007-D1
- RPS RX PRESS HI. H13-P680-0005-A8
- RRCS RX PRESS HI. H13-P680-0005-A2

Due to other equipment failures, the SRV's operated only on Spring Set Pressure.

Based on this information \_\_ (1) \_\_ was exceeded. To control RPV pressure, use the \_\_ (2) \_\_.

- |    | __ (1) __   | __ (2) __               |
|----|---|-------------------------|
| A. | the Reactor Coolant System Pressure Safety Limit                          | SRV's                   |
| B. | the Reactor Coolant System Pressure Safety Limit                          | MAX COMBINED FLOW LIMIT |
| C. | <u>only</u> the Reactor Steam Dome Pressure Technical Specification limit | SRV's                   |
| D. | <u>only</u> the Reactor Steam Dome Pressure Technical Specification limit | MAX COMBINED FLOW LIMIT |

NRC Exam 2013

QUESTION RO 75

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #	2	3
	Group #	2	
	K/A#	290002	A2.02
	Importance Rating	3.6	
<p>K&amp;A: Ability to (a) predict the impacts of the following on the Reactor Vessel Internals; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: †Over pressurization transient</p>			
<b>Reactor Vessel Internals</b>			
<p>Explanation: <b>Answer C</b> – Only the TS limit for steam dome pressure (1045 psig) will be exceeded based on annunciator for RRCS pressure high (1083 psig) and the SRV's opening on spring set pressure - safety mode (highest setpoint -1190 psig). USAR Chapter 15 section 15.2.1.4.2 indicates the peak pressure for this analyzed event is 1180 psig which is below the Safety Limit value of <math>\leq</math> 1325 psig. SRV's would be manually opened to control RPV pressure.</p> <p>A – Incorrect – The max RPV pressure should be 1180 psig which is below the SL of 1325 psig.</p> <p>B – Incorrect – The max RPV pressure should be 1180 psig which is below the SL of 1325 psig. Additionally, the Max Combined Flow Limit would not work for this type of regulator failure.</p> <p>D – Incorrect – The Max Combined Flow Limit would not work for this type of regulator failure.</p>			
<p>Technical Reference(s): TS 2.1.2, TS 3.4.12, ONI-C85 Rev 0, ARI-H13-P680-05 Rev 13, ARI-H13-P680-07 Rev 20, &amp; USAR Chapt 15, 15.2.1.4.2 Rev 12</p>		<p>Reference Attached: TS 2.1.2 p 2.0-1, TS 3.4.12 p 3.4-32, ONI-C85 p 11, ARI-H13-P680-05 pp 7 &amp; 19, ARI-H13-P680-07 pp 89, &amp; USAR Chapt 15 p 15.2-6</p>	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3035-06(LP)-A.1, OT-3037-03-G and OT-3037-08-B			
Question Source:	Bank #	Modified Bank #      Nine Mile 2002	
	New		
Question History:	Previous NRC Exam Nine Mile 2002 RO-87		
Question Cognitive Level:	Memory or Fundamental Knowledge		Comprehension or Analysis      x
10 CFR Part 55 Content:	55.41      b.5	55.43	
Comments: Level of Difficulty = x			

**QUESTION SRO 1**

A loss of Hot Surge Tank level occurred.

The following conditions now exist:

- Operating in EOP-01, RPV Control
- RPV level is - 46 inches and lowering
- RPV pressure is 5 psig
- HPCS pump shaft has broken.
- LPCS pump is tagged out for motor replacement with motor removed
- RHR A pump is degraded
- EH12 has a Bus lockout
- No Alternate Injection Subsystems can be lined up
- The EOF is operational

As the Shift Manager, you would notify the Emergency Response Organization that entry into (1) is required.

EOP actions are (2) after the SAGs are entered.

	<u>(1)</u>	<u>(2)</u>
A.	SAG-1, Primary Containment Flooding	Continued
B.	SAG-1, Primary Containment Flooding	Exited
C.	SAG-2, RPV, Containment, and Radioactivity Release Control	Continued
D.	SAG-2, RPV, Containment, and Radioactivity Release Control	Exited

NRC Exam 2013

QUESTION SRO 1

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		3
	Group #		
	K/A#	2.1.20	
	Importance Rating		4.6
K&A: Ability to interpret and execute procedure steps.			
<b>Generic</b>			
<p>Explanation: <b>Answer B</b> – SRO must know that with the given conditions, EOP-01 requires entry into SAG-1 is required. The shift manager is responsible for notifying the ERO that entry into SAGs is required. EOP actions are exited when SAGs are entered.</p> <p>A – incorrect – the EOP Actions are discontinued when SAGs are entered.</p> <p>C – incorrect – SAG-2 entry is not required. EOP actions are exited when SAGs are entered.</p> <p>D incorrect - SAG-2 entry is not required.</p>			
Technical Reference(s): EOP-01 Bases Rev 3		Reference Attached: EOP-01 p 61	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3410-01-A.3			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41		
	55.43	b.5	
<p>Comments: Level of Difficulty = x - E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)] Knowledge of diagnostic steps and decision points in the emergency operating procedures (EOP) that involve transitions to event specific subprocedures or emergency contingency procedures</p>			

NRC Exam 2013

**QUESTION SRO 2**

You are an off-shift SRO.

Which of the following schedules would allow you to maintain proficiency as an SRO?

All shifts are full shifts with turnovers included.

1	Jul 4 US 12 hrs	Jul 5 US 12 hrs	Jul 21 SM 12 hrs	Jul 31 SE 8 hrs	Aug 8 ATC 12 hrs	Aug 30 SM 12 hrs	Sep 1 US 8 hrs
2	Mar. 31 US 12 hrs	Apr. 6 ATC 12 hrs	Apr. 10 BOP 12 hrs	May 1 US 12 hrs	May 21 ATC 12 hrs	Jun 1 SE 12 hrs	Jun 21 SE 12 hrs
3	Jan 3 US 8 hrs	Jan 8 ATC 8 hrs	Feb 15 BOP 8 hrs	Feb 16 ATC 8 hrs	Feb 28 BOP 8 hrs	Mar 18 SE 8 hrs	Apr 1 US 8 hrs
4	Jul 4 FS 8 hrs	Jul 5 US 12 hrs	Jul 21 ATC 12 hrs	Jul 31 BOP 12 hrs	Aug 8 ATC 12 hrs	Aug 30 BOP 12 hrs	Sep 1 FS 8 hrs

- A. 1 only
- B. 2 only
- C. 3 and 4 only
- D. 1 and 4 only

NRC Exam 2013

QUESTION SRO 2

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		3
	Group #		
	K/A#	2.1.4	
	Importance Rating		3.8
<p>K&amp;A: Knowledge of individual licensed operator responsibilities related to shift staffing, such as medical requirements, “no-solo” operation, maintenance of active license status, 10CFR55, etc.</p>			
<b>Generic</b>			
<p>Explanation: <b>Answer D</b> – Correct – Per NUREG 1021, ES-601, need 5-12 hr or 7-8 hr per calendar quarter to maintain proficiency. Also need at least one watch in the SRO position to maintain the SRO portion of the license. Both schedules 1 &amp; 4 contain the correct number of watches.</p> <p>A – incorrect – schedule #4 would also allow to maintain proficiency</p> <p>B – incorrect – the US watch is in the wrong calendar quarter the Shift Engineer (SE) watch does not count for SRO proficiency.</p> <p>C – incorrect – schedule #3 does not contain enough watches as the SE does not count for proficiency.</p>			
<p>Technical Reference(s): 10CFR55.53.e, NUREG 1021, ES-605, NOP-OP-1002 Rev 7, TMA-4206 Rev 13, and TS 5.3</p>		<p>Reference Attached: 10CFR55.53(e) p 1, NUREG 1021, ES-605 p 4, NOP-OP-1002 p 99, and TMA-4206 p 17</p>	
<p>Proposed references to be provided to applicants during examination: None</p>			
<p>Learning Objective (As available): OT-2600-01</p>			
Question Source:	Bank #	Modified Bank #	
	New		X
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	X
10 CFR Part 55 Content:	55.41	55.43	b.2
<p>Comments: Level of Difficulty = x SRO Only Justification: since this is a proficiency maintenance question for an SRO, the assessment of the combination of watch stations is unique to the SRO position. SRO's are allowed to stand a combination of RO and SRO watches to maintain SRO proficiency. Whereas RO's must stand only RO position watches.</p>			

NRC Exam 2013

**QUESTION SRO 3**

The Plant is operating at full power.

