UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
101 MARIETTA STREET, N.W.
ATLANTA, GEORGIA 30323

ENCLOSURE 1

EXAMINATION REPORT - 50-413/92-300

Facility Licensee: Duke Power Company

Facility Name: Catawba Nuclear Site

Facility Docket Nos.: 50-413 and 50-414

Facility License Nos.: NPF-35 AND NPF-52

Requalification written examinations and operating tests were administered at the Catawba Nuclear Site near York, South Carolina.

Chief Examiner: James H. Moorman, III — James H. Moorman, III — 5.27.92 — Date Signed

Approved By: Charles A. Casto, Chief — 5/27/92 — Date Signed
Operator Licensing Section 2
Operations Branch
Division of Reactor Safety

SUMMARY

SCOPE: During the weeks of May 4 and May 11, 1992, requalification written and operating examinations were administered to 16 Senior Reactor Operators (SROs) and six Reactor Operators (ROs). These operators combined to form six crews for simulator examinations.

RESULTS: Three SROs and two ROs failed the examinations. All crews passed their simulator examinations. Based on these results, the Catawba licensed operator requalification program remains rated satisfactory. Weaknesses in procedure use (paragraph 3a), crew communications (paragraph 3b), Emergency Operating Procedure content (paragraph 3c), and training methodology (paragraph 3d) were identified.

REPORT DETAILS

1. Facility Employees Attending Exit Interview

   W. H. Barron, Director, Operations Training
   M. J. Brady, Facility Representative
   E. M. Geddie, Operations Superintendent
   W. R. McCollum, Station Manager
   M. S. Tuckman, Site Vice President
   J. D. Wylie, Training Manager

2. NRC Personnel Attending Exit Interview

   M. E. Ernstes, Senior Examiner, Region II
   *J. H. Moorman, III, Senior Examiner, Region II
   W. T. Orders, Senior Resident Inspector
   D. C. Payne, Senior Examiner, Region II
   T. A. Peebles, Chief, Operations Branch

   *Chief Examiner

3. Discussion

   a. Weaknesses in Emergency Operating Procedure Usage

      A scenario involving a ruptured steam generator tube with the inability to close its main steam isolation valve (MSIV) was used to evaluate all three crews during the first week of the exam. The initial conditions of the scenario had reactor coolant system activity at just below the Technical Specification limit. With an MSIV stuck open on the steam generator with the ruptured tube, the Steam Generator Tube Rupture (SGTR) Emergency Operating Procedure (EOP) directs the operators to shut the MSIVs of the other steam generators and perform Enclosure 2 of the procedure. Enclosure 2 is a list of valves that the opertor shuts or verifies shut to ensure that the ruptured steam generator is isolated from the rest of the plant. None of the three crews completed this enclosure. One step of the enclosure directs the operator to place the steam dump system to manual and close the steam dumps. All three crews allowed the steam dump system to continue to dump steam to the condenser for a period of time after they had been given the enclosure to perform.

      There were other instances where enclosures to EOPs were neglected or, when they were performed, were not completed.

      A scenario involving an anticipated transient without scram (ATWS) and a stuck open steam generator power operated relief valve (SGPORV) was used to evaluate three crews during the second week of the exams. Two of the crews did not properly implement the EOPs in response to these events during the scenario. The SRO of one crew transitioned from EP-01, Reactor Trip or Safety Injection to EP-1A, Reactor Trip Response. This transition was made with the ATWS still in progress. EP-1A is used to address an uncomplicated reactor trip. While in EP-1A, the SRO directed the OATC to

announce "reactor trip" on the plant page system while the reactor was still at power. The RO complied with the order. When the SRO realized that the reactor was not going to trip, he transitioned to EP-2A1, Nuclear Power Generation/ATWS. While the SRO was in this procedure, the reactor was locally tripped. Instead of continuing on with 2A1 as the EOP rules of usage dictate, the SRO re-entered EP-01. This improper transition between procedures caused a delay in isolating a faulted steam generator.

Another SRO who was examined on this scenario misread step 7 of EP- 2A1. This caused a delay in isolating a faulted steam generator. This same SRO also waited at step 1 of EP-01 for someone to locally trip the reactor. He should have continued in the procedure to complete the immediate actions while waiting for the reactor to be locally tripped.

A scenario involving a small break LOCA with a loss of offsite power was used to evaluate all three crews during the second week of the exam. One crew improperly used EP-1C2, Post-LOCA Cooldown and Depressurization during this scenario. This procedure contains steps to cooldown and depressurize the RCS after the plant is stable. Step 13 of the procedure directs the operators to cooldown the RCS using any nonfaulted steam generators. Step 14 determines if there is a void in the reactor vessel head and if reactor coolant pumps are running. If there is a void in the reactor vessel head, the operators are directed to vent the reactor vessel head and continue the cooldown. The step also tells the operators not to depressurize RCS since this would increase the size of the head void and potentially uncover the core. The SRO of one crew did not wait for the head void to be collapsed, but went to step 15 and started a depressurization to the RCS.

Several teams initiated an RCS cooldown when the 100 degree per hour cooldown limit had been exceeded. Board operators also used other indications than lowest cold leg temperature to monitor their cooldown.

SROs did not read aloud cautions and notes contained in the EOPs. These cautions and notes remind the operators of potential problems and should be communicated to all members of the crew to ensure that more problems are not created to further complicate accident mitigation.

b. Weaknesses in Communications Between Operators

During most simulator scenarios observed, there were weaknesses observed in communications between board operators and SROs, between the two board operators, and between SRO procedure readers and the rest of the crew. There were many instances where the

board operator did not inform or delayed informing the SROs of important information. In one instance, a board operator delayed informing the SRO that a pressurizer PORV was stuck open. This information was important for the SRO since it was the cause of the transient. In another instance, the board operators did not tell the SRO that the TDAFW pump had tripped. This information is important because of heat sink concerns.

It is a standard practice in the industry for Senior Operators reading emergency procedures during a simulator exam (or real event) to provide an update to the crew on where they are and where they are going with respect to the accident mitigation strategy. This is usually done when transitioning from one procedure to another. This gives the crew an opportunity to ensure that they are in the correct mitigation strategy and allows any crew member to correct any errors in perception they may have regarding the chain of events. The Catawba operators were inconsistent in their application of this practice. Some senior operators conducted the briefs, and some operators did not do it at all.

c. Emergency Operating Procedure Content

Catawba EOPs have many deviations from the Westinghouse Owners' Group (WOG) guidelines for writing emergency procedures. One significant deviation is the mitigation strategy for a steam generator tube rupture. The mitigation strategy for the SGTR involves cooldown and depressurization of the reactor coolant system to pressure lower than that of the ruptured steam generator. Doing this as smoothly and as expeditiously as possible is necessary to stop leakage of radioactive water from the reactor coolant system into the steam generator and potentially to the environment. At the point in the Catawba mitigation strategy where the RCS is cooled down and depressurized, the operators are directed to do a simultaneous cooldown and depressurization while maintaining 20 degrees subcooling. Doing this is difficult since the RCS is depressurized using a pressurizer PORV. Because the PORV is used, the operators approach this evolution cautiously and this can extend the length of time necessary to complete cooldown and depressurization of the RCS. The mitigation strategy used in the WOG guidelines provides a method to complete the RCS cooldown and depressurization which is less demanding on the operators and can usually be accomplished in a shorter amount of time.

Catawba EOP 1C2, Post-LOCA Cooldown and Depressurization, provides guidance for RCS cooldown and depressurization following a LOCA. Step 14 of 1C2 requires the operators to vent the reactor vessel head if a void exists in the head area and directs the operator not to continue with the next step in the procedure which depressurizes the plant. There are accidents, such as a medium break LOCA or stuck open pressurizer PORV, that create conditions such

that the initial conditions in the procedure for venting the reactor vessel head cannot be met. There is no other guidance in the procedures to address this situation. This puts the operator in a position which could require a deviation from the procedure in order to continue mitigation of the accident.

Catawba EOP 2A1, Nuclear Power Generation/ATWS, step 4 states "IF the Reactor has been successfully tripped after entering this procedure, THEN RETURN TO procedure in effect." The rules of usage governing this procedure dictate that if the operator goes past step 4 in the procedure, the procedure should be completed. Two of the three crews evaluated on this procedure used it improperly.

Catawba EOP 1E, Steam Generator Tube Rupture, Enclosure 2, provides the operator with additional directions to isolate from the remainder of the secondary system a ruptured steam generator whose MSIV did not close. There are four valves which should be verified closed that are not included in the enclosure.

d. Training Program Weaknesses

The composition of crews for training on the simulator is not the same as the composition of crews that would be used to mitigate an accident in the plant. Crews are composed of four operators, 2 SROs and 2 ROs, for training on the simulator. A Shift Supervisor, Assistant Shift Supervisor (procedure reader), Operator at the Controls and Balance of Plant Operator comprise the crew. A plant crew would have a Shift Technical Advisor (STA) and another RO in addition to the positions listed above. All STAs at Catawba hold SRO licenses, but they do not receive training in the functions of an STA. Not training in the configuration that would be present in the plant during an actual accident mitigation deprives the SROs of resource allocation and conflict resolution training. It is particularly important for the procedure reader and the shift supervisor to effectively interface with the STA. Since the STA is a licensed SRO, he/she could give orders to an RO if he/she felt it was required. If a situation arises that requires interpretation or judgement, conflicts could arise between the STA and shift SRO on how to resolve them. This type of conflict could delay or complicate accident mitigation strategy.

Catawba Training Department evaluators and NRC operator licensing examiners co-evaluated operators during the requalification exams. The facility evaluators identified four operators during the first week of the exams as needing remediation and gave them failing scores for their exams. During the second week, two additional operators exhibited weaknesses that warranted remedial training. Failing these two operators would have resulted in more than 25 percent of the total number of operators examined having failed the exam. This could have resulted in the Catawba requalification

program being rated as unsatisfactory by the NRC. The facility evaluators did not identify these operators as needing remediation. This represented a change in the level of operator performance that was considered acceptable by the facility. It is expected that the facility would hold their operators to a higher performance standard than the NRC.

The NRC has noted for at least the past three exams that there is one decision in the EOPs that is not trained on. Step 12 of EOP 1C2, Post-LOCA Cooldown and Depressurization, directs the operators to verify that adequate shutdown margin exists prior to beginning a plant cooldown. Doing this requires an RCS boron sample to be taken and analyzed. The operators observed by the NRC during this exam did not request the sample until they had arrived at this step in the procedure. In order to get the operators to continue on in the procedure, they are told by the evaluators that an adequate shutdown margin exists. This relieves the operator of making any decision on whether or not they can cooldown the RCS and, if they decide that a cool down is acceptable, how far they can cool down until the current boron concentration was known. Some of the operators made a conservative calculation based on the last known boron concentration that would serve in the interim until the current boron concentration was available. Other operators discussed with the crew waiting at this step until the sample was taken, analyzed, and the boron concentration was known. Since operators could have to make a decision like this, they should be trained on how to handle it.

4. Exit Interview

At the conclusion of the site visit, the examiners met with those members of the plant staff indicated in paragraph 1 to discuss the results of the examinations. The licensee did not identify as proprietary any material provided to or reviewed by the examiners. There were no dissenting comments form the licensee.

5. List of Acronyms

ATWS - Anticipated Transient Without Scram
EOP - Emergency Operating Procedure
LOCA - Loss of Coolant Accident
MSIV - Main Steam Isolation Valve
OATC - Operator at the Controls
PORV - Power Operated Relief Valve
RO - Reactor Operator
SGPORV - Steam Generator Power Operated Relief Valve
SGTR - Steam Generator Tube Rupture
SRO - Senior Reactor Operator
STA - Shift Technical Advisor
TDAFW - Turbine Driven Auxiliary Feedwater Pump

ENCLOSURE 2

REQUALIFICATION PROGRAM EVALUATION REPORT

Licensed operator requalification examinations were administered in accordance with NUREG-1021, Operator Licensing Standards, Revision 6, dated June 1, 1990. For the purpose of operating tests, the examiners used "alternative B", which allows the examiners to simultaneously evaluate two operators. Based on the examination results, the Catawba requalification program has met the criteria of NUREG-1021, ES-601, c.2.B, Revision 6, and has been determined to be satisfactory. The facility is permitted to administer the re-examinations for returning the failed individuals to licensed duties. However, an NRC administered re-examination will be required for license renewal.

1. Reference Material and Proposed Examination

The examination team reviewed the reference material supplied by the licensee and found it adequate to support the examination. The licensee supplied a sampling plan that was used to select the examination topics.

WRITTEN EXAMINATIONS - The examiners reviewed the facility's proposed written examinations. The validation times closely reflected the amount of time necessary for a minimally competent operator to answer the questions correctly. The examination team changed or substituted about 20 percent of the questions. The changes that were made dealt mostly with psychometric problems in the questions. However, some question distractors were changed to make them more plausible. The examinations that were submitted were viewed as a considerable improvement over the examinations submitted for the previous examination. There were no changes made to the answer key after the exam.

JPMs - The proposed JPMs were generally adequate for the examination. Three JPMS were changed to cause the operator to take an alternate path in the procedure used in the JPMs. After the examination, critical steps in two JPMs were changed to noncritical steps. One JPM which involved a shutdown margin calculation was graded leniently because the facility administrator gave the operators a misleading attachment.

SIMULATOR SCENARIOS - There were six scenarios used in the two weeks of the exam. One of these scenarios was changed during the preparation week to include equipment failure, the others were used as written. The scenarios averaged 50 minutes contact time. One scenario during the second week was allowed to run for 70 minutes due to a simulator hardware problem altering the path of the scenario. One scenario in the second week was allowed to continue until the 50-minute time limit was reached although the planned scenario events had been accomplished. The operators in this scenario reached the post-LOCA cooldown procedure. Although it was not written into the scenario, properly completing the post-LOCA cooldown procedure was determined to be a critical task. A similar scenario used the first week had this a critical task. One operator failed as a result of this. In another scenario that involved

an ATWS, a post-scenario critical task was identified. That task was the proper use of procedures EOP 1A2, Nuclear Power Generation/ATWS and EOP-01, Reactor Trip or Safety Injection. One operator failed as the result of this. Other concerns related to operator performance are discussed in Enclosure 1 of this report.

2. Exam Administration

Administration of the exams went smoothly and according to the schedule prepared by the facility. The facility scheduling and close attention to examination security was very effective.

3. Evaluation of Facility Evaluators

As part of the requalification program evaluation, the NRC examiners closely monitor the facility evaluators for their objectivity and ability as evaluators. The Catawba evaluators were generally knowledgeable of the plant and of requirements relating to proper operator performance. Evaluations of operator performance in simulator scenarios during the first week of the exam identified weaknesses in operator performance and identified operators that needed remediation. However, during the second week of the exam, evaluations of operator performance failed to identify two additional operators that needed remediation. These operators were identified by the NRC and removed from shift by the licensee. This issue is discussed further in Enclosure 1 of this report. During the second week of the exams, the lead evaluator for the simulator exams asked some questions after the scenario had ended that were more appropriate for follow up of training scenarios.

Evaluators administering JPMs were professional in their conduct. There were no instances of the evaluators attempting to lead an operator to an answer.

ENCLOSURE 3

SIMULATOR FIDELITY REPORT

Facility Licensee: Catawba Nuclear Site

Facility Docket Nos. 50-413 and 50-414

Operating Tests Administered On: May 5 - 15, 1992

This form is used only to report observations. These observations do not constitute, in and of themselves, audit or inspection findings and are not, without further verification or review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information which may be used in future evaluations. No licensee action is required solely in response to these observations.

During the conduct of the simulator portions of the operating tests, the following items were observed:

The simulator does not model the interface between the Unit 1 and Unit 2 Service Water systems.

WRITTEN EXAM
ALL MASTER EXAMS

CATAWBA NRC REQUALIFICATION EXAM 1992
RO EXAM INFORMATION SUMMARY

The purpose of this summary sheet is to provide pertinent information concerning the development and assembly of the 1992 RO requalification examinations. Information summarized:

- Question bank designators
- Question validated response times
- Answer distribution
- Percentages of exam per lesson
- K/A numbers and importance factors for each test item

Individuals involved in the development of this exam:

Charles W. Nodine - Instructor
Kevin W. Abshire - Instructor
Wendell H. Barron - Director, Operator Training
Mike J. Brady - Facility Operations Representative
Larry R. Saunders - SRO validator
Ken Dover - RO validator

RO EXAM QUESTION SUMMARY

QUEST	PART	TIME	ANS	K/A NUMBER	RO IMP
CNT-1	B	4.2	A	103/000/G11	3.1
CP-13	B	3.0	C	029/000/K1.01	3.4
CP-4	A	3.3	D	059/000/G13	3.0
CP-5	B	4.5	D	001/010/A2.07	3.6
CP-6	B	5.0	B	001/010/G10	3.3
CP-8	B	4.0	B	045/010/K4.21	3.1
CSF-1	B	3.0	D	000/029/G10	4.1
CSF-16	B	3.8	B	000/054/EK3.04	4.6
CSF-24	B	4.3	A	000/040/G11	4.1
CSF-27	B	4.4	C	000/054/EK3.04	4.4
CSF-7	B	4.2	D	000/074/EK3.11	4.0
CSF-35	B	3.8	B	000/040/EA1.07	3.4
CSF-40	B	5.3	B	000/029/EK3.12	4.4
CSF-58	B	3.8	C	000/040/EK3.04	4.5
EHC-18	A	3.0	A	095/000/K4.12	3.3
EHC-20	A	1.0	D	045/050/K1.01	3.4
EHC-28	A	4.0	C	045/000/K4.12	3.3
EHC-29	A	3.0	A	045/000/K4.12	3.3

EP1-30	A	3.0	B	000/006/K6.18	3.5
EP1-4	B	2.5	D	004/000/A4.02	3.2
EP1-60	B	3.0	D	000/056/EK3.02	4.4
EP2-2	A	2.4	C	002/000/K4.05	3.8
EP2-29	A	3.0	C	000/028/EA2.02	3.4
EP2-30	A	2.0	B	000/011/EK3.14	4.1
EP3-9	B	3.0	D	000/009/EK3.08	3.8
EP4-1	A	1.8	C	000/037/EA2.14	4.0
EP4-12	B	7.0	A	000/038/EA1.05	4.1
EP4-20	B	2.8	D	000/038/G11	4.2
EP4-3	B	3.0	D	000/038/EK3.06	4.2
EP4-9	B	2.0	A	000/037/G11	3.7
EP5-2	A	3.5	D	000/055/EA2.03	3.9
IFE-11	A	3.5	B	059/000/K4.19	3.2
IFE-19	A	1.3	A	059/000/A2.11	3.0
IFE-8	A	4.5	B	059/000/A2.11	3.C
ISE-4	B	2.0	B	010/000/K1.02	3.9
ISL-2	A	3.1	D	000/025/EA2.04	3.3
ISL-3	B	2.0	D	002/000/A2.01	4.3
NC-10	B	6.0	C	002/000/A1.03	3.7
NC-15	A	1.0	C	000/011/EK1.01	4.1
NC-16	A	3.0	D	002/000/A1.03	3.7

NC-19	A	7.0	B	002/000/K1.09	4.1
NC-8	B	1.5	C	002/020/G11	3.3
NCP-4	A	2.0	C	003/000/A2.02	3.7
NCP-9	A	1.5	B	004/000/K3.04	3.7
ND-2	A	2.8	B	005/000/K4.07	3.2
ND-3	A	2.7	A	000/025/EK1.01	3.9
NI-12	A	5.0	C	006/000/A3.03	4.1
NV-1	B	2.0	B	004/000/A4.04	3.2
NV-23	A	1.7	A	006/020/A4.02	3.9
NV-24	A	1.5	C	004/000/K5.09	3.7
RN-1	A	2.4	B	076/000/G7	2.8
RN-16	A	3.0	C	076/000/K1.16	3.6
RN-18	A	1.9	C	076/000/K1.16	3.6
RN-22	A	4.0	B	008/000/A3.01	3.2
RN-40	A	3.0	A	000/062/G11	3.4
RN-39	A	4.7	D	026/000/K1.02	4.1
TOTAL		179.7			

RO EXAM ANSWER DISTRIBUTION:

- A - 11
- B - 15
- C - 15
- D - 15

EXAM TIMES:

- RO-1A(PART A) - 44.8 minutes
- RO-8A(PART A) - 44.8 minutes
- RO-B92(PART B) - 90.1 minutes

PERCENT OF EXAM BY LESSON:

CNT -	1.79	IFE -	5.36
CP -	8.93	ISE -	1.79
CSF -	14.29	ISL -	3.57
EHC -	7.14	NC -	8.93
EP1 -	5.36	NCP -	3.57
EP2 -	5.36	ND -	3.57
EP3 -	1.79	NI -	1.79
EP4 -	8.93	NV -	5.36
EP5 -	1.79	RN -	10.71

COMMENTS:

During NRC Prep week two questions were replaced:

CSF-33 was replaced with CSF-7
IPE-2 was replaced with ISE-4

RO

B-92

PART B

LESSON PLAN:CSF NUMBER: 1 TOPIC: EP REV DATE: 04/21/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

Determine the status of the Critical Safety Functions following a Safety Injection on Unit 1 due to Low Pressurizer Pressure given the following conditions:

Containment pressure - 2.0 psig
Core Exit T/C's - 583 deg. F
NC Pressure - 1720 psig
NC Temperature - 582 deg F (Th)
Reactor Power - 0%
All NCP's - Running
Intermediate Range SUR - +.4 dpm

A. Red Path Core Cooling

B. Orange Path Heat Sink

C. Yellow Path Containment

D. Orange Path Subcriticality

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/029/G 10 RO: 4.1 SRO: 4.5
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2:

PART B

LESSON PLAN:CSF NUMBER: 16 TOPIC: EP REV DATE: 03/28/92

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 3.8

A Unit 1 Reactor Trip and loss of offsite power has occurred. Failure of the CA system and low S/G levels have resulted in the SRO initiating NC feed and bleed per EP/2C1. As a result, core exit thermocouples began to decrease. The SRO then chose to transition back to the procedure in effect. Was the SRO's decision correct?

A. Yes; once heat removal has been established the CSF is restored and procedure in effect has higher priority.

B. No; Primary heat removal has not been restored and completion of EP/2C1 is required.

C. Yes; procedure in effect will direct implementation of EP/1C 'High Energy Line Break Inside Containment' which will terminate NC feed and bleed.

D. No; although primary heat removal has been restored, once a CSF procedure is entered it shall be performed to completion.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/054/EK3.04 RO: 4.6 SRO: 4.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/2C1

REFERENCE #2: OMP 1-7

PART B

LESSON PLAN:CSF NUMBER: 24 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 4.3

With the unit operating at 100% power, a steam line break outside containment occurred on 1A S/G 60 minutes ago. Plant conditions are as follows:

- SR SUR = 0 dpm
- NC Press. = 2280 psig
- PZR Lvl = 43%
- S/G levels B,C,D ~ 15% NR
- S/G levels A = 25% WR and decreasing
- S/G Pressure B,C,D = 1120 psig
- S/G Pressure A = less than 50 psig and decreasing
- NC Temperature (T cold) = 425 deg F (~ stable)
- Two NC pumps are running and SI has just been terminated.

Choose from below which critical safety functions are NOT satisfied AND what action should be taken?

A. Heat sink and NC Integrity. NC pressure should be reduced to < 1600 psig.

B. Heat Sink and NC Integrity. S/G level should be increased to > 22%.

C. NC Integrity and Reactor Coolant Inventory. NC pressure should be reduced to < 2000 psig.

D. Heat Sink and Reactor Coolant Inventory. PZR level should be increased to 45%.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/040/G-11 RO: 4.1 SRO: 4.3
KA NUMBER: 000/040/G-12 RO: 3.8 SRO: 4.1
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2: EP/1/A/5000/2D2

PART B

LESSON PLAN:CSF NUMBER: 27 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 4.4

A Unit 1 Reactor Trip has occurred. Given the following plant conditions:

- All CA pumps are unavailable
- Doghouse hi level CF isolation has occurred
- 1CF10 and 1CF17 1A and 1B CF pump discharge isolation valves cannot be opened.

- S/G A N/R Level 0%
- S/G B N/R Level 3% decreasing
- S/G C N/R Level 5% decreasing
- S/G D N/R Level 0%
- NC pressure 2230 psig stable
- NC subcooling 92 deg.F increasing
- 1ETB is de-energized

The SRO directs the operators to align RF to the steam generators. Do you agree or disagree with this decision? Why or Why not? Select one.

A. Decision wrong; RF should not be aligned until NC subcooling decreases to less than 50 deg.F

B. Decision correct; RF is the last available feed source prior to initiating feed and bleed.

C. Decision wrong; RF aligned only if NC bleed path is inadequate.

D. Decision correct; Only one NV pump available for feed and bleed requires use of RF.

ANSWER: C

ATTACHMENTS: NRC92

KA NUMBER: 000/054/EK3.04 RO: 4.4 SRO: 4.6
KA NUMBER: 000/054/EK3.05 RO: 4.6 SRO: 4.7
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2: EP/1/A/5000/2C1

PART B

LESSON PLAN:CSF NUMBER: 7 TOPIC: EP REV DATE: 04/21/92

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 4.2

Unit 1 is operating at 100% RTP when a Small Break LOCA occurs. The operating crew has transitioned to EP/1C when the following conditions were observed:

- All hot leg temperatures (WR) greater than 700 deg.F
- Containment press. 3.2 psig
- RVLIS lower range 37%
- NCP's off

Based upon the existing indications, the operating crew should:

A. Cooldown the NCS using S/G PORVs, disregarding the 100 deg. F/hr cooldown limit, and maintain pressure constant in an attempt to establish NCS Subcooling.

B. Cooldown the NCS within th deg.F/hr cooldown limit using the S/G PORVs. Th uld result in a subsequent decrease in NCS pr ure allowing increased ECCS Flow.

C. Cooldown the NCS as quickl as possible using the steam dump valves. This would result in a subsequent decrease in NCS pressure allowing increased ECCS flow.

D. Cooldown the NCS as quickly as possible using the S/G PORVs. This would result in a subsequent decrease in NCS pressure allowing increase ECCS flow.

ANSWER: D

ATTACHMENTS: RPLACD CSF-33 ON ROX

KA NUMBER: 000/074/EK3.11 RO: 4.0 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/2B1

REFERENCE #2:

PART B

LESSON PLAN:CSF NUMBER: 35 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.8

A Unit 1 Safety Injection has just occurred. Given the following plant conditions:

NC pressure	1980 psig and increasing
NC temperature	545 deg. F Tave and slowly increasing
PZR level	35% and increasing
All S/G pressures	1000 psig and slowly increasing
'A' S/G level	0% NR
'B' S/G level	8% NR increasing
'C' S/G level	10% NR increasing
'D' S/G level	0% NR

SM isolation has occurred
Containment pressure 0.1 psig and stable

Select the one true statement concerning Critical Safety Function Status Trees.

A. CSF status green; monitor at 10 to 15 minute intervals per EP/02 CSF Status Trees.

B. CSF status yellow on Heat Sink; monitor only to determine or identify abnormal conditions.

C. CSF status yellow on Heat Sink;immediately implement EP/2C5 S/G Low Level.

D. CSF status yellow on Core Cooling; implement EP/2B3 Saturated Core Cooling Conditions.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/040/EA1.07 RO: 3.4 SRO: 3.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2: OMP 1-4

PART B

LESSON PLAN:CSF NUMBER: 40 TOPIC. EP REV DATE: 11/20/90

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 5.3

At 1115 a Unit 1 Safety Injection has occurred. Given the following plant conditions at 1145:

- Reactor trips breakers A and B OPEN
- Lowest NC Tcold 381 deg.F
- Reactor power 10-8 amps IR
- Startup rate +0.2 dpm
- Core Exit T/C's 411 deg.F and stable
- NC Subcooling 200 deg.F
- NC pumps ALL OFF
- NC pressure 2270 psig
- Containment pressure 3.8 psig
- Containment H2 Conc 0%
- RVLIS U/R 99%
- Pzr level 64% increasing
- ETB bus deenergized
- S/G A N/R level 34%
- S/G B N/R level 0%
- S/G C N/R level 40%
- S/G D N/R level 38%

Concerning Critical Safety Functions, which one of the following describes the appropriate action to be taken?

A. Ensure CA flow to B S/G maintained greater than 25 gpm.

B. Allow NC temperature to increase until IR startup rate negative.

C. Establish normal letdown and depressurize NC using charging and letdown.

D. Align one train of ND for Aux. Containment Spray.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/029/EK3.12 RO: 4.4 SRO: 4.7
KA NUMBER: 000/029/G11 RO: 4.4 SRO: 4.6
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2: EP/1/A/5000/2A1

PART B

LESSON PLAN:CSF NUMBER: 58 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.8

At 1400 a Unit 1 Safety Injection has occurred. Given the following plant conditions at 1435

- Reactor power 300 cps
- Startup rate +0.2 dpm
- Core Exit T/C's 442
- NC Subcooling +200 deg.F
- NC pumps ALL OFF
- RVLIS U/R 99%
- Pzr level 100%
- S/G A W/R level 31%
- S/G B W/R level 34%
- S/G C W/R level 0%
- S/G D W/R level 29%
- Lowest NC Tcold 305 deg.F
- NC pressure 2410 psig
- Containment pressure 8 psig
- Containment H2 Conc 0%
- Total CA flow 690 gpm
- S/G C pressure 8 psig

Select the highest priority critical safety function that should be implemented.

A. EP/2A2 Loss of Core Shutdown

B. EP/2C1 Loss of Secondary Heat Sink

C. EP/2D1 Imminent Pressurized Thermal Shock Condition

D. EP/2D3 High Pressurizer Pressure

ANSWER: C

ATTACHMENTS:

KA NUMBER: 000/040/EK3.04 RO: 4.5 SRO: 4.7
KA NUMBER: 000/040/G11 RO: 4.1 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/01

REFERENCE #2: EP/1/A/5000/02

PART B

LESSON PLAN:CP NUMBER: 5 TOPIC: CP REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 4.5

During a Reactor Startup yi observe the following conditions after withdrawing Control Bank C to 38 steps.

. ECP is 110 steps Bank D
. SR counts is 1500 cps and increasing
. SR SUR is +.25 DPM and stable

Which one of the following describes the required operator response?

A. Insert the control banks,Recheck ECP calculation and check shutdown margin.

B. Manually Trip the Reactor

C. Continue with the startup when counts level off

D. Emergency Borate until the Control Rod Banks are above the insertion limits.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 001/010/A2.07 RO: 3.6 SRO: 4.2
KA NUMBER: 001/010/G-10 RO: 3.3 SRO: 3.5
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6100/01

REFERENCE #2:

PART B

LESSON PLAN:CP NUMBER: 6 TOPIC: CP REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 5.0

Given the following plant conditions during a Unit 1 Reactor Startup:

- Initial Countrate was 13 cps
- Current Countrate is 76 cps
- ECP is 90 steps Bank D
- Projected ECP is 35 steps Bank C
- Previous 2 Projected ECP's are 42 steps Bank C and 45 steps Rank C

Can the OATC continue the startup?

A. No, obtain NC system boron sample and borate if below ECB value.

B. No, Insert the control banks and verify adequate Shutdown Margin exists.

C. Yes, provided the Reactor Group Duty Engineer is informed of the Reactor response.

D. Yes, but the next rod withdrawal is limited to a maximum of 25 steps.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 001/C10/G-10 RO: 3.3 SRO: 3.5
KA NUMBER: 001/010/A4.03 RO: 3.5 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6100/01

REFERENCE #2:

PART B

LESSON PLAN:CP NUMBER: 8 TOPIC: CP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 3 SRO OBJ: 3 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 4.0

Given the following Unit 1 Power History immediately following a refueling outage.

Day 1: 15% Day 2: 100% Day 3: 100%
Day 4: 100% Day 5: 100% Day 6: 65%
Present power level is 65%

What is the maximum rate at which the unit can be returned to Full Power?

A. 3%/hour to 100% RTP

B. 20%/hour to 90% RTP then 3%/hr to 100% RTP

C. 30%/hour to 90% RTP then 3%/hr to 100% RTP

D. 20%/hour to 100% RTP

ANSWER: B

ATTACHMENTS: NRC92

KA NUMBER: 045/010/K4.21 RO: 3.1 SRO: 3.2
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6700/01

REFERENCE #2:

PART B

LESSON PLAN:CP NUMBER: 13 TOPIC: CP REV DATE: 11/15/90

SRO ONLY: RO OBJ: 3 SRO OBJ: 3 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 3.0

During a plant heatup following refueling, NC system temperature is 220 deg.F. EMF39L currently indicates 3500 cpm and is sampling all sample locations. What should be the TRIP 1 and TRIP 2 setpoints for EMF39L?