The NI-Outs NLO reported the following diesel generator air receiver parameters:

Div 1 DG		Div 3 DG	
Right Bank 245 psig	Left Bank 207 psig	Right Bank 225 psig	Left Bank 205 psig

Based on the above conditions \_\_\_\_.

**Reference Provided:**

- A. no Tech Spec ACTIONS are required
- B. the Unit Supervisor would take Tech Spec ACTIONS for Div 1 Starting Air
- C. the Unit Supervisor would take Tech Spec ACTIONS for Div 3 Starting Air
- D. the Unit Supervisor would take Tech Spec ACTIONS for Div 1 and Div 3 Starting Air

NRC Exam 2013

QUESTION SRO 3

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		3
	Group #		
	K/A#	2.2.42	
	Importance Rating		4.6
K&A: Ability to recognize system parameters that are entry-level conditions for Technical Specifications.			
<b>Generic</b>			
<p>Explanation: <b>Answer C</b> – Per TS Bases, Div 3 requires BOTH air starting air systems for the DG to be operable, while for Div 1 &amp; 2, only one air system is required.</p> <p>A – incorrect – TS LCO entry for Div 3 DG starting air is required</p> <p>B – incorrect – Div 1 starting air is operable with one receiver &gt; 210 psig</p> <p>D – incorrect - Div 1 starting air is operable with one receiver &gt; 210 psig</p>			
Technical Reference(s): TS 3.8.3 and TS Bases 3.8.3 Rev 1, 3, & 7		Reference Attached: TS 3.8.3 and TS Bases 3.8-41a, 42, & 49	
Proposed references to be provided to applicants during examination: <b>TS 3.8.3 (Partial)</b>			
Learning Objective (As available): OT-3037-12-C & D			
Question Source:	Bank #	Modified Bank #	New
			X
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	x
10 CFR Part 55 Content:	55.41	55.43	b.2
<p>Comments: Level of Difficulty = x - Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]</p> <ul style="list-style-type: none"> <li>• Application of Required Actions (Section 3) and Surveillance Requirements (SR) (Section 4) in accordance with rules of application requirements (Section 1).</li> <li>• Knowledge of TS bases that are required to analyze TS required actions and terminology.</li> </ul>			

**QUESTION SRO 4**

While performing a surveillance, the required annunciator did not illuminate. An I&C technician developed a Simple Troubleshooting Plan to install test equipment to monitor the annunciator relay voltages.

Approval of the Simple Troubleshooting Plan is the responsibility of the \_\_\_\_\_.

- A. Shift Manager
- B. Plant Manager
- C. I&C Supervisor
- D. Unit Supervisor

NRC Exam 2013

QUESTION SRO 4

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		3
	Group #		
	K/A#		2.2.20
	Importance Rating		3.8
K&A: Knowledge of the process for managing troubleshooting activities.			
<b>Generic</b>			
<p>Explanation: <b>Answer A</b> – IAW NOP-ER-3001, sect 4.10, the Shift Manager’s approval is required for the Simple Trouble Shooting Plan.</p> <p>B – Incorrect – Plant Manger approval is required for more than Simple Troubleshooting Plans</p> <p>C - Incorrect – the I&amp;C supervisor is not responsible for APPROVAL of the troubleshooting plan</p> <p>D – Incorrect - the Unit Supervisor is responsible for normal work release, not troubleshooting.</p>			
Technical Reference(s): NOP-ER-3001 Rev 5		Reference Attached: NOP-ER-3001 pp 14-15	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): 3039-02-A			
Question Source:	Bank #		
	Modified Bank #		
	New		X
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		X
	Comprehension or Analysis		
10 CFR Part 55 Content:	55.41		
	55.43	b.5	
<p>Comments: Level of Difficulty = x - E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <ul style="list-style-type: none"> <li>• Knowledge of when to implement attachments and appendices, including how to coordinate these items with procedure steps.</li> </ul>			

**QUESTION SRO 5**

The following conditions exist:

- The plant start up from a forced outage is in progress IAW IOI-1, Cold Startup.
- The plant is operating with a known fuel leak.
- Reactor Power is on range 8 of the IRM's.
- Main condenser vacuum is being maintained between 4" HgA and 5" HgA using the mechanical vacuum pumps.
- Annunciator H13-P680-07-A10, AIRBORNE RAD P804 alarmed.
- Radiation monitor OG VEN TPIPE GAS, D17-K836 exceeded the HIGH alarm setpoint.

The Unit Supervisor will enter \_\_\_\_\_.

- A. ONI-N11, Pipe Break Outside Containment and direct stopping the Mechanical Vacuum Pump IAW SOI-N64/62 Off-Gas/Condenser Air Removal System
- B. ONI-D17, High Radiation levels Within Plant and direct stopping the Mechanical Vacuum Pump IAW SOI-N64/62 Off-Gas/Condenser Air Removal System
- C. ONI-N11, Pipe Break Outside Containment and direct isolating the Main Steam Lines IAW SOI-B21 Nuclear Steam Supply Shutoff, Automatic Depressurization And Nuclear Steam Supply Systems.
- D. ONI-D17, High Radiation levels Within Plant and direct isolating the Main Steam Lines IAW SOI-B21 Nuclear Steam Supply Shutoff, Automatic Depressurization And Nuclear Steam Supply Systems.

NRC Exam 2013

QUESTION SRO 5

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		3
	Group #		
	K/A#	2.3.11	
	Importance Rating		4.3
K&A: Ability to control radiation releases.			
<b>Generic</b>			
<p>Explanation: <b>Answer B</b> – IAW ONI-D17, the US should direct the stopping the MVP's when the OG Vent pipe rad monitor exceeds the HIGH alarm setpoint.</p> <p>A – Incorrect – ONI-N11 is the wrong procedure to enter. This is for a pipe break. No indications of a pipe break were given in the stem. The second part contains the correct action.</p> <p>C – Incorrect - ONI-N11 is the wrong procedure to enter. This is for a pipe break. No indications of a pipe break were given in the stem. The second part contains the wrong action of closing the main steam lines.</p> <p>D – Incorrect – the first part is correct, but the second part contains the wrong action of closing the main steam lines.</p>			
Technical Reference(s): ONI-D17 Rev 16 and ARI-H13-P680-07 Rev 20		Reference Attached: ONI-D17 pp 3 & 7 and ARI-H13-P680-07 p 15	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-D17A-M			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	x
10 CFR Part 55 Content:	55.41	55.43	b.4
<p>Comments: Level of Difficulty = D. Radiation hazards that may arise during normal and abnormal situations, including maintenance activities and various contamination conditions. [10 CFR 55.43(b)(4)]</p> <ul style="list-style-type: none"> <li>• Analysis and interpretation of radiation and activity readings as they pertain to selection of administrative, normal, abnormal, and emergency</li> </ul>			

NRC Exam 2013

**QUESTION SRO 6**

The plant was operating at full power, when a transient occurs, resulting in the following conditions:

- NO Control Rod movement occurred.
- White SCRAM SOL VLS Lights (GP1A, GP1B, GP2A, GP2B, GP3A, GP3B, GP4A, and GP4B) on P680 are ALL OFF.
- The Turbine Generator is ON LINE.
- Reactor Power is 30%.
- ADS is INHIBITED.
- The HPCS pump tripped on over-current.
- RPV Water Level is at 30 inches, lowering at 4 inches per minute.
- Suppression Pool Water Temperature is 90°F and rising, due to RCIC starting.