A. Trip 1 - 5215 cpm, Trip 2 - 5950 cpm

B. Trip 1 - 5600 cpm, Trip 2 - 8032 cpm

C. Trip 1 - 7350 cpm, Trip 2 - 10,500 cpm

D. Trip 1 - 8000 cpm, Trip 2 - 11,475 cpm

ANSWER: C

ATTACHMENTS:

KA NUMBER: 029/000/K1.01 RO: 3.4 SRO: 3.7
KA NUMBER: 029/000/A1.02 RO: 3.4 SRO: 3.7
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6100/01

REFERENCE #2:

PART B

LESSON PLAN:EP4 NUMBER: 3 TOPIC: EP REV DATE: 02/05/91

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 3.0

During a S/G tube rupture event on "A" S/G, EP1E is designed to cooldown and depressurize the NC system to stop break flow. Which of the following conditions require you to stop in the procedure until the situation is corrected.

A. The ruptured S/G is determined to be faulted also.

B. All NCP's are off and unable to restore subcooling to > 0 deg.F

C. Ruptured S/G MSIV cannot be closed.

D. PZR level < 5% when SI termination criteria check is reached

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/038/EK3.06 RO: 4.2 SRO: 4.5
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1E3

REFERENCE #2:

PART B

LESSON PLAN:EP4 NUMBER: 12 TOPIC: EP REV DATE: 03/28/92

SYS CATEGORY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRO OBJ: 2 TIME: 7.0

The following situation exists:

- 'A' S/G is ruptured, level is 57% NR, pressure is 1145 psig. Isolation has been completed.
- NC System pressure is 1450 psig Tavg is 529 deg.F
- OATC is dumping steam from intact S/G's to the condenser
- Two (2) NC pumps ON

Based on the above conditions, select the required action.

A. Slowly opening the Main Steam Isolation bypass valve for 'A' Steam Generator.

B. Open 'A' S/G PORV manually.

C. Include 'A' S/G in cooldown to allow depressurization.

D. Open the PZR Spray Valve and reduce NC pressure to increase back flow to the NC system.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/038/EA1.05 RO: 4.1 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1E

REFERENCE #2:

PART B

LESSON PLAN:EP4 NUMBER: 20 TOPIC: EP REV DATE: 03/28/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 2.8

The following plant conditions exist:

- Secondary side EMFs in TRIP 2 indicate a SGTR.
- The operators are unable to identify which S/G is ruptured.
- S/I has initiated

Which one of the following actions need to be taken for this situation?

A. Remain in EP/01 until ruptured S/G is identified

B. Treat accident as a LOCA; enter EP1C, High Energy Line Break Inside Containment.

C. Enter EP1E, Steam Generator Tube Rupture; treat all S/G's as ruptured.

D. Enter EP/1E, Steam Generator Tube Rupture; perform applicable steps while attempting to identify ruptured S/G.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/038/G-11 RO: 4.2 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1E

REFERENCE #2:

PART B

LESSON PLAN:EP4 NUMBER: 9 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 1 SRO OBJ: 1 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 1 TIME: 2.0

The following plant conditions exist:

- 150 gpm Tube Leak on "C" S/G.
- Both NV pumps on FWST, Charging Line Flow rate @ 200 gpm
- PZR level at program
- Reactor power is 30% and shutdown is in progress
- NCS pressure 2000 psig and Tavg 559 deg.F

Which course of action will address the current plant condition?

A. Complete AP-10 "Reactor Coolant Leak Case I",
Then refer to EP-1E2 "SGTR Alternate Cooldown using Backfill".

B. Continue in EP-1E "SGTR"
Then go to EP-1E1 "POST-SGTR Cooldown and Depressurization".

C. Continue in AP10 "Reactor Coolant Leak Case I",
Then go to EP-1E1, POST-SGTR Cooldown and Depressurization.

D. Continue in EP-1E "SGTR",
Then go to EP-1E3 "SGTR with Continuous NC System Leakage: Subcooled Recovery".

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/037/G-11 RO: 3.7 SRO: 4.0
KA NUMBER: 000/037/K3.05 RO: 4.2 SRO: 4.4
KA NUMBER: 000/037/K3.07 RO: 3.9 SRO: 4.1

REFERENCE #1. AP/1/A/5500/10

REFERENCE #2:

PART B

LESSON PLAN:NC NUMBER: 8 TOPIC: PS REV DATE: 04/21/92

SRO ONLY: RO OBJ: 6 SRO OBJ: 6 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 1.5

Unit 1 is operating at 50% power when IAE technician brings the Shift Supervisor the results of a surveillance test on the Pzr heater bank capabilities. Given the following results:

A bank - 173 kw C bank - 145 kw
B bank - 123 kw D bank - 380 kw

Select from below the proper action to be taken by the Shift Supervisor.

A. No action is required.

B. Declare C bank Pzr heaters inoperable and restore to operable status within 72 hours.

C. Declare B bank pzr heaters inoperable and restore to operable status within 72 hours.

D. Enter Unit 1 in T.S. 3.0.3 due to two groups pzr heaters inoperable and prepare to shutdown Unit 1 to Mode 3 within 7 hours.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 002/020/G-11 RO: 3.3 SRO: 4.0
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: T. S. 3/4.4.3

REFERENCE #2: T.S. Interpretation

PART B

LESSON PLAN:NC NUMBER: 10 TOPIC: PS REV DATE: 04/21/92

SRO ONLY: RO OBJ: 6 SRO OBJ: 6 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 6.0

While performing a heatup on Unit 1 from Mode 4 the following temperatures were logged:

TIME	NC PRESS	NC TEMP	PZR LIQ SPACE TEMP
1015	450 psi	355	460 deg. F
1045	742 psi	392	512 deg. F
1115	1260 psi	420	575 deg. F

Which of the following is true concerning the NC/PZR heatup rate?

A. The Tech. Spec. limit on the NC System heatup rate was NOT exceeded, but the Tech. Spec. limit on the Pressurizer heatup rate was exceeded.

B. The Tech. Spec. limit on the NC System heatup rate was exceeded, but the Tech. Spec. limit on the Pressurizer heatup rate was NOT exceeded.

C. The Tech. Spec. limits on the NC System AND Pressurizer heatup rate were exceeded.

D. The Tech. Spec. pressure/temperature limit was exceeded.

ANSWER: C

ATTACHMENTS: REV DIST A&B PER NRC

KA NUMBER: 002/000/A1.03 RO: 3.7 SRO: 3.8
KA NUMBER: 002/000/G-5 RO: 3.6 SRO: 4.1
KA NUMBER: 010/000/A1.07 RO: 3.7 SRO: 3.7

REFERENCE #1: T.S. 3.4.9.1,3.4.9.2

REFERENCE #2: OP/1/A/6700/01

PART B

LESSON PLAN:EP1 NUMBER: 4 TOPIC: EP REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 7 TIME: 2.5

Unit 1 is tripped due to a loss of all NC Pumps. The following conditions exist:

- Tave 557 deg. F
- Burnup 200 EFPD

Determine the boron concentration required to cooldown to 200 deg. F?

A. 1050 ppm

B. 1073 ppm

C. 1170 ppm

D. 1193 ppm

ANSWER: D

ATTACHMENTS: C1C6 CORE - UPD PERI

KA NUMBER: 004/000/A4.02 RO: 3.2 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1A1

REFERENCE #2: OP/0/A/6100/06

PART B

LESSON PLAN:EP1 NUMBER: 60 TOPIC: EP REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 7 TIME: 3.0

A natural circulation cooldown is in progress because offsite power has been lost. The CRDM Cooling Fans cannot be loaded onto the AC Blackout Buses.

How will the inoperability of the CRDM Fans affect the cooldown and depressurization?

A. It has little affect because the amount of NC System Heat removed by running the fans is of little significance compared to that removed by steaming the secondary plant.

B. Transfer to EP-2F3 "Void in Reactor Vessel" will be required because cooldown and depressurization will cause formation of a steam void in the vessel head.

C. Pressure must be reduced more rapidly to avoid a possible pressurized thermal shock transient.

D. Greater minimum subcooling must be maintained, and the total upper head cooldown rate will be less.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/056/EK3.02 RO: 4.4 SRO: 4.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1A1

REFERENCE #2:

PART B

LESSON PLAN:CNT NUMBER: 1 TOPIC: CNT REV DATE: 11/19/90

SRO ONLY: RO OBJ: 14 SRO OBJ: 14 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 9 TIME: 4.2

During the performance of the quarterly CAPT surveillance, it was discovered that 1SA-1 could not be closed. The unit is currently at 70% RTP. What action(s) should the operators take?

A. Repair SA-1 or close SA-3 within 4 hours and declare CAPT inoperable.

B. CAPT is inoperable, the valve must be repaired within 72 hours or the unit shutdown.

C. Use SA-3 to isolate the CAPT, after a Restricted Procedure change has been approved, and complete the test.

D. Enter TSAIL for tracking only unless SA-2 leakage is unacceptable.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 103/000/G-11 RO: 3.1 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: T.S. 3.6.3 & Interp.

REFERENCE #2: OP PROF Track 90-101

PART B

LESSON PLAN:EP3 NUMBER: 9 TOPIC: EP REV DATE: 02/04/91

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISO OBJ: 0 PTRQ OBJ: 6 TIME: 3.0

Which one of the following indicates how NC pump operation decreases the likelihood of pressurized thermal shock? (Select one)

A. Increased heat input from the NC pumps will reduce cooldown rate.

B. Provides more accurate temperature indication due to increased coolant flow past the Th RTD's.

C. Causes NC pressure to decrease due to collapsing the void in the upper head.

D. Improves mixing of the cold incoming SI flow with warm reactor coolant.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/009/EK3.08 RO: 3.8 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/2D1

REFERENCE #2:

PART B

LESSON PLAN:ISL NUMBER: 3 TOPIC: TA REV DATE: 07/16/90

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 2 PTRQ OBJ: 2 TIME: 2.0

Which of the following describes the primary concern in an Inter System LOCA event?

A. It is undetectable and may cause damage that is not apparent.

B. The Emergency Procedures lack adequate guidance to deal with ISLOCA events.

C. Hot reactor coolant may cause overheating of low pressure systems causing them to be inoperable.

D. It could result in a rapid loss of reactor coolant that may not be isolable.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 002/000/A2.01 RO: 4.3 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Memo 4/2/90 from OSM

REFERENCE #2: RE: ISLOCA Inform.

PART B

LESSON PLAN:ISE NUMBER: 4 TOPIC: ECCS REV DATE: 04/21/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 2.0

While performing a normal "Shutdown to Mode 5" reactor coolant system pressure was decreased to 1900 psig. The control room operator then manually blocked the Pressurizer and Steam Line safety injection signals.

Considering the above, indicate which of the following statements is True.

A. If reactor coolant pressure increases to 1940 psig the above blocked signals will be automatically unblocked.

B. The "S/G Low Steam Line Pressure" main steam isolation is blocked and the "Steam Line Pressure Rate" main steam isolation is unblocked by blocking the steam line safety injection.

C. If reactor coolant pressure increases unexpectedly, causing a Pressurizer PORV to lift, operator action must be taken to initiate a Ss signal if the Pressurizer PORV stuck open and NC pressure subsequently decreased to 1845 psig.

D. The Steam Line Safety Injection is blocked < P-11 so neither a "Main Steam Isol" or "S/G Low Steam Line Pressure" Safety Injection could occur until the plant is repressurized to > P-11 setpoint.

ANSWER: B

ATTACHMENTS: REPLACED IPE-2

KA NUMBER: 010/000/K1.02 RO: 3.9 SRO: 4.1
KA NUMBER: 013/000/K4.03 RO: 3.9 SRO: 4.4
KA NUMBER: 013/000/K4.03 RO: 3.9 SRO: 4.4

REFERENCE #1: OP/1/A/6100/02

REFERENCE #2:

PART B

LESSON PLAN:NV NUMBER: 1 TOPIC: PS REV DATE: 04/01/92

SRO ONLY: RO OBJ: 3 SRO OBJ: 3 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 2.0

Determine the amount of Boric Acid required to increase the Unit one Reactor Coolant boron concentration from 920 ppm to 1250 ppm.

- NC WR Pressure = 400 psig
- NC Tave = 300 deg.
- PZR level = 25%

(Select one)

A. 2973 gal

B. 3657 gal

C. 17712 gal

D. 21786 gal

ANSWER: B

ATTACHMENT: C1C6 - UPDT PERIODIC

KA NUMBER: 004/000/A4.04 RO: 3.2 SRO: 3.6
KA NUMBER: 004/010/A4.03 RO: 3.9 SRO: 3.7
KA NUMBER: 004/020/A4.01 RO: 3.8 SRO: 3.3

REFERENCE #1: OP/1/A/6150/09

REFERENCE #2: U1 R.O.D.

CATAWBA NRC REQUALIFICATION EXAM 1992
SRO EXAM INFORMATION SUMMARY

The purpose of this summary sheet is to provide pertinent information concerning the development and assembly of the 1992 SRO requalification examinations. Information summarized:

- Question bank designators
- Question validated response times
- Answer distribution
- Percentages of exam per lesson
- K/A numbers and importance factors for each test item

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SRO EXAM QUESTION SUMMARY

QUEST	PART	TIME	ANS	K/A NUMBER	SO IMP
CNT-1	B	4.2	A	103/000/G11	3.9
CP-4	A	3.3	D	059/000/G13	3.1
CP-6	B	5.0	B	001/010/G1[illegible]	3.5
CP-8	B	4.0	B	045/010/K4.21	3.2
CSF-1	B	3.0	D	000/029/G10	4.5
CSF-16	B	3.8	B	000/054/EK3.04	4.7
CSF-18	B	1.0	B	000/009/EA2.14	4.4
CSF-2	B	3.1	B	000/029/EA2.01	4.7
CSF-22	B	2.1	D	000/074/EK3.11	4.4
CSF-24	B	4.3	A	000/040/G11	4.3
CSF-27	B	4.4	C	000/054/EK3.04	4.6
CSF-35	B	3.8	B	000/040/EA1.07	3.7
CSF-40	B	5.3	B	000/029/EK3.12	4.7
CSF-58	B	3.8	C	000/040/EK3.04	4.7
CSF-6	B	4.0	A	000/011/EK3.21	4.5
DG3-10	A	3.0	B	064/000/K4.02	4.2
EHC-18	A	3.0	A	095/000/K4.12	3.6
EHC-28	A	4.0	C	045/000/K4.12	3.6

EHC-29	A	3.0	A	045/000/K4.12	3.6
EP1-30	A	3.0	B	000/006/K6.18	3.9
EP2-29	A	3.0	C	000/028/EA2.02	3.8
EP2-30	A	2.0	B	000/011/EK3.14	4.2
EP3-6	B	3.9	A	000/040/EA2.03	4.7
EP4-12	B	7.0	A	000/038/EA1.05	4.3
EP4-20	B	2.8	D	000/038/G11	4.3
EP4-3	B	3.0	D	000/038/EK3.06	4.5
EP4-9	B	2.0	A	000/037/G11	4.0
EP5-2	A	3.5	C	000/055/EA2.03	4.7
IFE-11	A	3.5	B	059/000/K4.19	3.4
IFE-16	A	1.0	C	059/000/A3.02	3.1
IFE-19	A	1.3	A	059/000/A2.11	3.3
IFE-8	A	4.5	B	059/000/A2.11	3.3
ISL-2	A	3.0	D	000/025/EA2.04	3.6
ISL-3	B	2.0	D	002/000/A2.01	4.4
NC-10	B	6.0	C	002/000/A1.03	3.8
NC-11	B	2.0	D	000/037/EK3.10	3.7
NC-15	A	1.0	C	000/011/EK1.01	4.4
NC-19	A	7.0	B	002/000/K1.09	4.1
NC-20	A	2.5	A	002/020/K4.01	3.8
NCP-4	A	2.0	C	003/000/A2.02	3.9

NCP-9	A	1.5	B	004/000/K3.04	3.9
ND-2	A	2.8	B	005/000/K4.07	3.5
ND-3	A	2.7	A	000/025/EK1.01	4.3
NI-12	A	5.0	C	006/000/A3.03	4.1
NV-23	A	1.7	A	006/020/A4.02	3.8
NV-24	A	1.5	C	004/000/K5.09	4.2
RN-1	A	2.4	B	076/000/G7	3.0
RN-22	A	1.0	B	008/000/A3.01	3.0
RN-40	A	3.0	A	000/062/G11	3.7
RN-39	A	4.7	D	026/000/K1.02	4.1
RN-6	A	1.8	A	000/062/G8	3.7
SEP-11	A	3.0	A	072/000/A1.01	3.6
SEP-24	B	3.7	B	194/001/A1.16	4.4
SEP-6	B	1.0	A	000/060/G1	3.9
SEP-7	B	4.8	D	194/001/A1.16	4.4
TS-3	A	3.0	D	062/000/G11	3.7
TOTAL		180.8			

SRO EXAM ANSWER DISTRIBUTION:

- A - 16
- B - 17
- C - 10
- D - 13

EXAM TIMES:

- SRO-1A(PART A) - 45.4 minutes
- SRO-8A(PART A) - 45.4 minutes
- SRO-B92(PART B) - 90.0 minutes

PERCENT OF EXAM BY LESSON:

CNT -	1.79	IFE -	7.14
CP -	5.36	SEP -	7.14
CSF -	19.64	ISL -	3.57
EHC -	5.36	NC -	8.93
EP1 -	1.79	NCP -	3.57
EP2 -	3.57	ND -	3.57
EP3 -	1.79	NI -	1.79
EP4 -	7.14	NV -	3.57
EP5 -	1.79	RN -	8.93
DG3 -	1.79	TS	1.79

SRO
B-92

PART B

LESSON PLAN:CSF NUMBER: 1 TOPIC: EP REV DATE: 04/21/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

Determine the status of the Critical Safety Functions following a Safety Injection on Unit 1 due to Low Pressurizer Pressure given the following conditions:

Containment pressure - 2.0 psig
Core Exit T/C's - 583 deg F
NC Pressure - 1720 psig
NC Temperature - 582 deg F (Th)
Reactor Power - 0%
All NCP's - Running
Intermediate Range SUR - +.4 dpm

A. Red Path Core Cooling

B. Orange Path Heat Sink

C. Yellow Path Containment

D. Orange Path Subcriticality

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/029/G 10 RO: 4.1 SRO: 4.5
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2:

PART B

LESSON PLAN:CSF NUMBER: 2 TOPIC: EP REV DATE: 04/21/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 3.1

An ATWS has occurred. All attempts to trip the reactor were unsuccessful and emergency boration CANNOT be established. Reactor power is less than 1% and the Intermediate Range SUR is + .2 DPM. EP/2A1 is currently being implemented.

Choose the statement that best describes tne correct operator action(s) under these conditions?

A. Return to the procedure and step in effect.

B. Allow the RCS to heat up while continuing efforts to establish emergency boration.

C. Go to EP-2A2 required by the subcriticality status tree based on current reactor conditions.

D. Allow RCS to cooldown while continuing efforts to establish emergency boration.

ANSWER: B

ATTACHMENTS: REV DIST. D PER NRC

KA NUMBER: 000/029/EA2.01 RO: 4.4 SRO: 4.7
KA NUMBER: 000/029/SG 12 RO: 4.1 SRO: 4.2
KA NUMBER: 000/029/EK3.12 RO: 4.4 SRO: 4.7

REFERENCE #1: EP/1/A/5000/2A1

REFERENCE #2:

PART B

LESSON PLAN:CSF NUMBER: 16 TOPIC: EP REV DATE: 03/28/92

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 3.8

A Unit 1 Reactor Trip and loss of offsite power have occurred. Failure of the CA system and low S/G levels have resulted in the SRO initiating NC feed and bleed per EP/2C1. As a result, core exit thermocouples began to decrease. The SRO then chose to transition back to the procedure in effect. Was the SRO's decision correct?

A. Yes; once heat removal has been established the CSF is restored and procedure in effect has higher priority.

B. No; Primary heat removal has not been restored and completion of EP/2C1 is required.

C. Yes; procedure in effect will direct implementation of EP/1C 'High Energy Line Break Inside Containment' which will terminate NC feed and bleed.

D. No; although primary heat removal has been restored, once a CSF procedure is entered it shall be performed to completion.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/054/EK3.04 RO: 4.6 SRO: 4.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/2C1

REFERENCE #2: OMP 1-7

PART B

LESSON PLAN: CSF NUMBER: 24 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 4.3

With the unit operating at 100% power, a steam line break outside containment occurred on 1A S/G 60 minutes ago. Plant conditions are as follows:

- SR SUR = 0 dpm
- NC Press. = 2280 psig
- PZR Lvl = 43%
- S/G levels B,C,D ~ 15% NR
- S/G levels A = 25% WR and decreasing
- S/G Pressure B,C,D = 1120 psig
- S/G Pressure A = less than 50 psig and decreasing
- NC Temperature (T cold) = 425 deg F (~ stable)
- Two NC pumps are running and SI has just been terminated.

Choose from below which critical safety functions are NOT satisfied AND what action should be taken?

A. Heat sink and NC Integrity. NC pressure should be reduced to < 1600 psig.

B. Heat Sink and NC Integrity. S/G level should be increased to > 22%.

C. NC Integrity and Reactor Coolant Inventory. NC pressure should be reduced to < 2000 psig.

D. Heat Sink and Reactor Coolant Inventory. PZR level should be increased to 45%.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/040/G-11 RO: 4.1 SRO: 4.3
KA NUMBER: 000/040/G-12 RO: 3.8 SRO: 4.1
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2: EP/1/A/5000/2D2

PART B

LESSON PLAN:CSF NUMBER: 27 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 4.4

A Unit 1 Reactor Trip has occurred. Given the following plant conditions:

- All CA pumps are unavailable
- Doghouse hi level CF isolation has occurred
- 1CF10 and 1CF17 1A and 1B CF pump discharge isolation valves cannot be opened.

- S/G A N/R Level 0%
- S/G B N/R Level 3% decreasing
- S/G C N/R Level 5% decreasing
- S/G D N/R Level 0%
- NC pressure 2230 psig stable
- NC subcooling 92 deg.F increasing
- 1ETB is de-energized

The SRO directs the operators to align RF to the steam generators. Do you agree or disagree with this decision? Why or Why not? Select one.

A. Decision wrong; RF should not be aligned until NC subcooling decreases to less than 50 deg.F

B. Decision correct; RF is the last available feed source prior to initiating feed and bleed.

C. Decision wrong; RF aligned only if NC bleed path is inadequate.

D. Decision correct; Only one NV pump available for feed and bleed requires use of RF.

ANSWER: C

ATTACHMENTS: NRC92

KA NUMBER: 000/054/EK3.04 RO: 4.4 SRO: 4.6
KA NUMBER: 000/054/EK3.05 RO: 4.6 SRO: 4.7
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2: EP/1/A/5000/2C1

PART B

LESSON PLAN:CSF NUMBER: 35 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.8

A Unit 1 Safety Injection has just occurred. Given the following plant conditions:

NC pressure	1980 psig and increasing
NC temperature	545 deg. F Tave and slowly increasing
PZR level	35% and increasing
All S/G pressures	1000 psig and slowly increasing
'A' S/G level	0% NR
'B' S/G level	8% NR increasing
'C' S/G level	10% NR increasing
'D' S/G level	0% NR

SM isolation has occurred
Containment pressure 0.1 psig and stable

Select the one true statement concerning Critical Safety Function Status Trees.

A. CSF status green; monitor at 10 to 15 minute intervals per EP/02 CSF Status Trees.

B. CSF status yellow on Heat Sink; monitor only to determine or identify abnormal conditions.

C. CSF status yellow on Heat Sink;immediately implement EP/2C5 S/G Low Level.

D. CSF status yellow on Core Cooling; implement EP/2B3 Saturated Core Cooling Conditions.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/040/EA1.07 RO: 3.4 SRO: 3.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2: OMP 1-4

PART B

LESSON PLAN:CSF NUMBER: 40 TOPIC: EP REV DATE: 11/20/90

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 5.3

At 1115 a Unit 1 Safety Injection has occurred. Given the following plant conditions at 1145:

- Reactor trips breakers A and B OPEN
- Lowest NC Tcold 381 deg.F
- Reactor power 10-8 amps IR
- Startup rate +0.2 dpm
- Core Exit T/C's 411 deg.F and stable
- NC Subccoling 200 deg.F
- NC pumps ALL OFF
- NC pressure 2270 psig
- Containment pressure 3.8 psig
- Containment H2 Conc 0%
- RVLIS U/R 99%
- Pzr level 64% increasing
- ETB bus deenergized
- S/G A N/R level 34%
- S/G B N/R level 0%
- S/G C N/R level 40%
- S/G D N/R level 38%

Concerning Critical Safety Functions, which one of the following describes the appropriate action to be taken?

A. Ensure CA flow to B S/G maintained greater than 25 gpm.

B. Allow NC temperature to increase until IR startup rate negative.

C. Establish normal letdown and depressurize NC using charging and letdown.

D. Align one train of ND for Aux. Containment Spray.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/029/EK3.12 RO: 4.4 SRO: 4.7
KA NUMBER: 000/029/G11 RO: 4.4 SRO: 4.6
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/02

REFERENCE #2: EP/1/A/5000/2A1

PART B

LESSON PLAN:CSF NUMBER: 58 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.8

At 1400 a Unit 1 Safety Injection has occurred. Given the following plant conditions at 1435

- Reactor power 300 cps
- Startup rate +0.2 dpm
- Core Exit T/C's 442
- NC Subcooling +200 deg.F
- NC pumps ALL OFF
- RVLIS U/R 99%
- Pzr level 100%
- S/G A W/R level 31%
- S/G B W/R level 34%
- S/G C W/R level 0%
- S/G D W/R level 29%
- Lowest NC Tcold 305 deg.F
- NC pressure 2410 psig
- Containment pressure 8 psig
- Containment H2 Conc 0%
- Total CA flow 690 gpm
- S/G C pressure 8 psig

Select the highest priority critical safety function that should be implemented.

A. EP/2A2 Loss of Core Shutdown

B. EP/2C1 Loss of Secondary Heat Sink

C. EP/2D1 Imminent Pressurized Thermal Shock Condition

D. EP/2D3 High Pressurizer Pressure

ANSWER: C

ATTACHMENTS:

KA NUMBER: 000/040/EK3.04 RO: 4.5 SRO: 4.7
KA NUMBER: 000/040/G11 RO: 4.1 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/01

REFERENCE #2: EP/1/A/5000/02

PART B

LESSON PLAN:CSF NUMBER: 6 TOPIC: EP REV DATE: 10/23/90

SRO ONLY: Y RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 4.0

In EP/2F3 (Void in the Reactor Vessel), a calculation is performed to determine the maximum time the vessel head may be vented to containment. Why is this calculation necessary? (Select one)

A. To ensure H2 vented from the vessel does not cause containment H2 concentration to exceed 3%.

B. To ensure maximum gas volume in containment does not exceed the 1.2 X 10(6) cubic feet design value.

C. To ensure NC system pressure does not fall below minimum required pressure for head venting.

D. To ensure the maximum volume of H2 vented does not exceed the 9500 cubic feet design value.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/011/EK3.21 RO: 4.2 SRO: 4.5
KA NUMBER: 000/011/EA2.38 RO: 3.9 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/2F3

REFERENCE #2:

PART B

LESSON PLAN:CSF NUMBER: 18 TOPIC: EP REV DATE: 03/30/92

SRO ONLY: Y RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 1.0

During the performance of EP/2D1, "Imminent Pressurized Thermal Shock Condition", a three hour soak time is required if the cooldown has exceeded 100 deg. F in any one hour.
What is the basis for the three hour soak time?

A. The three hour soak time allows the reactor vessel head to cool thus preventing upper head voiding due the subsequent depressurization.

B. The three hour soak time allows the thermal gradients in the vessel wall to be reduced thus limiting corresponding stress.

C. The three hour soak time allows boron that may have "plated" out during the initial cooldown to dissolve to continuing the cooldown and depressurization.

D. The three hour soak time provides sufficient time so that the lower containment ventilation units and CRDM vent fans may cool the NC components and support structures thus limiting stress caused by the initial rapid cooldown.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/009/EA2.14 RO: 3.8 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/2D1

REFERENCE #2: WOG Emg. Resp.Guide.

PART B

LESSON PLAN:CSF NUMBER: 22 TOPIC: EP REV DATE: 03/30/92

SRO ONLY: Y RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 2.1

During the use of EP/2B1,"Inadequate Core Cooling", attempts to establish adequate core cooling using the ECCS pumps are ineffective, the S/G's are depressurized. What is the depressurization of the S/G's intended to accomplish in EP/2B1?

A. The depressurization of the S/G's is an attempt to increase/establish natural circulation in the NCS.

B. The depressurization of the S/G's is an attempt to decrease RCS pressure to limit the effects of PTS on NCS.

C. The depressurization of the S/G's is an attempt to limit the delta P across the S/G tubes to < 1600 psi.

D. The depressurization of the S/G's is an attempt to decrease NCS pressure to improve the ability of the ECCS system to inject into the core.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/074/EK3.11 RO: 4.0 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/2B1

REFERENCE #2:

PART B

LESSON PLAN:SEP NUMBER: 6 TOPIC: EP REV DATE: 03/30/92

SRO ONLY: Y RO OBJ: 3 SRO OBJ: 3 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 3 TIME: 1.0

In the event of a nuclear incident each person on site is accounted for by: (Select one)

A. Each person reporting to their assembly point and the supervisor at the assembly point will report the accountability of personnel to security within thirty minutes.

B. Each person notifying their supervisor, who in turn reports anyone that is unaccounted for to the appropriate Superintendent within thirty minutes.

C. Essential personnel reporting to the Technical Support Center within 10 minutes and non-essential personnel reporting to the "Alpha" offsite emergency support station within thirty minutes.

D. Non-essential personnel reporting to their assembly point in the railroad bays and Essential personnel reporting to the Site Vice President within 45 minutes.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/060/SG1 RO: 3.0 SRO: 3.9
KA NUMBER: 194/001/A1.16 RO: 3.1 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: RP/0/A/5000/10

REFERENCE #2:

PART B

LESSON PLAN:SEP NUMBER: 7 TOPIC: EP REV DATE: 04/21/92

SRO ONLY: Y RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 4.8

The following situation exists:

- A LOCA has occurred
- EMF53A and EMF53B readings in excess of 1350 R/HR
- Containment Integrity has been lost
- Restoring Containment Integrity will result in a dose to Two (2) Maintenance workers of 10 - 20 REM Whole Body each.

Under the present conditions, select a course of action to address the situation.

A. With Station Health Physicist's approval maintenance can perform the work

B. Excessive Whole Body dose exposure is unwarranted in this emergency

C. Recovery managers approval must be obtained prior to any excess in exposure being received

D. With Emergency Coordinator approval maintenance can perform the work

ANSWER: D

ATTACHMENTS: REV STEM PER NRC

KA NUMBER: 194/001/A1.16 RO: 3.1 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: RP/0/A/5000/05

REFERENCE #2:

PART B

LESSON PLAN:SEP NUMBER: 24 TOPIC: EP REV DATE: 03/27/92

SRO ONLY: Y RO OBJ: 0 SRO OBJ: 1 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 1 TIME: 3.7

Events are occurring as follows:

- Unit shutdown has been in progress per T.S. 3.4.6.2, "Operational Leakage", for 1 hour.
- "A" S/G tube leak estimated at 44 gpm
- "A" S/G PORV lifts, does not reset, and cannot be isolated.
- Currently in Notification of Unusual Event

As Emergency Coordinator choose ONE action to address this situation.

A. Remain in Notification of Unusual Event

B. Upgrade to Alert

C. Upgrade to Site Area Emergency

D. Upgrade to General Emergency

ANSWER: B

ATTACHMENTS:

KA NUMBER: 094/000/A1.16 RO: 3.1 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: RP/0/A/5000/01

REFERENCE #2: Basis Document

PART B

LESSON PLAN:CP NUMBER: 6 TOPIC: CP REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 5.0

Given the following plant conditions during a Unit 1 Reactor Startup:

- Initial Countrate was 13 cps
- Current Countrate is 76 cps
- ECP is 90 steps Bank D
- Projected ECP is 35 steps Bank C
- Previous 2 Projected ECP's are 42 steps Bank C and 45 steps Bank C

Can the OATC continue the startup?

A. No, obtain NC system boron sample and borate if below ECB value.

B. No, Insert the control banks and verify adequate Shutdown Margin exists.

C. Yes, provided the Reactor Group Duty Engineer is informed of the Reactor response.

D. Yes, but the next rod withdrawal is limited to a maximum of 25 steps.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 001/010/G-10 RO: 3.3 SRO: 3.5
KA NUMBER: 001/010/A4.03 RO: 3.5 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6100/01

REFERENCE #2:

PART B

LESSON PLAN:CP NUMBER: 8 TOPIC: CP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 3 SRO OBJ: 3 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 4.0

Given the following Unit 1 Power History immediately following a refueling outage.