Which ONE of the following EOP Actions should have highest priority, based on these conditions?

- A. Scram And ARI IAW EOP-SPI 1.2
- B. Pulling Scram Fuses IAW EOP-SPI 1.1
- C. Bypass of MSIV and ECCS Interlocks IAW EOP-SPI 2.3
- D. Start one loop of RHR in Suppression Pool Cooling IAW the Hardcard



**QUESTION SRO 7**

Consider the following conditions:

- Twenty minutes ago the plant was manually scrammed from 50% power due to a fire in bus D-1-A.
- Bus D-1-A was de-energized and the fire was out in 15 minutes.
- The Shift Manager was able to recruit off-shift day shift personnel for additional control room monitoring.
- All control rods inserted.
- Reactor level is being controlled using Feedwater at 178”.
- Reactor pressure is being controlled using Bypass valves.
- Unit 1 Plant Vent radiation monitor showed elevated release rates following the scram, but has returned to normal.

Classify the event.

**Reference Provided:**

- A. No classifiable event
- B. Unusual Event
- C. Alert
- D. Site Area Emergency

NRC Exam 2013

QUESTION SRO 7

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		3
	Group #		
	K/A#	2.4.32	
	Importance Rating		4.0
K&A: Knowledge of operator response to loss of all annunciators.			
<b>Generic</b>			
<p>Explanation: <b>Answer C</b> – a loss of D-1A causes a loss of the majority of the control room annunciators. The manual scram is considered a significant plant transient and additional monitoring in the control room satisfies the entry conditions for an ALERT.</p> <p>A – Incorrect – Plausible since the fire is in a non-safe shutdown bldg, the release is less than 60 minutes. And if they don't realize that the annunciators are powered from D-1-A.</p> <p>B – Incorrect – plausible if they think the fire is in a safe shutdown building.</p> <p>D – Incorrect – Plausible if they assume sufficient indications are not available to monitor critical plant parameters.</p>			
Technical Reference(s): EPI-A1 rev 25		Reference Attached: EPI-A1 p 55	
Proposed references to be provided to applicants during examination: <b>EPI-A1</b>			
Learning Objective (As available): OT-3035-05(LP)-A.6			
Question Source:	Bank #		
	Modified Bank #		
	New		X
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41		
	55.43	b.5	
<p>Comments: Level of Difficulty = x - E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <p>This 10 CFR 55.43 topic involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.</p>			

**QUESTION SRO 8**

The following conditions exist:

- The plant is operating at 98% power.
- Core flow is 103 Mlbs/Hr.
- OPRMs are INOPERABLE
- Alternate methods to detect and suppress thermal hydraulic instability oscillations have been initiated IAW 3.3.1.3 OPRM Instrumentation.

Reactor Recirculation Pump B then trips.

In accordance with ONI-C51, Unplanned Changes Reactor Power or Reactivity, the Unit Supervisor will direct \_\_\_\_\_.

**Reference Provided:**

- A. inserting Cram Rods IAW FTI-B002, Control Rod Movements
- B. restarting Recirc Pump B IAW SOI-B33, Reactor Recirculation
- C. inserting a manual reactor scram IAW ONI-C71-1, Reactor Scram
- D. shutting Recirc Pump B FCV IAW ONI-SPI G-2, Single Pump Operation

NRC Exam 2013

QUESTION SRO 8

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	295001	2.1.23
	Importance Rating		4.4
K&A: Ability to perform specific system and integrated plant procedures during all modes of plant operation			
<b>Partial or Complete Loss of Forced Core Flow Circulation / 1 &amp; 4</b>			
<p>Explanation: <b>Answer A</b> – With the plant operating at 103 Mlbm/Hr/ a trip of 1 recirc pump would lower core flow to &lt; 50% rated core flow, putting operation in the Controlled Entry Immediate Exit Region of the Backup Stability Protection (OPRM INOP) P/F map. The US would assess the situation and direct inserting Cram Rods to lower power to exit this region.</p> <p>B – Incorrect – Plausible since ONI-C51 indicates the preferred method to exit the CE/IE region is opposite the way it was entered.</p> <p>C – Incorrect – Plausible since at lower core flows, a trip of 1 recirc pump will cause entry into the Manual Scram region.</p> <p>D – Incorrect - Plausible since shutting the Recirc Loop Suction valve is required, but not the FCV.</p>			
Technical Reference(s): ONI-C51 Flow Chart Rev J and PDB-A6 rev 14		Reference Attached: ONI-C51 and PDB-A6 p 5	
Proposed references to be provided to applicants during examination: <b>PDB-A06, Power Flow Map (modified)</b>			
Learning Objective (As available): OT-COMBINED-B33-I			
Question Source:	Bank # Modified Bank # New	Peach Bottom 2008 # SRO-9	
Question History:	Previous NRC Exam Peach Bottom 2008		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43 b.5		
<p>Comments: Level of Difficulty = x E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <p>This 10 CFR 55.43 topic involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.</p>			

**QUESTION SRO 9**

Plant startup is in progress with the conditions:

- Control Rod withdrawal in progress
- Reactor pressure is 280 psig
- Turbine Shell Warming is in progress IAW SOI-N32/39/41/51, Main Turbine Generator and Turning Gear System

The following occurs:

- While throttling Main Stop Valve No. 2 Bypass Valve using the CHEST AND SHELL WARMING INCREASE / DECREASE pushbuttons, the INCREASE pushbutton momentarily stuck depressed
- Turbine first stage pressure equalized with reactor pressure
- Annunciator H13-P680-05-E5, FAST CLOSE & TURB STOP SCRAM BYP, reset
- Automatic actions failed to occur

The action the Unit Supervisor would direct to compensate for the failed automatic action is to   (1)  

The basis for the automatic action that failed is to   (2)  

  (1)  

  (2)  

- |    |   |  |
|----|---|--|
| A. | Place Mode Switch in SHUTDOWN   | ensure the Minimum Critical Power Ratio (MCPR) Safety Limit is not exceeded      |
| B. | Place Mode Switch in SHUTDOWN   | ensure the fuel peak cladding temperature remains below the limits of 10CRF50.46 |
| C. | Depress the CHEST AND SHELL WARMING DECREASE pushbutton to close the Main Stop Valve No. 2 Bypass Valve | ensure the Main Turbine heat-up rate is not exceeded                             |
| D. | Depress the CHEST AND SHELL WARMING DECREASE pushbutton to close the Main Stop Valve No. 2 Bypass Valve | prevent turbine packing damage by limiting turbine speed                         |

NRC Exam 2013

QUESTION SRO 9

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	295006	2.4.50
	Importance Rating		4
K&A: Ability to verify system alarm setpoints and operate controls identified in the alarm response manual			
<b>SCRAM / 1</b>			
<p>Explanation: <b>Answer A</b> – When turbine 1<sup>st</sup> stage pressure exceeds 212 psig, the annunciator will clear, indicating that power above the LPSP is sensed. With power above the LPSP, a Rx scram should result due to turb stop valves being closed. Since no automatic actions occurred, the US should direct inserting a manual scram. Additionally, the bases for the scram is to prevent exceeding the MCPR safety limit.</p> <p>B – Incorrect – Correct action, but wrong bases for action.</p> <p>C – Incorrect – H/U rate limit is 150°F/ hr, however once a scram setpoint limit is exceeded, the action to scram becomes more important than closing the bypass valve.</p> <p>D - incorrect – Packing damage is a concern if turbine speed exceeds 30 rpm, however once a scram setpoint limit is exceeded, the action to scram becomes more important than closing the bypass valve</p>			
Technical Reference(s): TS Bases 3.3.1.1 Rev 0, SOI-N32 Rev 25, ARI-H13-P680-05 Rev 13		Reference Attached: TS Bases p B-3.3-16 SOI-N32 p 34 & ARI-H13-P680-05 p 97	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-N32_C85-C.2			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	x
10 CFR Part 55 Content:	55.41	55.43	b.5
<p><b>Comments:</b> Level of Difficulty = x E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <p>This 10 CFR 55.43 topic involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.</p> <p>B. Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]</p> <ul style="list-style-type: none"> <li>• Knowledge of TS bases that are required to analyze TS required actions and terminology.</li> </ul>			

**QUESTION SRO 10**

The following conditions exist.