Day 1: 15% Day 2: 100% Day 3: 100%
Day 4: 100% Day 5: 100% Day 6: 65%
Present power level is 65%

What is the maximum rate at which the unit can be returned to Full Power?

A. 3%/hour to 100% RTP

B. 20%/hour to 90% RTP then 3%/hr to 100% RTP

C. 30%/hour to 90% RTP then 3%/hr to 100% RTP

D. 20%/hour to 100% RTP

ANSWER: B

ATTACHMENTS: NRC92

KA NUMBER: 045/010/K4.21 RO: 3.1 SRO: 3.2
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6700/C1

REFERENCE #2:

PART B

LESSON PLAN:EP4 NUMBER: 3 TOPIC: EP REV DATE: 02/05/91

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 3.0

During a S/G tube rupture event on "A" S/G, EP1E is designed to cooldown and depressurize the NC system to stop break flow. Which of the following conditions require you to stop in the procedure until the situation is corrected.

A. The ruptured S/G is determined to be faulted also.

B. All NCP's are off and unable to restore subcooling to > 0 deg.F

C. Ruptured S/G MSIV cannot be closed.

D. PZR level < 5% when SI termination criteria check is reached

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/038/EK3.06 RO: 4.2 SRO: 4.5
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1E3

REFERENCE #2:

PART B

LESSON PLAN:EP4 NUMBER: 12 TOPIC: EP REV DATE: 03/28/92

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 7.0

The following situation exists:

- 'A' S/G is ruptured, level is 57% NR, pressure is 1145 psig. Isolation has been completed.
- NC System pressure is 1450 psig Tavg is 529 deg.F
- OATC is dumping steam from intact S/G's to the condenser
- Two (2) NC pumps ON

Based on the above conditions, select the required action.

A. Slowly opening the Main Steam Isolation bypass valve for 'A' Steam Generator.

B. Open 'A' S/G PORV manually.

C. Include 'A' S/G in cooldown to allow depressurization.

D. Open the PZR Spray Valve and reduce NC pressure to increase back flow to the NC system.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/038/EA1.05 RO: 4.1 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1E

REFERENCE #2:

PART B

LESSON PLAN:EP4 NUMBER: 20 TOPIC: EP REV DATE: 03/28/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 2.8

The following plant conditions exist:

- Secondary side EMFs in TRIP 2 indicate a SGTR.
- The operators are unable to identify which S/G is ruptured.
- S/I has initiated

Which one of the following actions need to be taken for this situation?

A. Remain in EP/01 until ruptured S/G is Identified

B. Treat accident as a LOCA; enter EP1C, High Energy Line Break Inside Containment.

C. Enter EP1E, Steam Generator Tube Rupture; treat all S/G's as ruptured.

D. Enter EP/1E, Steam Generator Tube Rupture; perform applicable steps while attempting to identify ruptured S/G.

ANSWER: D

ATTACHMENTS·

KA NUMBER: 000/038/G-11 RO: 4.2 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1E

REFERENCE #2:

PART B

LESSON PLAN:EP4 NUMBER: 9 TOPIC: EP REV DATE: 03/26/92

SRO ONLY: RO OBJ: 1 SRO OBJ: 1 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 1 TIME: 2.0

The following plant conditions exist:

- 150 gpm Tube Leak on "C" S/G.
- Both NV pumps on FWST, Charging Line Flow rate @ 200 gpm
- PZR level at program
- Reactor power is 30% and shutdown is in progress
- NCS pressure 2000 psig and Tavg 559 deg.F

Which course of action will address the current plant condition?

A. Complete AP-10 "Reactor Coolant Leak Case I",
Then refer to EP-1E2 "SGTR Alternate Cooldown using Backfill".

B. Continue in EP-1E "SGTR"
Then go to EP-1E1 "POST-SGTR Cooldown and Depressurization".

C. Continue in AP10 "Reactor Coolant Leak Case I",
Then go to EP-1E1, POST-SGTR Cooldown and Depressurization.

D. Continue in EP-1E "SGTR",
Then go to EP-1E3 "SGTR with Continuous NC System Leakage: Subcooled Recovery".

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/037/G-11 RO: 3.7 SRO: 4.0
KA NUMBER: 000/037/K3.05 RO: 4.2 SRO: 4.4
KA NUMBER: 000/037/K3.07 RO: 3.9 SRO: 4.1

REFERENCE #1: AP/1/A/5500/10

REFERENCE #2:

PART B

LESSON PLAN:NC NUMBER: 10 TOPIC: PS REV DATE: 04/21/92

S-T ONLY: RO OBJ: 6 SRO OBJ: 6 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 6.0

While performing a heatup on Unit 1 from Mode 4 the following temperatures were logged:

TIME	NC PRESS	NC TEMP	PZR LIQ SPACE TEMP
1015	450 psi	355	460 deg. F
1045	742 psi	392	512 deg. F
1115	1260 psi	420	575 deg. F

Which of the following is true concerning the NC/PZR heatup rate?

A. The Tech. Spec. limit on the NC System heatup rate was NOT exceeded, but the Tech. Spec. limit on the Pressurizer heatup rate was exceeded.

B. The Tech. Spec. limit on the NC System heatup rate was exceeded, but the Tech. Spec. limit on the Pressurizer heatup rate was NOT exceeded.

C. The Tech. Spec. limits on the NC System AND Pressurizer heatup rate were exceeded.

D. The Tech. Spec. pressure/temperature limit was exceeded.

ANSWER: C

ATTACHMENTS: REV DIST A&B PER NRC

KA NUMBER: 002/000/A1.03 RO: 3.7 SRO: 3.8
KA NUMBER: 002/000/G-5 RO: 3.6 SRO: 4.1
KA NUMBER: 010/000/A1.07 RO: 3.7 SRO: 3.7

REFERENCE #1: T.S. 3.4.9.1,3.4.9.2

REFERENCE #2: OP/1/A/6700/01

PART B

LESSON PLAN:NC NUMBER: 11 TOPIC: PS REV DATE: 03/30/92

SRO ONLY: RO OBJ: 6 SRO OBJ: 6 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 2.0

With Unit 1 at 1180 MW, EMF-34 (S/G Blowdown Low Range) Trip II alarm actuates.

Chemistry identifies "C" S/G with a primary to secondary leak and calculates the leakage to be 0.4 gpm.

Based on the above information the following T.S. action shall betaken: (Select one)

A. Continue power operations indefinitely while continuing to verify that secondary side activity is <. 1.0 micro curie/gram Dose equivalent I-131.

B. Continue power operations at 100% RTP, since the S/G leakage is within limits.

C. Immediately begin unit shutdown and be in Hot standby within 6 hours.

D. Reduce leakage to within limits within 4 hours or be in at least Hot Standby within next 6 hours.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/037/EK3.10 RO: 3.3 SRO: 3.7
KA NUMBER: 000/037/EA1.13 RO: 3.9 SRO: 4.0
KA NUMBER: 000/037/EA2.10 RO: 3.2 SRO: 4.1

REFERENCE #1: AP/1/A/5500/10

REFERENCE #2: T.S. 3.4.6.2

PART B

LESSON PLAN:CNT NUMBER: 1 TOPIC: CNT REV DATE: 11/19/90

SRO ONLY: RO OBJ: 14 SRO OBJ: 14 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 9 TIME: 4.2

During the performance of the quarterly CAPT surveillance, it was discovered that 1SA-1 could not be closed. The unit is currently at 70% RTP. What action(s) should the operators take?

A. Repair SA-1 or close SA-3 within 4 hours and declare CAPT inoperable.

B. CAPT is inoperable, the valve must be repaired within 72 hours or the unit shutdown.

C. Use SA-3 to isolate the CAPT, after a Restricted Procedure change has been approved, and complete the test.

D. Enter TSAIL for tracking only unless SA-2 leakage is unacceptable.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 103/000/G-11 RO: 3.1 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: T.S. 3.6.3 & Interp.

REFERENCE #2: OP PROF Track 90-101

PART B

LESSON PLAN:ISL NUMBER: 3 TOPIC: TA REV DATE: 07/16/90

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 2 PTRQ OBJ: 2 TIME: 2.0

Which of the following describes the primary concern in an Inter System LOCA event?

A. It is undetectable and may cause damage that is not apparent.

B. The Emergency Procedures lack adequate guidance to deal with ISLOCA events.

C. Hot reactor coolant may cause overheating of low pressure systems causing them to be inoperable.

D. It could result in a rapid loss of reactor coolant that may not be isolable.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 002/000/A2.01 RO: 4.3 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Memo 4/2/90 from OSM

REFERENCE #2: RE: ISLOCA Inform.

PART B

LESSON PLAN:EP3 NUMBER: 5 TOPIC: EP REV DATE: 03/27/92

SRO ONLY: Y RO OBJ: 1 SRO OBJ: 1 POINT VALUE: 1.00 pts.

ISS OBJ: 1 PTRQ OBJ: 1 TIME: 3.9

Which of the following describes when and why EP/1D1,"S/I Termination following Steam LIne Break", would be implemented?

A. Used following high energy line breaks that allow termination criteria to be met and have caused a cooldown severe enough to be a PTS concern.

B. Used following steam line breaks and spurious S/I to quickly terminate safety injection to prevent pressurizer overfill.

C. Used following steam line breaks to isolate and identify the faulted S/G.
Quickly terminates safety injection and specifies soak time to mitigate PTS conditions.

D. Used following steam line breaks outside of containment to quickly identify and isolate faulted steam lines thereby minimizing the magnitude of the cooldown.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/040/EA2.03 RO: 4.6 SRO: 4.7
KA NUMBER: 000/040/EK3.04 RO: 4.5 SRO: 4.7
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1C

REFERENCE #2 EP/1C2

CATAWBA NRC REQUALIFICATION EXAM 1992
RO EXAM INFORMATION SUMMARY

The purpose of this summary sheet is to provide pertinent information concerning the development and assembly of the 1992 RO requalification examinations. Information summarized:

- Question bank designators
- Question validated response times
- Answer distribution
- Percentages of exam per lesson
- K/A numbers and importance factors for each test item

Individuals involved in the development of this exam:

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RO EXAM QUESTION SUMMARY

QUEST	PART	TIME	ANS	K/A NUMBER	RO IMP
CNT-1	B	4.2	A	103/000/G11	3.1
CP-13	B	3.0	C	029/000/K1.01	3.4
CP-4	A	3.3	D	059/000/G13	3.0
CP-5	B	4.5	D	001/010/A2.07	3.6
CP-6	B	5.0	B	001/010/G10	3.3
CP-8	B	4.0	B	045/010/K4.21	3.1
CSF-1	B	3.0	D	000/029/G10	4.1
CSF-16	B	3.8	B	000/054/EK3.04	4.6
CSF-24	B	4.3	A	000/040/G11	4.1
CSF-27	B	4.4	C	000/054/EK3.04	4.4
CSF-35	B	3.8	B	000/040/EA1.07	3.4
CSF-40	B	5.3	B	000/029/EK3.12	4.4
CSF-58	B	3.8	C	000/040/EK3.04	4.5
CSF-7	B	4.2	D	000/074/EK3.11	4.0
EHC-18	A	3.0	A	095/000/K4.12	3.3
EHC-20	A	1.0	D	045/050/K1.01	3.4
EHC-28	A	4.0	C	045/000/K4.12	3.3
EHC-29	A	3.0	A	045/000/K4.12	3.3

EP1-30	A	3.0	B	000/006/K6.18	3.5
EP1-4	B	2.5	D	004/000/A4.02	3.2
EP1-60	B	3.0	D	000/056/EK3.02	4.4
EP2-2	A	2.4	C	002/000/K4.05	3.8
EP2-29	A	3.0	C	000/028/EA2.02	3.4
EP2-30	A	2.0	B	000/011/EK3.14	4.1
EP3-9	B	3.0	D	000/009/EK3.08	3.8
EP4-1	A	1.8	C	000/037/EA2.14	4.0
EP4-12	B	7.0	A	000/038/EA1.05	4.1
EP4-20	B	2.8	D	000/038/G11	4.2
EP4-3	B	3.0	D	000/038/EK3.06	4.2
EP4-9	B	2.0	A	000/037/G11	3.7
EP5-2	A	3.5	D	000/055/EA2.03	3.9
IDE-23	A	2.0	D	041/020/K4.17	3.7
IFE-11	A	3.5	B	059/000/K4.19	3.2
IFE-19	A	1.3	A	059/000/A2.11	3.0
IFE-8	A	4.5	B	059/000/A2.11	3.0
ISE-4	B	2.0	B	010/000/K1.02	3.9
ISL-2	A	3.1	D	000/025/EA2.04	3.3
ISL-3	B	2.0	D	002/000/A2.01	4.3
NC-10	B	6.0	C	002/000/A1.03	3.7
NC-15	A	1.0	C	000/011/EK1.01	4.1

NC-16	A	3.0	D	002/000/A1.03	3.7
NC-19	A	7.0	B	002/000/K1.09	4.1
NC-8	B	1.5	C	002/020/G11	3.3
NCP-3	A	2.0	A	003/000/A4.08	3.2
NCP-9	A	1.5	B	004/000/K3.04	3.7
ND-2	A	2.8	B	005/000/K4.07	3.2
ND-3	A	2.7	A	000/025/EK1.01	3.9
NI-12	A	5.0	C	006/000/A3.03	4.1
NV-1	B	2.0	B	004/000/A4.04	3.2
NV-23	A	1.7	/	006/020/A4.02	3.9
NV-24	A	1.5	C	004/000/K5.09	3.7
RN-16	A	3.0	C	076/000/K1.16	3.6
RN-18	A	1.9	C	076/000/K1.16	3.6
RN-22	A	4.0	B	008/000/A3.01	3.2
RN-39	A	4.7	D	026/000/K1.02	4.1
RN-40	A	3.0	A	000/062/G11	3.4
TOTAL		179.3			

RO EXAM ANSWER DISTRIBUTION:

- A - 12
- B - 14
- C - 14
- D - 16

EXAM TIMES:

- RO-1A(PART A) - 44.8 minutes
- RO-8A(PART A) - 44.8 minutes
- RO-B92(PART B) - 90.1 minutes

PERCENT OF EXAM BY LESSON:

CNT -	1.79	IFE -	5.36
CP -	8.93	ISE -	1.79
CSF -	14.29	ISL -	3.57
EHC -	7.14	NC -	8.93
EP1 -	5.36	NCP -	3.57
EP2 -	5.36	ND -	3.57
EP3 -	1.79	NI -	1.79
EP4 -	8.93	NV -	5.36
EP5 -	1.79	RN -	8.93
IDE -	1.79		

COMMENTS:

During NRC Prep week two questions were replaced:

CSF-33 was replaced with CSF-7
IPE-2 was replaced with ISE-4
NCP-4 was replaced with NCP-3
RN-1 was replaced with IDE-23

PROGRAM: Operations Training

MODULE: License Requalification

TOPIC: Static Simulator Scenario #1 (SSS-1)

EXERCISE: Large Break LOCA

OVERVIEW:

This Exercise Guide will test the candidates ability to correctly diagnose transient/accident conditions, evaluate plant & response and /or specify the correct course of action for a large Break LOCA based on control room indication and appropriate control room reference material.

PREREQUISITE KNOWLEDGE LEVEL:

Previously licensed at the RO or SRO level.

1.0 Synopsis

The major malfunction in this Scenario is a large Break LOCA. The initial break flow is ~ 2400 gpm. One of the safety injection pumps fails to start, a Reactor Trip Breaker fails to open and 'B' Loop RN fails. The Reactor coolant pumps are stopped per the Emergency procedures, 2 minutes after the pumps are stopped the simulator is frozen.

2.0 Initial Conditions

2.1 Reset Simulator to IC-19 with Rod Step Counters ON.

2.2 Plant Conditions

Unit	One
Power History	100%, MOL
Boron	445 ppm
Tave	591°F
Xenon	3120 pcm decreasing
Samarium	-43 pcm

2.3 Select: ICCM-A = RVLIS
ICCM-B = Core Cooling

2.4 Check Rod Step counters for proper indications.

2.5 Rotate chart recorders to clear paper.

3.0 Procedure

NOTE: It is very important to follow these steps in the exact order shown to ensure consistency.

3.1 Turn Chart Recorder Power On

3.2 Run Simulator

3.3 Set up OAC as follows:

A. Start Trend Recorders, if desired, using Trend Group 00

B. Select Display Group ~~086~~ 089 to display on Utility Video. cwn

C. Select Graphic 008 (RN) to display on Monitor Video

D. Acknowledge OAC Alarm Video

3.4 Acknowledge Control Room Annunciators

3.5 Select Graphic 1F on Turbine Control Monitor on reset alarms.

3.6 Freeze simulator

3.7 Insert Malfunctions as follows

A. Insert MALF NIX1 (Safety Injection Pump Failure)

1. Select pump =1(A)
2. Select Mode =1(Auto)
3. Set Delay = 0
4. Activate Malfunction

B. Insert MALF IPX3 (Reactor Trip Breaker Failure)

1. Select Breaker =2(B)
2. Set Delay = 0
3. Activate Malfunction

C. Insert MALF NCX7A (Reactor coolant System Leak)

1. Select Leak Rate of 6 inch
2. Ramp Rate = 0
3. Time delay = 0
4. Activate Malfunction

D. Insert LOA RNX7 (RN pump 1B rack out)

1. Select value = F (racked out)
2. Activate

E. Insert MALF RNX3 (RN pump failure)

1. Pump = 4(2B)
2. Mode = 3(both)
3. Activate

3.8 Run Simulation as follows

A. Type in "Run 10" and enter

B. When simulator freezes, trip reactor coolant pumps, manually open the Reactor Trip Breakers (Safety Injection flow indicated and subcooling $\leq 0^{\circ}F$), and close NV202 and NV203.

C. Type in "Run 179" and Enter.

D. When simulator freezes, acknowledge annunciators from simulator control console.

E. Type in "Run 1" and Enter.

3.9 When the simulator has frozen turn off chart recorder power and acknowledge alarm video screen.

4.0 Turnover Sheet

4.1 See Attachment 1

TURNOVER SHEET

Conditions Existing at the time of the Incident:

A. Plant Conditions

- Power History 100% MOL
- Boron 445 ppm
- Tave 591°F
- Xenon 3120 pcm decreasing
- Samarium -43 pcm
- "A" Train Components in Service

B. Tech. Spec. Action Items:

2B RN pump inoperable

C. Work in Progress:

2B RN pump motor repair

D. Current Procedure:

OP/1/A/6100/03 Enclosure 4.3

Manual Actions Taken During the Incident:

A. Operator Computer Alarms Acknowledged
B. Control Room Annunciators Acknowledged
C. A manual Reactor Trip was inserted.
D. Reactor Coolant Pumps tripped.
E. NV pump recirc NV202 and NV203 closed.

Simulator and chart recorders are "Frozen", the OAC is operational.

RO - 1A

Finished Product

PART A

LESSON PLAN:NC NUMBER: 15 TOPIC: SSS01 REV DATE: 03/26/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 1.0

If the operator were to align SM system to allow dumping steam via condenser dumps, which of the following would describe the heat removal process he would initiate in the primary system?

A. Subcooled natural circulation cooling

B. Two phase forced circulation cooling

C. Reflux cooling

D. No heat removal; loops are voided

ANSWER: C

ATTACHMENTS:

KA NUMBER: 000/011/EK1.01 RO: 4.1 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC1 (ICCM)

REFERENCE #2:

PART A

LESSON PLAN:EP2 NUMBER: 29 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

!SS OBJ: 0 PTRQ OBJ: 3 TIME: 3.0

What must pressurizer level be greater than in order to terminate safety injection?

A. 0%

B. 5%

C. 20%

D. 32%

ANSWER: C

ATTACHMENTS:

KA NUMBER: 000/028/EA2.02 RO: 3.4 SRO: 3.8
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1C

REFERENCE #2:

PART A

LESSON PLAN:EP2 NUMBER: 30 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRO OBJ: 4 TIME: 2.0

How does tripping the NC Pumps reduce the severity of this emergency condition?

A. Prevents steam binding in the NC loops

B. Reduces the amount of inventory lost during the LOCA

C. Reduces cooldown rate of the NCS (PTS concern)

D. Reduces NCS pressure, lowering resistance (head) to ECCS flow

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/011/EK3.14 RO: 4.1 SRO: 4.2
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Lesson Plan

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 22 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 4.0

Which of the following statements is true concerning the RN to KC Heat Exchanger outlet control valves?

A. Both outlet valves are aligned as demanded by KC Temperature.

B. Both outlet valves are failed open

C. 'B' Train will fail to the "KC Temp" position

D. 'A' Train will fail to the "miniflow" position

ANSWER: B

ATTACHMENTS:

KA NUMBER: 008/000/A3.01 RO: 3.2 SRO: 3.0
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Lesson Plan

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 39 TOPIC: SSS01 REV DATE: 04/22/92

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 4.7

Assume the event progresses to the point where Containment Spray needs to be transferred to cold leg recirculation. Which of the following describes how RN will be aligned to the NS heat exchangers?

A. Establish 4600 gpm RN flow to 1A NS heat exchanger.

B. Close 2RN47A or 2RN48B (RN Supply X-Over Isols) and align 4600 gpm to both 1A and 1B NS Heat Exchangers.

C. Establish 4600 gpm RN flow to both 1A and 1B NS Heat Exchangers.

D. Close 2RN47A or 2RN48B (RN Supply X-Over Isols) and align 4600 gpm to 1A NS Heat Exchangers.

ANSWER: D

ATTACHMENTS: REV DIST A,B PER NRC

KA NUMBER: 026/000/K1.02 RO: 4.1 SRO: 4.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1C3

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 40 TOPIC: SSS01 REV DATE: 04/15/92

SRO ONLY: 3 RO OBJ: 18 SRO OBJ: 18 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 18 TIME: 3.0

RN system suctions and discharges will be realigned from Lake Wylie to the Standby Nuclear Service Water Pond (SNSWP): (select one)

A. when Containment Spray is transferred to Cold Leg Recirc and RN Essential Header temperature is greater than 85 deg.

B. if containment pressure is greater than 1.2 psig and time since the reactor trip has been greater than 50 minutes.

C. if EMF45A or EMF45B 'Train A(B) RN' radiation monitors Trip 2 alarm actuates.

D. when Containment Spray is transferred to Cold Leg Recirc and if SNSWP temperature is less than 85 deg.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/062/G11 RO: 3.4 SRO: 3.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1C3

REFERENCE #2: MC11

PART A

LESSON PLAN:NV NUMBER: 23 TOPIC: SSS01 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 1.7

If during transfer to cold leg recirculation; ND28A (ND pump 1A to NV and NI pumps) could not be opened, how would NV pump operation be affected? (Select one)

A. Both NV pumps would receive suction from 'B' ND.

B. Both NV pumps suctions would remain aligned to the FWST.

C. Both NV pumps would be secured due to loss of a suction source.

D. 'A' NV pump would be secured, 'B' NV pump would receive suction from 'B' ND.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 006/020/A4.02 RO: 3.9 SRO: 3.8
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1C3

REFERENCE #2: CN-1562-1.2

PART A

LESSON PLAN:ND NUMBER: 2 TOPIC: SSS01 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 4 PTRQ OBJ: 1 TIME: 2.8

Given:
NC system pressure has stabilized at 410 psig
FWST level is 46%

It is desired to place 1A ND train in the residual heat removal mode, but 1ND1B and 1ND2A (ND pump 1A suctions from loop B) will not open. Which of the following describes why?

A. 1NI185A (ND pump 1A suction from containment sump) is open

B. Reactor coolant system pressure is too high

C. ECCS Train A has NOT been reset

D. 1NI147B (NI pumps recirc to FWST isol) is open

ANSWER: B

ATTACHMENTS:

KA NUMBER: 005/000/K4.07 RO: 3.2 SRO: 3.5
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC11

REFERENCE #2: MC1

PART A

LESSON PLAN:NI NUMBER: 12 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: PO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 5.0

Based on current flow rates from the FWST, how long before the FWST to containment sump swap over will occur?

A. ~ 20 minutes

B. ~ 24 minutes

C. ~ 28 minutes

D. ~ 32 minutes

ANSWER: C

ATTACHMENTS:

KA NUMBER: 006/000/A3.03 RO: 4.1 SRO: 4.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC-10, 11

REFERENCE #2:

PART A

LESSON PLAN:CP NUMBER: 4 TOPIC: CP REV DATE: 04/03/91

SRO ONLY: RO OBJ: 3 SRO OBJ: 3 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 3 TIME: 3.3

Given the following conditions observed over three 1 hour periods while conducting a unit heatup.

1. - NC Temperature is 200 deg.F
   - A0141 (S/G A after CF isol valve line temp) is 122 deg.F
   - A0148 (S/G A inlet Temp feedwater) is 150 deg.F

2. - NC temp is 285 deg.F
   - A0141 is 128 deg.F
   - A0148 is 153 deg.F

3. - NC temp is 350 deg.F
   - A0141 is 128 deg.F
   - A0148 is 152 deg.F

Which one of the following would explain the trend seen during the heatup?

A. CF-90 (S/G 1A CF Cont. Isolation Byp) may have been inadvertently opened.

B. CA-223 (S/G 1A CA Nozzle Temp Flow Isol) may have been inadvertently closed.

C. CA-149 (S/G 1A CF Byp to CA Nozzle) may have been inadvertently opened.

D. CM-839 (S/G Warming Isolation to Cond 1A) may have been inadvertently closed.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 059/000/G-13 RO: 3.0 SRO: 3.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6100/01

REFERENCE #2:

PART A

LESSON PLAN:ISL NUMBER: 2 TOPIC: TA REV DATE: 03/26/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 3.1

Given Unit 1 conditions:

- o NC Fill and Vent is complete
- o NC is being pressurized to allow NC pumps to be started
- o Pressurizer level is 30%

During the pressurization, the following abnormal indications are noted.

- o Pressurizer level rapidly decreases to 0%
- o 'PRT HI/LO LEVEL' Alarm lit
- o 'PRT HI PRESS' Alarm lit

Which of the following describes the nature of the problem?

A. The ND pump discharge line has ruptured.

B. An NC loop drain was left open.

C. A Pressurizer PORV has opened.

D. An ND suction relief has lifted.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/025/EA2.04 RO: 3.3 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/B/6100/10

REFERENCE #2: AP/1/A/5500/19

PART A

LESSON PLAN:EP1 NUMBER: 30 TOPIC: EP REV DATE: 04/01/91

SRO ONLY: RO OBJ: 8 SRO OBJ: 8 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 8 TIME: 3.0

Following a small-break LOCA, one channel of reactor coolant wide range pressure begins failing low. What effect does this have on subcooling margin INDICATION?

A. The failed channel indicates too high a subcooling margin. The other channel indicates correctly.

B. The failed channel indicates too low a subcooling margin. The other channel indicates correctly.

C. Both channels indicate too high a subcooling margin.

D. Both channels indicate too low a subcooling margin.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/006/K6.18 RO: 3.5 SRO: 3.9
KA NUMBER: 000/009/EA1.16 RO: 4.2 SRO: 4.2
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6700/01 CURVE

REFERENCE #2: ICCM MANUAL

PART A

LESSON PLAN:EP5 NUMBER: 2 TOPIC: EP REV DATE: 04/22/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 3.5

While performing steps in EP/1/A/5000/03, "Loss of All A/C Power", an SI signal may be generated when power is restored. If an SI signal is generated, which one action below is required by the procedure?

A. Reset the SI to permit the Blackout Sequence to actuate.

B. Reset the SI to prevent damaging NCP seals on power restoration.

C. No action is necessary as it has no effect.

D. Reset the SI to permit manual loading of equipment on an A/C emergency bus.

ANSWER: D

ATTACHMENTS: REV DIST A,B PER NRC

KA NUMBER: 000/055/EA2.03 RO: 3.9 SRO: 4.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2: EP-03

PART A

LESSON PLAN:ND NUMBER: 3 TOPIC: PS REV DATE: 04/22/92

SRO ONLY: RO OBJ: 6 SRO OBJ: 6 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 2.7

Given:

- o Unit 1 is in Mode 5
- o NC is drained to 6.5%
- o 1A ND is in service

If a loss of VI (Instrument Air) were to occur, which of the following describes the method or feature that would allow 1A ND loop flow to be controlled?

A. Select 'THROTTLE' on NI173A 'ND pump A to Cold Legs C & D' and position as required.

B. 1ND26 'NDHX 1A Outlet' and 1ND27 'NDHX 1A Bypass' will fail to preset travel stop positions.

C. Transfer control of 1ND26 and 1ND27 to 'LOCAL' and position as required.

D. Dispatch NLOs to locally throttle 1ND67 'ND Pump 1A Disch.'

ANSWER: A

ATTACHMENTS: REV DIST D PER NRC

KA NUMBER: 000/025/EK1.01 RO: 3.9 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: AP/1/A/5500/19

REFERENCE #2:

PART A

LESSON PLAN:NCP NUMBER: 3 TOPIC: PS REV DATE: 08/28/91

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 1 TIME: 0.0

Following a LOCA without loss of subcooling and no NCS voiding, safety injection, Phase A and Phase B isolation are all manually initiated. After reset of all safety signals, only KC and seal injection is restored to the NCP's and one NCP is restarted with NCS pressure 1800 psig. Which of the following will result?

A. NCP Stator Winding Hi Temp

B. NCP Hi Hi Vibration

C. NCP #1 Seal Outlet Hi Temp

D. NCP #1 Seal Delta P < 200 psi

ANSWER: A

ATTACHMENTS:

KA NUMBER: 003/000/A4.08 RO: 3.2 SRO: 2.9
KA NUMBER: 003/000/A2.02 RO: 3.7 SRO: 3.9
KA NUMBER: 003/000/GEN 15 RO: 3.8 SRO: 4.0

REFERENCE #1:

REFERENCE #2:

PROGRAM: Operations Training

MODULE: License Requalification

TOPIC: Static Simulator Scenario #8 (SSS-8)

EXERCISE: Runback Due to a Lockout/Control Rods Failure to Move

OVERVIEW:

This Exercise Guide will test the candidates ability to correctly diagnose transient/accident conditions, evaluate plant response and /or specify the correct course of action for a Runback and Control Rods failure to move, based on control Room indications and appropriate control room reference materials.

PREREQUISITE KNOWLEDGE LEVEL:

Previously licensed at the RO or SRO level.

1.0 Synopsis

The unit is at full power. Median CF flow for 'D' S/G fails, the operating NV pump fails, and a Zone Lockout causes a runback. The simulator is then frozen and the candidates ability to diagnose the event, evaluate plant response and conditions and specify a course of action is tested.

2.0 Initial Conditions

2.1 Reset Simulator to IC-28 with Rod Step Counters ON.

2.2 Plant Conditions

Unit	One
Power History	100%, EOL
Boron	128 ppm
Tave	590°F
Xenon	2902 ppm
Samarium	-82 ppm

2.3 Select. ICCM-A = RVLIS
ICCM-B = Core Cooling

2.4 Check Rod Step counters for proper indications.

2.5 Rotate chart recorders to clear paper.

3.0 Procedure

NOTE: It is very important to follow these steps in the exact order shown to ensure consistency.

3.1 Turn Chart Recorder Power On

3.2 Run Simulator

3.3 Set up OAC as follows:

A. Start Trend Recorders, if desired, using Trend Group 00

B. Select Display Group 08 to display on Utility Video.

C. Select Nuclear 06 to display on Monitor Video

D. Acknowledge OAC Alarm Video

E. Select Turbine Graphic 1F and acknowledge ETSI alarms.

3.4 Acknowledge Control Room Annunciators

3.5 Freeze Simulator

3.6 Insert Malfunctions as follows

A. Insert MALF IRX9 (Control Rods fail to move)

1. Select failure = 1 (Auto)
2. Select Delay = 0
3. Activate Malfunction

B. Insert LOA NVX69 (NV RACKOUT BRK NV PMP 1B)

1. Select F
2. Set Delay = 0
3. Activate LOA

C. Insert MALF EPX3 (Zone Lockout)

1. Select Lockout = 2 (Zone A)
2. Set Delay = 70 sec
3. Activate malfunction

D. Insert OVR XMT CFX7 (FCF:5060 STM GEN 1D FEEDWATER FLOW METER FI-540A)

1. Value = 0
2. Activate

E. Insert OVR XMT CFX57 (FCF:5061 STM GEN 1D FEEDWATER FLOW DFCS FI-521A)

1. Value = 0
2. Time Delay = 5 sec
3. Activate

3.7 Run Simulation as follows

A. Type in "Run 119" and Enter

B. When simulator freezes, acknowledge annunciators from simulator control console.

C. Type in "Run 1" and Enter

3.8 When the simulator has frozen, turn off chart recorder power and acknowledge alarm video screen

4.0 Turnover Sheet

TURNOVER SHEET

Conditions Existing at the time of the Incident:

A. Plant Conditions

- Power History 100% EOL
- Boron 128 ppm
- Tave 590°F
- Xenon 2902 pcm
- Samarium -82 pcm

B. Tech. Spec. Action Items:

None current

C. Work in Progress:

1A1 VG compressor is being repaired
Both starting air tank pressures = 215 psig

D. Current Procedure:

OP/1/A/6100/03 Enclosure 4.3

E. 'B' Train Components in service

Manual Actions Taken During the Incident:

A. Operator Computer Alarms Acknowledged
B. Control Room Annunciators Acknowledged

Simulator and chart recorders are "Frozen", OAC is operational.