- The plant is operating at rated power
- Nuclear Closed Cooling Pumps A and C are running
- Nuclear Closed Cooling Pump B is tagged out for motor replacement

The following alarms were received:

- H13-P680-7A-A3, Unit-2 CONTROL RM ALARM
- H13-P970-01-B1, NCC PUMP DISCH HEADER PRESSURE LOW
- H13-P970-01-D1, NCC COMMON HEADER FLOW LOW
- H13-P680-1A-B5, NRX NCC FLOW LO
- 2H13-P877-01-G4, BUS XH21(4.16KV) UNDERVOLTAGE

The Field Supervisor reports voltmeter for Bus XH21 is reading zero volts.

A technician testing Bus XH21 undervoltage relays reports a piece of test equipment malfunctioned and caused a trip of Isolating Breaker EH2116. The test equipment was removed and there was no damage to the relays or the bus.

Select the procedures containing the steps to mitigate this event and recover Bus XH21 and restart NCC C pump.

- 1 SOI-P43, Nuclear Closed Cooling
- 2 SOI-2R10 (4KV), Plant Electrical System (4KV) Unit 2
- 3 ONI- R22-1 Loss Of An Essential Or A Stub 4.16kv Bus
- 4 ONI- P43, Loss of Nuclear Closed Cooling

- A. 1, 2, & 3
- B. 1, 2, & 4
- C. 1, 3, & 4
- D. 2, 3, & 4

NRC Exam 2013

QUESTION SRO 10

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	295018	AA2.05
	Importance Rating		2.9
K&A: Ability to determine and/or interpret the following as they apply to Partial Or Complete Loss Of Component Cooling Water: System pressure			
<b>Partial or Total Loss of CCW / 8</b>			
<p>Explanation: <b>Answer B</b> – NCC Pump C is fed from Bus XH21. Bus XH21 UV will trip the NCC pump causing low pressure and low flow. In order to mitigate this event (trip of an NCC pump) ONI-P43 is entered, which directs starting an additional NCC pump. Bus XH21 must be recovered to restart C NCC pump. This is covered in the SOI-2R10, not the ONI-R22.</p> <p>A, C, &amp; D – incorrect – ONI-R22-1 does not contain any steps to recover Bus XH-21</p>			
Technical Reference(s): ONI-P43 Rev 11, ARI-2H13-P877-001 Rev 3, SOI-2R10 (4KV) Rev 7, ARI-H13-P970-001 Rev 16, SOI-P43 Rev 15		Reference Attached: ONI-P43 pp 3 & 4, ARI-2H13-P877-001 p 3, SOI-2R10 (4KV) p 2, ARI-H13-P970-001 p 17	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-COMBINED-P43-F.1			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	x
10 CFR Part 55 Content:	55.41	55.43	b.5
<p>Comments: Level of Difficulty = x E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <p>This 10 CFR 55.43 topic involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.</p>			

NRC Exam 2013

**QUESTION SRO 11**

The plant is operating at 75% power with the following conditions:

- Unit 1 Service Air Compressor, 1P51C001 is tagged out for maintenance
- Unit 1 Instrument Air Compressor, 1P52C001 is running in Lead

Thirty minutes ago Bus H22 experienced a bus lockout.

Currently, Unit 1 Instrument Air Compressor is showing degrading output.

Regarding Service and Instrument Air systems only:

If Unit 1 Instrument Air Compressor is lost, the PSA Risk Category will be \_\_ (1) \_\_.

In accordance with NOP-OP-1007, Risk Management, notification of the Duty Team \_\_ (2) \_\_ required.

**Reference Provided:**

- |    | __ (1) __ | __ (2) __ |
|----|-----------|-----------|
| A. | Green     | is        |
| B. | Green     | is not    |
| C. | Yellow    | is        |
| D. | Yellow    | is not    |

NRC Exam 2013

**QUESTION SRO 11**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	295019	2.1.25
	Importance Rating		4.2
K&A: Ability to interpret reference materials, such as graphs, curves, tables, etc.			
<b>Partial or Total Loss of Inst. Air / 8</b>			
<p>Explanation: <b>Answer C</b> – with Bus H22 locked out, both U2 air compressors are lost. If U1 IAC is lost, all 4 air compressors will be out of service resulting in a loss of air. IAW PDB-C007 this changes the Plant risk from Green to Yellow. IAW NOP-OP-1007, duty team notification is required for a change in risk level.</p> <p>A – Incorrect – Risk Category will change to Yellow.</p> <p>B – Incorrect – Risk Category will change to Yellow and Duty Team notification is required.</p> <p>D – Incorrect - Duty Team notification is required.</p>			
Technical Reference(s): NOP-OP-1007 Rev 15, PDB-C0011 Rev 5		Reference Attached: NOP-OP-1007 p 23, PDB-C0011 p 10	
Proposed references to be provided to applicants during examination: <b>PDB-C0011, PSA Pre-Solved Configurations for On-Line Risk (Partial)</b>			
Learning Objective (As available): OT-3035-14(LP)-A.3 and OT-3060-01-I			
Question Source:	Bank #		
	Modified Bank #		
	New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		
	Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41		
	55.43	b.5	
<p>Comments: Level of Difficulty = x E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <p>This 10 CFR 55.43 topic involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.</p>			

**QUESTION SRO 12**

The Plant is operating at 90% power.  
RCIC is being run in CST to CST mode for a PMT.

The Suppression Pool Average Temperature was recorded as follows:

T <sub>1</sub>	94.0 °F
T <sub>2</sub>	96.2 °F
T <sub>3</sub>	100.5 °F
T <sub>4</sub>	102.3 °F
T <sub>5</sub>	105.0 °F
T <sub>6</sub>	106.0 °F

The RCIC turbine was tripped at T<sub>3</sub>.  
Based on the above data, the Unit Supervisor would enter Tech Spec 3.6.2.1 \_\_\_\_\_.

**Reference Provided:**

- A. Condition A @ T<sub>2</sub>
- B. Condition A @ T<sub>3</sub>
- C. Condition C @ T<sub>5</sub>
- D. Condition C @ T<sub>6</sub>

NRC Exam 2013

QUESTION SRO 12

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	295026	EA2.01
	Importance Rating		4.2
K&A: Ability to determine and/or interpret the following as they apply to Suppression Pool High Water Temperature: Suppression pool water temperature.			
<b>Suppression Pool High Water Temp. / 5</b>			
Explanation: <b>Answer B</b> – Per Tech Spec Bases once testing is suspended, the higher SP temperature limit is no longer in effect and Condition A is entered if Temperature is > 95°F. A – Incorrect – At T2 testing is still being performed, so Condition A does not apply. C – Incorrect – At T5 Condition A is applicable, but Condition C would be applicable at > 105° if testing were still being performed. D – incorrect – At T6 Condition C would be applicable at > 105° if testing were still being performed.			
Technical Reference(s): TS 3.6.2.1 & TS 3.6.2.1 Bases Rev 1		Reference Attached: TS 3.6.2.1 pp 3.6-36 and 37 & B 3.6-73	
Proposed references to be provided to applicants during examination: <b>TS 3.6.2.1 - Partial</b>			
Learning Objective (As available): TO-3037-07-H			
Question Source:	Bank # Modified Bank # New		x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43 b.2		
Comments: Level of Difficulty = x - B. Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)] • Knowledge of TS bases that are required to analyze TS required actions and terminology.			

**QUESTION SRO 13**

While operating at rated power, the plant experienced a LOCA and a LOOP resulting in the following conditions:

- Drywell pressure 4.0 psig – stable
- Drywell temperature 220°F – Stable
- Rx Pressure 800-1000 psig on SRV's
- The lowest RPV water level 110 inches
- RCIC tripped
- HPCS did not auto start
- HPCS was manually started for level control
- RPV water level has been stabilized

This event meets the conditions for a/an \_\_\_\_ notification(s) to the NRC Operations Center.

**Reference Provided:**

- A. 1 hour and 4 hour only
- B. 4 hour and 8 hour only
- C. 1 hour and 8 hour only
- D. 1 hour, 4 hour, and 8 hour

NRC Exam 2013

QUESTION SRO 13

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	295028	2.4.30
	Importance Rating		4.1
K&A: Knowledge of events related to system operation/status that must be reported to internal organizations or external agencies, such as the State, the NRC, or the transmission system operator.			
<b>High Drywell Temperature / 5</b>			
Explanation: <b>Answer D</b> – 1 hr – E-Plan (Hi DW temp & pressure indicate loss of RCS barrier AA2), 4 hr – ECCS system Injection, & 8 hr – ECCS System actuation A – Incorrect – had ECCS Actuation B – incorrect – had E-Plan entry C – Incorrect – had ECCS system injection			
Technical Reference(s): EPI-A1 Rev 25, PAP-1604 Rev 24		Reference Attached: EPI-A1 p 19, PAP-1604 pp. 26, 29, 30, 33, 35, & 36	
Proposed references to be provided to applicants during examination: <b>PAP-1604, Reports Management &amp; EPI-A1, Emergency Action Levels</b>			
Learning Objective (As available): OT-3039-01-A			
Question Source:	Bank # Modified Bank # New	Vermont Yankee 2005	
Question History:	Previous NRC Exam Vermont Yankee 2005 #83		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43 b.5		
Comments: Level of Difficulty = x E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)] This 10 CFR 55.43 topic involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.			

**QUESTION SRO 14**

The plant was operating at rated power.

A manual Rx scram was inserted due to a loss of main condenser vacuum.

The transient resulted in the following conditions:

- An ATWS is in progress
- MSIV's are shut
- RPV water level is 65 inches and stable
- RPV pressure is 960 psig and stable
- 2 SRV's are open
- Suppression Pool Temperature is 116°F and rising slowly
- Suppression Pool Level 18.1' and lowering due to a leak
- The margin to exceeding HCL is 3°F

What is the action that the Unit Supervisor would order first?

- A. Open an additional SRV to lower RPV pressure
- B. Open MSIV's IAW EOP-SPI 9.2, Opening MSIV's
- C. Transition to EOP 4-2, Emergency Depressurization
- D. Anticipate Emergency Depressurization IAW EOP-02, Containment Control

NRC Exam 2013

**QUESTION SRO 14**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		1
	K/A#	295030	EA2.02
	Importance Rating		3.9
K&A: Ability to determine and/or interpret the following as they apply to Low Suppression Pool Water Level: Suppression pool temperature			
<b>Low Suppression Pool Wtr Lvl / 5</b>			
<p>Explanation: <b>Answer A</b> – With SP temp rising and SP level lowering, the margin to HCL is shrinking. IAW EOP-01A, the SRO would direct the RO to lower RPV pressure by opening an additional SRV to maintain margin to HCL.</p> <p>B – Incorrect – With the main condenser not available, opening the MSIV's would not be appropriate.</p> <p>C – Incorrect – ED would only be performed if SP temperature could not be restored and maintained below HCL.</p> <p>D – Incorrect – Anticipating ED is not appropriate during an ATWS.</p>			
Technical Reference(s): EOP-1A Chart Rev D		Reference Attached: EOP-1A Chart (partial)	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3402-04B-D.1			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	x
10 CFR Part 55 Content:	55.41	55.43	b.5
<p>Comments: Level of Difficulty = x E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <p>This 10 CFR 55.43 topic involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed</p>			

NRC Exam 2013

QUESTION SRO 15

The plant was operating at full power, when the following occurred:

- Both Feedwater Pump Turbines tripped.
- The Motor Feed Pump failed to start.
- The reactor automatically scrammed.
- One Control Rod is at position 48.
- All other Control Rods are fully inserted.
- HPCS initiation raised RPV Water Level from 110 inches.
- HPCS was manually overridden OFF as RPV Water Level reached 210 inches.

Current Plant conditions are:

- Reactor pressure 700 psig, rising at 10 psig per minute.
- MSIVs are open.
- The operating CRD Pump tripped.

Over the next ten minutes RPV Water Level will (1).

The procedure used to control RPV Water Level is (2).

- |    | <u>(1)</u>                 | <u>(2)</u>                  |
|----|----------------------------|-----------------------------|
| A. | <u>rise</u> due to swell   | EOP-1, RPV Control          |
| B. | <u>rise</u> due to swell   | EOP-1A, Level Power Control |
| C. | <u>lower</u> due to shrink | EOP-1, RPV Control          |
| D. | <u>lower</u> due to shrink | EOP-1A, Level Power Control |



**QUESTION SRO 16**

The plant is operating at rated power.

A non-isolable leak has resulted in suppression pool level being above the upper limit established by the Technical Specifications and the level is still slowly rising.

Per the Bases for Technical Specification 3.6.2.2, Suppression Pool Water Level, with suppression pool level above the upper limit:

- A. RCIC may trip on high exhaust back-pressure.
- B. The peak drywell design pressure may be exceeded during a design basis LOCA.
- C. The peak containment design pressure may be exceeded during a design basis LOCA.
- D. There could be excessive hydrodynamic loads on submerged structures during SRV and horizontal vent steam discharges.

NRC Exam 2013

QUESTION SRO 16

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		2
	K/A#	295029	EA2.02
	Importance Rating		3.6
K&A: Ability to determine and/or interpret the following as they apply to High Suppression Pool Water Level: Reactor pressure			
<b>High Suppression Pool Wtr Lvl / 5</b>			
Explanation: <b>Answer D</b> – TS 3.6.2.2 Bases states document states the upper limit is based, in part on precluding excessive dynamic loading on the S/RV.			
A – Incorrect - bases document does not state the RCIC turbine may trip with a high suppression pool level but is credible because with a higher SP water level, RCIC back pressure would be higher.			
B – Incorrect - the bases document does not state the drywell design pressure could be exceeded with a high suppression pool level but is credible because drywell pressure would be higher given a DBA LOCA and a higher SP water level.			
C – Incorrect - the bases document states the containment design pressure would not be exceeded with a high suppression pool level.			
Technical Reference(s): TS 3.6.2.2 Bases Rev 7 and Lesson Plan OT-3037-002-10 Rev 2.		Reference Attached: TS 3.6.2.2 Bases p B 3.6-76 & Lesson Plan OT-3037-002-10 p 17	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-10-B			
Question Source:	Bank # Modified Bank # New	Grand Gulf 2008	
Question History:	Previous NRC Exam Grand Gulf 2008 # SRO1		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43 b.2		
Comments: Level of Difficulty = x Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]			
Knowledge of TS bases that are required to analyze TS required actions and terminology.			

NRC Exam 2013

**QUESTION SRO 17**

The plant was operating at rated power when the following annunciator alarmed:

H13-P680-01-C5, RWCU ISOL PUMP A/B RM TEMP HI

Upon investigation, the RO reports the following:

- 1E31-N700A A1-1, RWCU Pump A Room ventilation differential temperature is tripped and reading 32°F
- 1E31-N700A A2-1, RWCU Pump A Room ambient temperature is not tripped and reading 133°F and rising slowly

Based on this information, the Unit Supervisor will (1).

The Technical Specification basis for the RWCU area high temperature trip function is to (2).