RO - 8A

Finished Product

PART A

LESSON PLAN:EHC NUMBER: 29 TOPIC: SSS08 REV DATE: 04/22/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

If the Turbine Runback did NOT initiate automatically, the operator would:

A. Select MANUAL and depress 'CONTROL VALVE LOWER'.

B. Select 'EMERG MANUAL' and depress 'CONTROL VALVE LOWER'.

C. Trip the turbine.

D. Select a 'TARGET' of 675 MWe and a 'LOAD RATE' of at least 24 MW/MIN, and then depress 'GO'.

ANSWER: A

ATTACHMENTS: MINOR REVS PER NRC

KA NUMBER: 045/000/K4.12 RO: 3.3 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: 1MC-1

REFERENCE #2: OP/1/B/6300/01

PART A

LESSON PLAN:IFE NUMBER: 19 TOPIC: CF REV DATE: 03/30/92

SRO ONLY: RO OBJ: 8 SRO OBJ: 8 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 1.3

Which ONE of the following parameters will the operator use to determine where 'D' S/G level should be controlled?

A. PR Nuclear Instruments

B. Thermal Power Best Estimate

C. S/G Level Trip Setpoint

D. Turbine Impulse Pressure Ch. I

ANSWER: A

ATTACHMENTS:

KA NUMBER: 059/000.A2.11 RO: 3.0 SRO: 3.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: DATA BOOK FIG 3.12

REFERENCE #2:

PART A

LESSON PLAN:IFE NUMBER: 8 TOPIC: SSS08 REV DATE: 12/27/91

SRO ONLY: RO OBJ: 8 SRO OBJ: 8 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 4.5

Which of the following has failed, causing DFCS to auto swap to manual control?

A. Median selected CF header pressure.

B. Median selected CF Flow.

C. Average steam flow.

D. Median selected SM header pressure.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 059/000/A2.11 RO: 3.0 SRO: 3.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC2

REFERENCE #2: OP/1/A/6100/10E

PART A

LESSON PLAN:NV NUMBER: 24 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 1.5

What is the reason for letdown isolation?

A. To prevent inventory loss of the NC system.

B. To prevent overfilling of the VCT.

C. To prevent flashing in the letdown line.

D. Failure of NV-1 and NV-2 to close.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 004/000/K5.09 RO: 3.7 SRO: 4.2
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: AP/1/A/5500/12

REFERENCE #2: 1MC-10

PART A

LESSON PLAN:EHC NUMBER: 28 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 4.0

Which of the following will DEHC monitor to determine when the runback should be stopped?

A. Generation output current less that 16000 amps.

B. Valve reference signal less than 50.4%.

C. First stage pressure less than 56%.

D. Generator megawatts less than 675 MWe.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 045/000/K4.12 RO: 3.3 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Turbine Graphic 1F

REFERENCE #2: OP/1/B/6100/10B

PART A

LESSON PLAN:IFE NUMBER: 11 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 9 TIME: 3.5

When plant conditions stabilize, which of the following would describe the effect of one 'C' S/G Wide Range level channel failing low?

A. Rx trip alert annunciator on all 4 S/G's with no reactor trip.

B. A DFCS trouble alarm will come in.

C. S/G C will feed up to 66% level with no operator action.

D. S/G C will give a lo-lo level reactor trip with no operator action.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 059/000/K4.19 RO: 3.2 SRO: 3.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:NC NUMBER: 16 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

If control rods were to begin operating normally, which one of the following would explain the effect of the subsequent temperature change on the reactor coolant system?

A. Rapid heatup would exceed the Tech Spec heatup rate.

B. Rapid cooldown would require soak time at the final temperature.

C. Cooldown rate would exceed the Tech Spec limit.

D. Cooldown rate would be within the Tech Spec limit.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 002/000/A1.03 RO: 3.7 SRO: 3.8
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC1

REFERENCE #2: T.S. 3.4.9

PART A

LESSON PLAN:NCP NUMBER: 9 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 9 TIME: 1.5

How is NC pump lower bearing cooling being accomplished at this time?

A. Seal injection flow to the NC system along the pump shaft.

B. NC system water flowing across NC pump thermal barrier up the NC pump shaft.

C. KC flow to the NC pump lower bearing heat exchanger.

D. The NC pump lower bearing has no cooling at this time.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 004/000/K3.04 RO: 3.7 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: AP/1/A/5500/12

REFERENCE #2: 1MC-10

PART A

LESSON PLAN:IDE NUMBER: 23 TOPIC: STM REV DATE: 02/13/92

SRO ONLY: RO OBJ: 8 SRO OBJ: 8 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 2.0

Reactor Trip Breaker "B" DOES NOT open on a reactor trip. Which one of the following best describes the response of the Steam Dump system:

A. Plant Trip Controller operates atmospheric dumps

B. Plant Trip Controller operates condenser dumps

C. Load Rejection Controller operates atmospheric dumps

D. Load Rejection Controller operates condenser dumps

ANSWER: D

ATTACHMENTS:

KA NUMBER: 041/020/K4.17 RO: 3.7 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 16 TOPIC: PSS REV DATE: 01/30/91

SRO ONLY: RO OBJ: 12 SRO OBJ: 12 POINT VALUE: 1.00 pts.

ISS OBJ: 12 PTRQ OBJ: 7 TIME: 3.0

How will Unit 1 Train 'B' blackout affect the RN (Nuclear Service Water) system?

A. Only RN pump 1B will start.

B. All four pumps will start.

C. Both 'B' Train pumps will start.

D. No RN pumps will start.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 000/076/K1.16 RO: 3.6 SRO: 3.8
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 18 TOPIC: PSS REV DATE: 01/30/91

SRO ONLY: RO OBJ: 12 SRO OBJ: 12 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 7 TIME: 1.9

Which of the following signals or sets of signals is required to cause 1RN47A (RN supply crossover isolation) to automatically close?

A. Unit 2 Sp signal coincident with B RN Pit Emergency Low Level.

B. RN Pit A Emergency Low Level.

C. RN Pit B Emergency Low Level.

D. Unit 2 Sp signal coincident with RN Pit A Emergency Low Level.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 076/000/K1.16 RO: 3.6 SRO: 3.8
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: CN-1574-1.1

REFERENCE #2:

PART A

LESSON PLAN:EHC NUMBER: 18 TOPIC: GEN REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

Loss of one feed pump at 100% load will cause load to drop to 90%:

A. immediately

B. in 7.5 seconds

C. in 30 seconds

D. in one minute

ANSWER: A

ATTACHMENTS:

KA NUMBER: 095/000/K4.12 RO: 3.3 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: DATA BOOK

REFERENCE #2:

PART A

LESSON PLAN:EHC NUMBER: 20 TOPIC: GEN REV DATE: 03/30/92

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 1 TIME: 1.0

If the operator selects "SPEED OUT", what feature is lost for EHC? (Select one)

A. 103% overspeed

B. Load Drop Anticipator

C. Throttle Pressure Limiter

D. Frequency correction

ANSWER: D

ATTACHMENTS:

KA NUMBER: 045/050/K1.01 RO: 3.4 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1.

REFERENCE #2:

PART A

LESSON PLAN:NC NUMBER: 19 TOPIC: PS REV DATE: 03/30/92

SRO ONLY: RO OBJ: 6 SRO OBJ: 6 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 7.0

Given:

- o Unit 1 is in Mode 5
- o Pressurizer pressure is 330 psig
- o Pressurizer level is 28%

Which of the following evolutions could result in exceeding the PRESSURIZER Tech Spec COOLDOWN limits?

A. A pressurizer spray valve is cycled, reducing pressure to 300 psig.

B. NV294 'Charging Flow Control' fails open, allowing Pressurizer level to increase

C. 'C' Heater group trips on a ground fault.

D. Pressurizer level is rapidly reduced to 20%

ANSWER: B

ATTACHMENTS:

KA NUMBER: 002/000/K1.09 RO: 4.1 SRO: 4.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: T.S. 3.4.9.2

REFERENCE #2:

PART A

LESSON PLAN:EP4 NUMBER: 1 TOPIC: EP REV DATE: 04/22/92

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRG OBJ: 2 TIME: 1.8

Supplemental actions are being performed to recover from a 500 gpm tube leak in S/G C.
S/G C pressure is 800 PSIG, and narrow-range level is 47% and increasing.
The NC System is at 900 psig and being depressurized by using Pzr spray.
Based on these parameters, which of the following actions would be appropriate?

A. Establish maximum blowdown rate for S/G C

B. Reinitiate Safety Injection.

C. Establish conditions such that RCS pressure is less than S/G C pressure

D. Reinitiate CA flow to the affected S/G.

ANSWER: C

ATTACHMENTS: REV PER CWN

KA NUMBER: 000/037/EA2.14 RO: 4.0 SRO: 4.4
KA NUMBER: 000/037/EA2.16 RO: 4.1 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP-1E P.19, 21, 32

REFERENCE #2: EP-2C3 P.5, 7

PART A

LESSON PLAN:EP2 NUMBER: 2 TOPIC: EP REV DATE: 04/01/91

SRO ONLY: RO OBJ: 3 SRO OBJ: 3 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 3 TIME: 2.4

In addition to EMF41 (Aux. Bldg. Vent), which of the following could also indicate a LOCA Outside of Containment due to a failure in the Residual Heat Removal System?

A. EMF42 (Fuel Pool Ventilation)

B. KC pumps hi indicated discharge pressure

C. ND/NS pump room sump level hi

D. VUCDT level rate increase

ANSWER: C

ATTACHMENTS:

KA NUMBER: 002/000/K4.05 RO: 3.8 SRO: 4.2
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/01

REFERENCE #2: EP/2, ISL LESSON PLN

CATAWBA NRC REQUALIFICATION EXAM 1992
SRO EXAM INFORMATION SUMMARY

The purpose of this summary sheet is to provide pertinent information concerning the development and assembly of the 1992 SRO requalification examinations. Information summarized:

- Question bank designators
- Question validated response times
- Answer distribution
- Percentages of exam per lesson
- K/A numbers and importance factors for each test item

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SRO EXAM QUESTION SUMMARY

QUEST	PART	TIME	ANS	K/A NUMBER	SO IMP
CA-30	A	3.0	C	061/000/K4.05	3.4
CNT-1	B	4.2	A	103/000/G11	3.9
CP-4	A	3.3	D	059/000/G13	3.1
CP-6	B	5.0	B	001/010/G10	3.5
CP-8	B	4.0	B	045/010/K4.21	3.2
CSF-1	B	3.0	D	000/029/G10	4.5
CSF-16	B	3.8	B	000/054/EK3.04	4.7
CSF-18	B	1.0	B	000/009/EA2.14	4.4
CSF-2	B	3.1	B	000/029/EA2.01	4.7
CSF-22	B	2.1	D	000/074/EK3.11	4.4
CSF-24	B	4.3	A	000/040/G11	4.3
CSF-27	B	4.4	C	000/054/EK3.04	4.6
CSF-35	B	3.8	B	000/040/EA1.07	3.7
CSF-40	B	5.3	B	000/029/EK3.12	4.7
CSF-58	B	3.8	C	000/040/EK3.04	4.7
CSF-6	B	4.0	A	000/011/EK3.21	4.5
DG3-10	A	3.0	B	064/000/K4.02	4.2
EHC-18	A	3.0	A	095/000/K4.12	3.6

EHC-28	A	4.0	C	045/000/K4.12	3.6
EHC-29	A	3.0	A	045/000/K4.12	3.6
EP1-30	A	3.0	B	000/006/K6.18	3.9
EP2-29	A	3.0	C	000/028/EA2.02	3.8
EP2-30	A	2.0	B	000/011/EK3.14	4.2
EP3-5	B	3.9	A	000/040/EA2.03	4.7
EP4-12	B	7.0	A	000/038/EA1.05	4.3
EP4-20	B	2.8	D	000/038/G11	4.3
EP4-3	B	3.0	D	000/038/EK3.06	4.5
EP4-9	B	2.0	A	000/057/G11	4.0
EP5-2	A	3.5	D	000/055/EA2.03	4.7
IDE-23	A	2.0	D	041/020/K4.17	3.9
IFE-11	A	3.5	B	059/000/K4.19	3.4
IFE-16	A	1.0	C	059/000/A3.02	3.1
IFE-19	A	1.3	A	059/000/A2.11	3.3
IFE-8	A	4.5	B	059/000/A2.11	3.3
ISL-2	A	3.1	D	000/025/EA2.04	3.6
ISL-3	B	2.0	D	002/000/A2.01	4.4
NC-10	B	6.0	C	002/000/A1.03	3.8
NC-11	B	2.0	D	000/037/EK3.10	3.7
NC-15	A	1.0	C	000/011/EK1.01	4.4
NC-19	A	7.0	B	002/000/K1.09	4.1

NCP-3	A	2.0	A	003/000/A4.08	2.9
NCP-9	A	1.5	B	004/000/K3.04	3.9
ND-2	A	2.8	B	005/000/K4.07	3.5
ND-3	A	2.7	A	000/025/EK1.01	4.3
NI-12	A	5.0	C	006/000/A3.03	4.1
NV-23	A	1.7	A	006/020/A4.02	3.8
NV-24	A	1.5	C	004/000/K5.09	4.2
RN-22	A	4.0	B	008/000/A3.01	3.0
RN-39	A	4.7	D	026/000/K1.02	4.1
RN-40	A	3.0	A	000/062/G11	3.7
RN-6	A	1.8	A	000/062/G8	3.7
SEP-11	A	3.0	A	072/000/A1.01	3.6
SEP-24	B	3.7	B	194/001/A1.16	4.4
SEP-6	B	1.0	A	000/060/G1	3.9
SEP-7	B	4.8	D	194/001/A1.16	4.4
TS-3	A	3.0	D	062/000/G11	3.7
TOTAL		180.9			

SRO EXAM ANSWER DISTRIBUTION:

- A - 16
- B - 16
- C - 10
- D - 14

EXAM TIMES:

- SRO-1A(PART A) - 45.4 minutes
- SRO-8A(PART A) - 45.4 minutes
- SRO-B92(PART B) - 90.0 minutes

PERCENT OF EXAM BY LESSON:

CNT -	1.79	IFE -	7.14
CP -	5.36	SFP -	7.14
CSF -	19.64	ISL -	3.57
EHC -	5.36	NC -	7.14
EP1 -	1.79	NCP -	3.57
EP2 -	3.57	ND -	3.57
EP3 -	1.79	NI -	1.79
EP4 -	7.14	NV -	3.57
EP5 -	1.79	RN -	7.14
DG3 -	1.79	TS -	1.79
CA -	1.79	IDE -	1.79

#7

SRO-1A

Finished Product

PART A

LESSON PLAN:NC NUMBER: 15 TOPIC: SSS01 REV DATE: 03/26/92

SRO ONLY: RO OBJ: 5 SRO OBJ: 5 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 1.0

If the operator were to align SM system to allow dumping steam via condenser dumps, which of the following would describe the heat removal process he would initiate in the primary system?

A. Subcooled natural circulation cooling

B. Two phase forced circulation cooling

C. Reflux cooling

D. No heat removal; loops are voided

ANSWER: C

ATTACHMENTS:

KA NUMBER: 000/011/EK1.01 RO: 4.1 SRO: 4.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC1 (ICCM)

REFERENCE #2:

PART A

LESSON PLAN:EP2 NUMBER: 29 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 3 TIME: 3.0

What must pressurizer level be greater than in order to terminate safety injection?

A. 0%

B. 5%

C. 20%

D. 32%

ANSWER: C

ATTACHMENTS:

KA NUMBER: 000/028/EA2.02 RO: 3.4 SRO: 3.8
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1C

REFERENCE #2:

PART A

LESSON PLAN:EP2 NUMBER: 30 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 2.0

How does tripping the NC Pumps reduce the severity of this emergency condition?