(1)

(2)

- |    |  |                                       |
|----|--|---------------------------------------|
| A. | Immediately enter EOP-3, Secondary Containment Control   | Serve as a backup to RPV Level 2 trip |
| B. | Immediately enter EOP-3, Secondary Containment Control   | Limit offsite dose rates              |
| C. | Delay entry into EOP-3, Secondary Containment Control until the RWCU A pump room exceeds the ambient temperature trip setpoint | Serve as a backup to RPV Level 2 trip |
| D. | Delay entry into EOP-3, Secondary Containment Control until the RWCU A pump room exceeds the ambient temperature trip setpoint | Limit offsite dose rates              |

NRC Exam 2013

**QUESTION SRO 17**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		1
	Group #		2
	K/A#	295032	2.4.2
	Importance Rating		4.6
K&A: Knowledge of system set points, interlocks and automatic actions associated with EOP entry conditions.			
<b>High Secondary Containment Area Temperature / 5</b>			
<p>Explanation: <b>Answer B</b> – Ventilation cooler <math>\Delta T</math> is entry condition for EOP-3. The TS Bases for the ambient temperature high trip is to limit off site dose.</p> <p>A – Incorrect – misconception that the ambient temperature high trip is a b/u to the RPV Level 2 trip.</p> <p>C – Incorrect – Plausible if candidate thinks entry should be delayed until the high ambient trip is reached. Also, misconception that the ambient temperature high trip is a b/u to the RPV Level 2 trip.</p> <p>D – Incorrect – Plausible if candidate thinks entry should be delayed until the high ambient trip is reached.</p>			
Technical Reference(s): TS 3.3.6.1 Bases Rev 3, EOP-3 Chart Rev C. EOP-3 Bases Rev 3, & ARI-H13-P680-01 Rev 11		Reference Attached: TS 3.3.6.1 Bases pp B 3.3-156 & 157, EOP-3 Chart partial. EOP-3 Bases pp 8-10, & ARI-H13-P680-01 pp 35-36	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-07-G & OT-3402-17			
Question Source:	Bank # Modified Bank # New	River Bend 2007	
Question History:	Previous NRC Exam River Bend 2007 #84		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.2 &	
<p>Comments: Level of Difficulty = x Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]</p> <p>Knowledge of TS bases that are required to analyze TS required actions and terminology.</p>			

**QUESTION SRO 18**

The plant is in shutdown with the following conditions:

- Average Reactor Coolant temperature is 190°F.
- RHR A loop placed in Shutdown Cooling (SDC) Mode of operation IAW SOI-E12

Based on this information, the LPCI mode of RHR A system is \_\_\_\_\_.

- A. NOT affected, since it is NOT required to be OPERABLE with the current plant conditions
- B. INOPERABLE, since the RHR Minimum Flow Valve is deenergized closed for SDC Operations
- C. INOPERABLE, since the system must be manually realigned when required
- D. OPERABLE, provided the system can be manually realigned when required

NRC Exam 2013

**QUESTION SRO 18**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		2
	Group #		1
	K/A#	203000	2.2.25
	Importance Rating		4.2
K&A: Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.			
<b>RHR/LPCI: Injection Mode</b>			
<p>Explanation: <b>Answer D</b> – Per TS 3.5.2 Bases, one LPCI subsystem may be considered operable during alignment or operation for decay heat removal in Mode 4 or 5, if capable of being manually realigned to the LPCI mode.</p> <p>A – Incorrect – LPCI Mode is required to be Operable in this mode.</p> <p>B – Incorrect - LPCI subsystem is considered operable under this condition.</p> <p>C – Incorrect - LPCI subsystem is considered operable under this condition.</p>			
Technical Reference(s): TS 3.5.2, TS 3.5.2 Bases Rev 7,		Reference Attached: TS 3.5.2, TS 3.5.2 Bases p B 3.5-15	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-09-B			
Question Source:	Bank # Modified Bank # New	LaSalle 2003	
Question History:	Previous NRC Exam LaSalle 2003 #102		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43 b.2		
<p>Comments: Level of Difficulty = x Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]</p> <p>Knowledge of TS bases that are required to analyze TS required actions and terminology.</p> <p>HO – need to determine RHR cut in permissive pressure and mode of operation.</p>			

**QUESTION SRO 19**

The following conditions exist:

- The plant is operating at rated power.
- RCIC was shutdown to Secured Status yesterday to change the turbine lube oil.
- At 10:30 annunciator H13-P601-81-E1, HPCS Pump Room Level High alarmed.
- An NLO reports that the HPCS pump seal is spraying water and water is at the floor grating level.

Based on this information the EOP-3, Secondary Containment Control required action is to isolate HPCS and \_\_ (1) \_\_.

The Tech Spec requirement to be in Mode 3 must be met no later than \_\_ (2) \_\_.

**Reference Provided:**

	__ (1) __	__ (2) __
A.	wait until a second area water level is above Max Safe to shutdown the reactor.	22:30
B.	enter EOP-1, RPV Control and shutdown the reactor	23:30
C.	wait until a second area water level is above Max Safe to shutdown the reactor.	23:30
D.	enter EOP-1, RPV Control and shutdown the reactor	22:30

NRC Exam 2013

QUESTION SRO 19

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		2
	Group #		1
	K/A#	209002	A2.07
	Importance Rating		3.0
<p>K&amp;A: Ability to (a) predict the impacts of the following on the HIGH PRESSURE CORE SPRAY SYSTEM (HPCS) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Pump seal failure: BWR-5,6</p>			
<b>HPCS</b>			
<p>Explanation: <b>Answer C</b> – The suppression pool is not a primary system. Therefore, IAW EOP-3, it is required to wait until 2 areas of the same parameter is above the Max Safe to shutdown the reactor. The TS required S/D time to Mode 3 is 13 hours or 23:30.</p> <p>A – Incorrect – The TS S/D time is plausible if the 1 hour to verify RCIC is operable is not taken.</p> <p>B – Incorrect – If this were a primary system discharging, entering EOP-1 would be appropriate.</p> <p>D – Incorrect – The TS S/D time is plausible if the 1 hour to verify RCIC is operable is not taken. If this were a primary system discharging, entering EOP-1 would be appropriate.</p>			
Technical Reference(s): EOP-3 rev C & TS 3.5.1		Reference Attached: EOP-3 Chart & TS 3.5.1 p 3.5-1,2, & 3	
Proposed references to be provided to applicants during examination: TS 3.5.1 (partial)			
Learning Objective (As available): OT-3037-09-C & OT-3402-17			
Question Source:	Bank # Modified Bank # New	Dresden 2009	
Question History:	Previous NRC Exam Dresden 2009 #87		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.5 & b.2	
<p>Comments: Level of Difficulty = x Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <p>Knowledge of diagnostic steps and decision points in the emergency operating procedures (EOP) that involve transitions to event specific subprocedures or emergency contingency procedures.</p> <p>Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]</p> <p>Application of Required Actions (Section 3) and Surveillance Requirements (SR) (Section 4) in accordance with rules of application requirements (Section 1).</p>			

**QUESTION SRO 20**

The following conditions exist:

- The plant is operating at full power
- Work was performed on the 1E51-F031, RCIC PUMP SUPR PL SUCT ISOL
- 1E51-F031 is now down powered
- RCIC is in standby with suction aligned to the Condensate Storage Tank

A Technical Specification function of RCIC is to \_\_ (1) \_\_.

RCIC is \_\_ (2) \_\_.

**See attached PMT data.**

	__ (1) __	__ (2) __
A.	maintain coolant inventory, as well as vessel level, if a small break occurs in the RPV while the RCS is still pressurized	OPERABLE
B.	maintain coolant inventory, as well as vessel level, if a small break occurs in the RPV while the RCS is still pressurized	INOPERABLE
C.	operate following RPV isolation accompanied by a loss of coolant flow from the feedwater system to provide adequate core cooling and control of RPV water level	OPERABLE
D.	operate following RPV isolation accompanied by a loss of coolant flow from the feedwater system to provide adequate core cooling and control of RPV water level	INOPERABLE

NRC Exam 2013

**QUESTION SRO 20**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		2
	Group #		1
	K/A#	217000	2.2.37
	Importance Rating		4.6
K&A: Ability to determine operability and/or availability of safety related equipment.			
<b>RCIC</b>			
<p>Explanation: <b>Answer D</b> – The function of RCIC is to provide water for adequate core cooling if feedwater is isolated. The Suppression Pool suction is INOP because it is down powered. The Tech Spec required suction source is the Suppression Pool. With RCIC aligned to the CST and the SP suction INOP, the TS required source is unable to support the TS required function and RCIC is INOP.</p> <p>A &amp; C – incorrect – RCIC is INOP due to not being on the SP</p> <p>A &amp; B – incorrect – this is the Tech Spec function of HPCS</p>			
Technical Reference(s): Tech Spec Bases 3.5.3 rev 5 and Tech Spec Bases 3.5.1 rev 0		Reference Attached: Tech Spec Bases p B 3.5-21 & B 3.5-1	
Proposed references to be provided to applicants during examination: PMT data			
Learning Objective (As available): OT-3037-09-B			
Question Source:	Bank # Modified Bank # New	Perry 2010	
Question History:	Previous NRC Exam Perry 2010 #SRO19		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43 b.2		
<p>Comments: Level of Difficulty = x Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]</p> <p>Knowledge of TS bases that are required to analyze TS required actions and terminology.</p>			

**QUESTION SRO 21**

The following conditions exist:

- The plant is at 100% power
- I&C is performing surveillance SVI-B21-T0073-C, MAIN STEAM LINE LOW PRESSURE CHANNEL C CALIBRATION FOR 1B21-N076C
- All other MSL Low Pressure instruments are OPERABLE
- At 08:17 on Feb 2<sup>nd</sup>, the technician reports to you that he is unable to adjust the 1B21-N076C instrument within the allowable value.
- At 08:30 on Feb 2<sup>nd</sup>, while the BOP Operator was performing Tech Spec Rounds, he reports that trip unit B21-N676A is pegged high.

Based on this information, the Main Steam Line Pressure Low function for MSIV isolation (1) maintained.

The Required Action(s) is to (2).

**Reference Provided:**

- |    | <u>(1)</u> | <u>(2)</u>   |
|----|------------|--|
| A. | is         | place C channel in trip by 09:17 on Feb 3 <sup>rd</sup>  |
| B. | is         | place A channel in trip by 09:30 on Feb 3 <sup>rd</sup>  |
| C. | is not     | place either channel in trip by 09:17 on Feb 2 <sup>nd</sup> to restore isolation capabilities |
| D. | is not     | place either channel in trip by 09:30 on Feb 2 <sup>nd</sup> to restore isolation capabilities |

NRC Exam 2013

QUESTION SRO 21

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		2
	Group #		1
	K/A#	223002	A2.05
	Importance Rating		3.6
<p>K&amp;A: Ability to (a) predict the impacts of the following on the Primary Containment Isolation System/Nuclear Steam Supply Shut-Off; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Nuclear boiler instrumentation failures</p>			
<b>PCIS/Nuclear Steam Supply Shutoff</b>			
<p>Explanation: <b>Answer D</b> – per Tech Spec Bases, sufficient channels do <u>not</u> remain Operable such that a valid signal will <u>not</u> isolate the MSIV's. Therefore, the isolation function is <u>not</u> maintained. Trip capability must be restored within one hour. Per TS Bases, placing one channel in trip will restore trip capability.</p> <p>A – Incorrect – Function is lost. This is the Action for Condition A.</p> <p>B – Incorrect – Function is lost. This is the Action for Condition A, but the incorrect time.</p> <p>C – Incorrect – This is the incorrect time for placing a channel in trip</p>			
<p>Technical Reference(s): Tech Spec 3.3.6.1 &amp; Tech Spec Bases B 3.3.6.1 rev 3 &amp; 4, PDB-I5 Rev 9</p>		<p>Reference Attached: Tech Spec 3.3.6.1 pp. 48 &amp; 54 and Tech Spec Bases p B 3.3-142, 164, &amp; 165, and PDB-I5 pp 17-20</p>	
<p>Proposed references to be provided to applicants during examination: <b>Technical Specification 3.3.6.1 (partial) and Plant Data Book Tab I – (partial)</b></p>			
<p>Learning Objective (As available): OT-COMBINED-B21(NS4)-I &amp; OT-3037-07-B.5</p>			
Question Source:	Bank # Modified Bank # New	Perry 2010	
Question History:	Previous NRC Exam Perry 2010 #SRO-20		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis	x	
10 CFR Part 55 Content:	55.41 55.43	b.2	
<p>Comments: Level of Difficulty = x Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]</p> <p>Knowledge of TS bases that are required to analyze TS required actions and terminology.</p> <p>Application of Required Actions (Section 3) and Surveillance Requirements (SR) (Section 4) in accordance with rules of application requirements (Section 1).</p>			

**QUESTION SRO 22**

The plant is operating at rated power with the following conditions:

- Lake temperature is 79°F
- SVI-E12-T2001, RHR A Pump And Valve Operability Test is in progress
- Annunciator ECC HX A OUTLET TEMP HI/LO, H13-P601-20-B1 is in alarm
- The BOP reports ECC A HX Outlet Temperature is 96°F and stable

Based on this information, ECC A loop is \_\_\_\_\_.

- A. OPERABLE. SVI-E12-T2001 may continue
- B. OPERABLE. Direct the BOP to suspend the SVI until the ECC temperature alarm is reset
- C. INOPERABLE. Enter the applicable Conditions and Required Actions for the associated systems or components.
- D. INOPERABLE. Do not enter the applicable Conditions and Required Actions for the associated systems or components.

NRC Exam 2013

QUESTION SRO 22

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		2
	Group #		1
	K/A#	400000	2.1.32
	Importance Rating		4.0
K&A: Ability to explain and apply system limits and precautions.			
<b>Component Cooling Water</b>			
<p>Explanation: <b>Answer C</b> – SOI-P42 P&amp;L # 2.4 states that ECC is inoperable at temperatures &gt;95°F. IAW TS LCO 3.0.6 Bases, the LCO 3.0.6 exception to LCO 3.0.2 does NOT apply. The candidate needs to be familiar with OAI-1701 to formulate the correct answer.</p> <p>A &amp; B – Incorrect – ECC A is not Operable.</p> <p>D – Incorrect - the LCO 3.0.6 exception to LCO 3.0.2 does <u>not</u> apply</p>			
Technical Reference(s): SOI-P42 Rev19, TS 3.7.10, TS 3.0.2 & 3.0.6, and TS 3.0.6 Bases Rev 4		Reference Attached: SOI-P42 p 4, TS p 3.7-19, TS p 3.0-1 & 3.0-2, and TS Bases pp 3.0-7 & 8	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3037-02-A.3 & OT-3037-04-F			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge	Comprehension or Analysis	x
10 CFR Part 55 Content:	55.41	55.43	b.2
Comments: Level of Difficulty = x Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)] Application of Required Actions (Section 3) and Surveillance Requirements (SR) (Section 4) in accordance with rules of application requirements (Section 1). Application of generic Limiting Condition for Operation (LCO) requirements (LCO 3.0.1 thru 3.0.7; SR 4.0.1 thru 4.0.4).			

NRC Exam 2013

**QUESTION SRO 23**

The following scram insertion time measurements were recorded, per SVI-C11-T1006, Control Rod Maximum Scram Insertion Time.

ROD	NOTCH POSITION	TIME
34-59	43	0.38 sec
06-27	29	0.96 sec
10-27	13	7.05 sec

The measurements were conducted with reactor vessel dome pressure at 1024 psig.

Based on the above results, continued operation in Mode 1 is \_\_\_\_\_.

**Reference Provided:**

- A. not permitted; Immediately enter LCO 3.0.3.
- B. permitted; Verify scram times of at least another 18 rods.
- C. not permitted; Place the plant in Hot Shutdown in 12 hours.
- D. permitted; Fully insert rod 10-27 within 3 hours and disarm it within 4 hours

NRC Exam 2013

**QUESTION SRO 23**

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		2
	Group #		2
	K/A#	201003	2.1.7
	Importance Rating		4.7
K&A: Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.			
<b>Control Rod and Drive Mechanism</b>			
Explanation: <b>Answer D</b> – rod 10-27 is Inoperable and not slow per the Note in TS Table 3.1.4-1. This requires entering LCO 3.1.3 Condition C. A – Incorrect - LCO 3.0.3 not required since a Required Action applies. B – Incorrect – Placing plant in hot shutdown does not satisfy Tech Specs and is not required. C – Incorrect - Not required since 10-27 is not considered “slow”, thus there are not two slow rods adjacent to each other.			
Technical Reference(s): SVI-C11-T1006 Rev 16, TS 3.1.4 & 3.1.3		Reference Attached: TS 3.1 pp 12-14 & 7-9	
Proposed references to be provided to applicants during examination: <b>TS 3.1.4 &amp; 3.1.3 (partial)</b>			
Learning Objective (As available): OT-3037-05-E			
Question Source:	Bank # Modified Bank # New	RQL-0536	
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43 b.2		
Comments: Level of Difficulty = x Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)] Application of Required Actions (Section 3) and Surveillance Requirements (SR) (Section 4) in accordance with rules of application requirements (Section 1).			

NRC Exam 2013

QUESTION SRO 24

The following conditions exist:

- The plant has been operating at rated power for 105 days when main turbine vibrations increased. The decision was made to take the turbine offline and insert a balance shot.
- A plant down power to 15% Rated Thermal Power is in progress to remove the generator from the grid.
- As power was lowered to 22% RTP, annunciator H13-P680-05-C9, PWR BELOW LPSP alarmed.

Based on this information, per Tech Specs, SVI-C11-T1019, Rod Pattern System – Rod Pattern Controller must be performed within one hour of (1).

Per Tech Spec Bases, the Rod Pattern Controller will (2)

(1)

(2)

- |    |   |   |
|----|---|---|
| A. | receiving the PWR BELOW LPSP alarm                | initiate control rod withdrawal and insert blocks when the actual sequence deviates beyond allowances from the specified sequence |
| B. | lowering reactor power to 19% rated thermal power | initiate control rod withdrawal and insert blocks when the actual sequence deviates beyond allowances from the specified sequence |
| C. | receiving the PWR BELOW LPSP alarm                | prevent a violation of the MCPR Safety Limit that may result from a single control rod withdrawal error                           |
| D. | lowering reactor power to 19% rated thermal power | prevent a violation of the MCPR Safety Limit that may result from a single control rod withdrawal error                           |

NRC Exam 2013

QUESTION SRO 24

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		2
	Group #		2
	K/A#	201005	A2.03
	Importance Rating		3.2
<p>K&amp;A: Ability to (a) predict the impacts of the following on the Rod Control And Information System (RCIS) ; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations: Insert block: BWR-6</p>			
<b>RCIS</b>			
<p>Explanation: <b>Answer B</b> – Per Tech Specs, the RPC (SR 3.3.2.1.4) needs to be performed within one hour of lowering power to ≤19% RTP. Per TS Bases, the purpose of the RPC is to initiate control rod withdrawal and insert blocks.</p> <p>A – Incorrect – The alarm comes in based on turbine first stage pressure, not thermal power.</p> <p>C – Incorrect – The alarm comes in based on turbine first stage pressure, not thermal power. This is the Bases for the RWL.</p> <p>D – Incorrect – This is the Bases for the Rod Withdrawal Limiter.</p>			
<p>Technical Reference(s): ARI-H13-P680-05 Rev 13, TS 3.3.2.1, &amp; TS 3.3.2.1 Bases Revs 7 &amp; 1.</p>		<p>Reference Attached: ARI-H13-P680-05 p 57, TS 3.3.2.1 pp 15-19, &amp; TS 3.3.2.1 Bases pp B 3.3-43 &amp; 48</p>	
<p>Proposed references to be provided to applicants during examination: None</p>			
<p>Learning Objective (As available): OT-3037-07-H</p>			
Question Source:	Bank #	Modified Bank #	New
			x
Question History:	Previous NRC Exam		
Question Cognitive Level:	Memory or Fundamental Knowledge		Comprehension or Analysis
			x
10 CFR Part 55 Content:	55.41	55.43	b.2
<p>Comments: Level of Difficulty = x Facility operating limitations in the TS and their bases. [10 CFR 55.43(b)(2)]</p> <ul style="list-style-type: none"> <li>• Application of Required Actions (Section 3) and Surveillance Requirements (SR) (Section 4) in accordance with rules of application requirements (Section 1).</li> <li>• Application of generic Limiting Condition for Operation (LCO) requirements (LCO 3.0.1 thru 3.0.7; SR 4.0.1 thru 4.0.4).</li> </ul>			

NRC Exam 2013

**QUESTION SRO 25**

Core Alterations are in progress. The following conditions exist:

- A fuel bundle has been removed from the Upper Containment Fuel Storage Pool (RP-1) per the Fuel Movement Checklist.
- That same fuel bundle has just been lowered 6 feet into the core, but the grapple has not been released.
- Then, you, the Refuel SRO recognize the fuel bundle is not in its correct core location.

As the Refuel SRO, you are required to \_\_\_\_\_.

- A. remove the bundle from the core and return it an open RP-1 location
- B. remove the bundle from the core and place it in its correct core location
- C. seat the bundle in the current core location and contact the Reactor Engineer for further guidance
- D. maintain the bundle in the current elevation and contact Reactor Engineering for further guidance

NRC Exam 2013

QUESTION SRO 25

<b>Examination Outline Cross-Reference</b>	Level:	RO	SRO
	Tier #		2
	Group #		2
	K/A#	234000	K1.05
	Importance Rating		3.3
K&A: Knowledge of the physical connections and/or cause-effect relationships between Fuel Handling Equipment and the following: Reactor vessel components: Plant-Specific			
<b>Fuel Handling Equipment</b>			
<p>Explanation: <b>Answer A</b> – &gt; IAW FTI-D09, Use of the Fuel Movement Checklist, the mis-positioned bundle must be relocated to a vacant non-reactor location (RP-1)</p> <p>B – Incorrect – This is not allowed per FTI-D09</p> <p>C &amp; D – Incorrect – A bundle in the incorrect location is a SDM concern. It must be removed from the incorrect location.</p>			
Technical Reference(s): FTI-D009 Rev 16		Reference Attached: FTI-D09 pp 12-14	
Proposed references to be provided to applicants during examination: None			
Learning Objective (As available): OT-3602-01-D.4			
Question Source:	Bank # Modified Bank # New	Clinton 2009	
Question History:	Previous NRC Exam Clinton 2009 #SRO11		
Question Cognitive Level:	Memory or Fundamental Knowledge Comprehension or Analysis		x
10 CFR Part 55 Content:	55.41 55.43 b.5		
<p>Comments: Level of Difficulty = x E. Assessment of facility conditions and selection of appropriate procedures during normal, abnormal, and emergency situations. [10 CFR 55.43(b)(5)]</p> <p>This 10 CFR 55.43 topic involves both 1) assessing plant conditions (normal, abnormal, or emergency) and then 2) selecting a procedure or section of a procedure to mitigate, recover, or with which to proceed.</p>			

**References to be provided  
to Candidates for  
Written Test**

<b><u>Exam Question</u></b>	<b><u>Reference</u></b>
RO67	Modified EOP-SPI Supplement Figure #7 HDOL
SRO03	TS 3.8.3 (Partial)
SRO07	EPI-A1
SRO08	PDB-A06, Power Flow Map (modified)
SRO11	PDB-C0011, PSA Pre-Solved Configurations for On-Line Risk(partial)
SRO12	TS 3.6.2.1 (partial)
SRO13	PAP-1604, Reports Management EPI-A1
SRO19	TS 3.5.1 (partial)
SRO20	PMT DATA
SRO21	TS 3.3.6.1 (partial) PDB-I-5 (partial)
SRO23	TS 3.1.3 (partial) TS 3.1.4