A. Prevents steam binding in the NC loops

B. Reduces the amount of inventory lost during the LOCA

C. Reduces cooldown rate of the NCS (PTS concern)

D. Reduces NCS pressure, lowering resistance (head) to ECCS flow

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/011/EK3.14 RO: 4.1 SRO: 4.2
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Lesson Plan

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 22 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 4.0

Which of the following statements is true concerning the RN to KC Heat Exchanger outlet control valves?

A. Both outlet valves are aligned as demanded by KC Temperature.

B. Both outlet valves are failed open

C. 'B' Train will fail to the "KC Temp" position

D. 'A' Train will fail to the "miniflow" position

ANSWER: B

ATTACHMENTS:

KA NUMBER: 008.)00/A3.01 RO: 3.2 SRO: 3.0
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Lesson Plan

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 39 TOPIC: SSS01 REV DATE: 04/22/92

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 4.7

Assume the event progresses to the point where Containment Spray needs to be transferred to cold leg recirculation. Which of the following describes how RN will be aligned to the NS heat exchangers?

A. Establish 4600 gpm RN flow to 1A NS heat exchanger.

B. Close 2RN47A or 2RN48B (RN Supply X-Over Isols) and align 4600 gpm to both 1A and 1B NS Heat Exchangers.

C. Establish 4600 gpm RN flow to both 1A and 1B NS Heat Exchangers.

D. Close 2RN47A or 2RN48B (RN Supply X-Over Isols) and align 4600 gpm to 1A NS Heat Exchangers.

ANSWER. D

ATTACHMENTS: REV DIST A,B PER NRC

KA NUMBER: 026/000/K1.02 RO: 4.1 SRO: 4.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1C3

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 40 TOPIC: SGS01 REV DATE: 04/15/92

SRO ONLY: 3 RO OBJ: 18 SRO OBJ: 18 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 18 TIME: 3.0

RN system suctions and discharges will be realigned from Lake Wylie to the Standby Nuclear Service Water Pond (SNSWP): (select one)

A. when Containment Spray is transferred to Cold Leg Recirc and RN Essential Header temperature is greater than 85 deg.

B. if containment pressure is greater than 1.2 psig and time since the reactor trip has been greater than 50 minutes.

C. if EMF45A or EMF45B 'Train A(B) RN' radiation monitors Trip 2 alarm actuates.

D. when Containment Spray is transferred to Cold Leg Recirc and if SNSWP temperature is less than 85 deg.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 000/062/G11 RO: 3.4 SRO: 3.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1C3

REFERENCE #2: MC11

PART A

LESSON PLAN:NV NUMBER: 23 TOPIC: SSS01 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 1.7

If during transfer to cold leg recirculation; ND28A (ND pump 1A to NV and NI pumps) could not be opened, how would NV pump operation be affected? (Select one)

A. Both NV pumps would receive suction from 'B' ND.

B. Both NV pumps suctions would remain aligned to the FWST.

C. Both NV pumps would be secured due to loss of a suction source.

D. 'A' NV pump would be secured, 'B' NV pump would receive suction from 'B' ND.

ANSWER: A

ATTACHMENTS:

KA NUMBER: 006/020/A4.02 RO: 3.9 SRO: 3.8
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: EP/1/A/5000/1C3

REFERENCE #2: CN-1562-1.2

PART A

LESSON PLAN:ND NUMBER: 2 TOPIC: SSS01 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 4 PTRQ OBJ: 1 TIME: 2.8

Given:
NC system pressure has stabilized at 410 psig
FWST level is 46%

It is desired to place 1A ND train in the residual heat removal mode, but 1ND1B and 1ND2A (ND pump 1A suctions from loop B) will not open. Which of the following describes why?

A. 1NI185A (ND pump 1A suction from containment sump) is open

B. Reactor coolant system pressure is too high

C. ECCS Train A has NOT been reset

D. 1NI147B (NI pumps recirc to FWST isol) is open

ANSWER: B

ATTACHMENTS:

KA NUMBER: 005/000/K4.07 RO: 3.2 SRO: 3.5
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC11

REFERENCE #2: MC1

PART A

LESSON PLAN:NI NUMBER: 12 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 5.0

Based on current flow rates from the FWST, how long before the FWST to containment sump swap over will occur?

A. ~ 20 minutes

B. ~ 24 minutes

C. ~ 28 minutes

D. ~ 32 minutes

ANSWER: C

ATTACHMENTS:

KA NUMBER: 006/000/A3.03 RO: 4.1 SRO: 4.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC-10, 11

REFERENCE #2:

PART A

LESSON PLAN:DG3 NUMBER: 10 TOPIC: SSS01 REV DATE: 01/09/91

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

Assume during this event, you receive a "Trip Generator Fault" annunciator due to actuation of a 87G Relay on D/G 1A. How will this affect D/G operation?

A. No affect

B. D/G will trip

C. D/G will continue to run with D/G breaker locked out

D. Associated bus will load shed, and a Blackout Sequence will occur

ANSWER: B

ATTACHMENTS:

KA NUMBER: 064/000/K4.02 RO: 3.9 SRO: 4.2
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:SEP NUMBER: 11 TOPIC: SSS01 REV DATE: 04/22/92

SRO ONLY: Y RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 3 TIME: 3.0

Based on current indications, which of the following personnel protective actions is required?

A. Site assembly due to ALERT emergency classification.

B. Site assembly due to SITE AREA emergency classification.

C. Site assembly and Site evacuation of non-essential personnel due to GENERAL emergency classification.

D. Site assembly due to EMF41(Aux Bldg Vent) reading greater than 10E6 cpm.

ANSWER: B

ATTACHMENTS: REV ALL PER NRC

KA NUMBER: 072/000/A1.01 RO: 3.4 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Main Control Boards

REFERENCE #2: RP/0/A/5000/01 & 04

PART A

LESSON PLAN:EHC NUMBER: 18 TOPIC: GEN REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

Loss of one feed pump at 100% load will cause load to drop to 90%:

A. immediately

B. in 7.5 seconds

C. in 30 seconds

D. in one minute

ANSWER: A

ATTACHMENTS:

KA NUMBER: 095/000/K4.12 RO: 3.3 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: DATA BOOK

REFERENCE #2:

PART A

LESSON PLAN:EP5 NUMBER: 2 TOPIC: EP REV DATE: 04/22/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 4 TIME: 3.5

While performing steps in EP/1/A/5000/03, "Loss of All A/C Power", an SI signal may be generated when power is restored. If an SI signal is generated, which one action below is required by the procedure?

A. Reset the SI to permit the Blackout Sequence to actuate.

B. Reset the SI to prevent damaging RCP seals on power restoration.

C. No action is necessary as it has no effect.

D. Reset the SI to permit manual loading of equipment on an A/C emergency bus.

ANSWER: D

ATTACHMENTS: REV DIST A,B PER NRC

KA NUMBER: 000/055/EA2.03 RO: 3.9 SRO: 4.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2: EP-03

PART A

LESSON PLAN:NCP NUMBER: 3 TOPIC: PS REV DATE: 08/28/91

SRO ONLY: RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 1 TIME: 0.0

Following a LOCA without loss of subcooling and no NCS voiding, safety injection, Phase A and Phase B isolation are all manually initiated. After reset of all safety signals, only KC and seal injection is restored to the NCP's and one NCP is restarted with NCS pressure 1800 psig. Which of the following will result?

A. NCP Stator Winding Hi Temp

B. NCP Hi Hi Vibration

C. NCP #1 Seal Outlet Hi Temp

D. NCP #1 Seal Delta P < 200 psi

ANSWER: A

ATTACHMENTS:

KA NUMBER: 003/000/A4.08 RO: 3.2 SRO: 2.9
KA NUMBER: 003/000/A2.02 RO: 3.7 SRO: 3.9
KA NUMBER: 003/000/GEN 15 RO: 3.8 SRO: 4.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:IFE NUMBER: 16 TOPIC: CF REV DATE: 03/30/92

SRO ONLY: y RO OBJ: 2 SRO OBJ: 2 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 1 TIME: 1.0

Why is Unit 1 Steam Generator level ramped down with decreasing power? (Select one)

A. To ensure adequate S/G water mass available to remove decay heat after trip from any power level.

B. To minimize to the reactivity addition should a steam break occur

C. Prevent S/G damage due to voiding in the preheater section.

D. To minimize to effects of shrink and swell at lower power levels.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 059/000/A3.02 RO: 2.9 SRO: 3.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:ND NUMBER: 3 TOPIC: PS REV DATE: 04/22/92

SRO ONLY: RO OBJ: 6 SRO OBJ: 6 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 2.7

Given:

- o Unit 1 is in Mode 5
- o NC is drained to 6.5%
- o 1A ND is in service

If a loss of VI (Instrument Air) were to occur, which of the following describes the method or feature that would allow 1A ND loop flow to be controlled?

A. Select 'THROTTLE' on NI173A 'ND pump A to Cold Legs C & D' and position as required.

B. 1ND26 'NDHX 1A Outlet' and 1ND27 'NDHX 1A Bypass' will fail to preset travel stop positions.

C. Transfer control of 1ND26 and 1ND27 to 'LOCAL' and position as required.

D. Dispatch NLOs to locally throttle 1ND67 'ND Pump 1A Disch.'

ANSWER: A

ATTACHMENTS: REV DIST D PER NRC

KA NUMBER: 000/025/EK1.01 RO: 3.9 SRO: 4.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: AP/1/A/5500/19

REFERENCE #2:

SRO - 8A

Finished Product

PART A

LESSON PLAN:EHC NUMBER: 28 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 4.0

Which of the following will DEHC monitor to determine when the runback should be stopped?

A. Generation output current less that 16000 amps.

B. Valve reference signal less than 50.4%.

C. First stage pressure less than 56%.

D. Generator megawatts less than 675 MWe.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 045/000/K4.12 RO: 3.3 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: Turbine Graphic 1F

REFERENCE #2: OP/1/B/6100/10B

PART A

LESSON PLAN:EHC NUMBER: 29 TOPIC: SSS08 REV DATE: 04/22/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

If the Turbine Runback did NOT initiate automatically, the operator would:

A. Select MANUAL and depress 'CONTROL VALVE LOWER'.

B. Select 'EMERG MANUAL' and depress 'CONTROL VALVE LOWER'.

C. Trip the turbine.

D. Select a 'TARGET' of 675 MWe and a 'LOAD RATE' of at least 24 MW/MIN, and then depress 'GO'.

ANSWER: A

ATTACHMENTS: MINOR REVS PER NRC

KA NUMBER: 045/000/K4.12 RO: 3.3 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: 1MC-1

REFERENCE #2: OP/1/B/6300/01

PART A

LESSON PLAN:IFE NUMBER: 19 TOPIC: CF REV DATE: 03/30/92

SRO ONLY: RO OBJ: 8 SRO OBJ: 8 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 1.3

Which ONE of the following parameters will the operator use to determine where 'D' S/G level should be controlled?

A. PR Nuclear Instruments

B. Thermal Power Best Estimate

C. S/G Level Trip Setpoint

D. Turbine Impulse Pressure Ch. I

ANSWER: A

ATTACHMENTS:

KA NUMBER: 059/000/A2.11 RO: 3.0 SRO: 3.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: DATA BOOK FIG 3.12

REFERENCE #2:

PART A

LESSON PLAN:IFE NUMBER. 8 TOPIC: SSS08 REV DATE: 12/27/91

SRO ONLY: RO OBJ: 8 SRO OBJ: 8 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 4.5

Which of the following has failed, causing DFCS to auto swap to manual control?

A. Median selected CF header pressure.

B. Median selected CF Flow.

C. Average steam flow.

D. Median selected SM header pressure.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 059/000/A2.11 RO: 3.0 SRO: 3.3
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: MC2

REFERENCE #2: OP/1/A/6100/10E

PART A

LESSON PLAN:IFE NUMBER: 11 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 9 TIME: 3.5

When plant conditions stabilize, which of the following would describe the effect of one 'C' S/G Wide Range level channel failing low?

A. Rx trip alert annunciator on all 4 S/G's with no reactor trip.

B. A DFCS trouble alarm will come in.

C. S/G C will feed up to 66% level with no operator action.

D. S/G C will give a lo-lo level reactor trip with no operator action.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 059/000/K4.19 RO: 3.2 SRO: 3.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:NV NUMBER: 24 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 2 TIME: 1.5

What is the reason for letdown isolation?

A. To prevent inventory loss of the NC system.

B. To prevent overfilling of the VCT.

C. To prevent flashing in the letdown line.

D. Failure of NV-1 and NV-2 to close.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 004/000/K5.09 RO: 3.7 SRO: 4.2
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: AP/1/A/5500/12

REFERENCE #2: 1MC-10

PART A

LESSON PLAN:TS NUMBER: 3 TOPIC: SSS08 REV DATE: 04/22/92

SRO ONLY: y RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 3 TIME: 3.0

Which of the following actions is REQUIRED by Technical Specification due to the present status of 1A Busline?

A. Verify all systems, subsystems, devices and components which receive power from ETB are operable.

B. Verify breaker alignment of the Unit 2 Buslines within 1 hour and every 8 hours thereafter.

C. Restore 1A Busline to operable status within 12 hours or be in Mode 3 within 6 hours and Mode 5 within the following 30 hours.

D. Perform operability tests on both D/G's within 24 hours unless they have been successfully tested within the previous 24 hours.

ANSWER: D

ATTACHMENTS: REV DIST C PER NRC

KA NUMBER: 062/000/GEN 11 RO: 3.1 SRO: 3.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: AP/03 Load Rejection

REFERENCE #2: T.S. 3.8.1.1

PART A

LESSON PLAN:NCP NUMBER: 9 TOPIC: SSS08 REV DATE: 03/30/92

SRO ONLY: RO OBJ: 0 SRO OBJ: 0 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 9 TIME: 1.5

How is NC pump lower bearing cooling being accomplished at this time?

A. Seal injection flow to the NC system along the pump shaft.

B. NC system water flowing across NC pump thermal barrier up the NC pump shaft.

C. KC flow to the NC pump lower bearing heat exchanger.

D. The NC pump lower bearing has no cooling at this time.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 004/000/K3.04 RO: 3.7 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: AP/1/A/5500/12

REFERENCE #2: 1MC-10

PART A

LESSON PLAN:ISL NUMBER: 2 TOPIC: TA REV DATE: 03/26/92

SRO ONLY: RO OBJ: 4 SRO OBJ: 4 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRO OBJ: 4 TIME: 3.1

Given Unit 1 conditions:

- o NC Fill and Vent is complete
- o NC is being pressurized to allow NC pumps to be started
- o Pressurizer level is 30%

During the pressurization, the following abnormal indications are noted.

- o Pressurizer level rapidly decreases to 0%
- o 'PRT HI/LO LEVEL' Alarm lit
- o 'PRT HI PRESS' Alarm lit

Which of the following describes the nature of the problem?

A. The ND pump discharge line has ruptured.

B. An NC loop drain was left open.

C. A Pressurizer PORV has opened.

D. An ND suction relief has lifted.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 000/025/EA2.04 RO: 3.3 SRO: 3.6
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/B/6100/10

REFERENCE #2: AP/1/A/5500/19

PART A

LESSON PLAN:EP1 NUMBER: 30 TOPIC: EP REV DATE: 04/01/91

SRO ONLY: RO OBJ: 8 SRO OBJ: 8 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 8 TIME: 3.0

Following a small-break LOCA, one channel of reactor coolant wide range pressure begins failing low. What effect does this have on subcooling margin INDICATION?

A. The failed channel indicates too high a subcooling margin. The other channel indicates correctly.

B. The failed channel indicates too low a subcooling margin. The other channel indicates correctly.

C. Both channels indicate too high a subcooling margin.

D. Both channels indicate too low a subcooling margin.

ANSWER: B

ATTACHMENTS:

KA NUMBER: 000/006/K6.18 RO: 3.5 SRO: 3.9
KA NUMBER: 000/009/EA1.16 RO: 4.2 SRO: 4.2
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6700/01 CURVE

REFERENCE #2: ICCM MANUAL

PART A

LESSON PLAN:NC NUMBER: 19 TOPIC: PS REV DATE: 03/30/92

SRO ONLY: RO OBJ: 6 SRO OBJ: 6 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 7.0

Given:

- o Unit 1 is in Mode 5
- o Pressurizer pressure is 330 psig
- o Pressurizer level is 28%

Which of the following evolutions could result in exceeding the PRESSURIZER Tech Spec COOLDOWN limits?

A. A pressurizer spray valve is cycled, reducing pressure to 300 psig.

B. NV294 'Charging Flow Control' fails open, allowing Pressurizer level to increase

C. 'C' Heater group trips on a ground fault.

D. Pressurizer level is rapidly reduced to 20%

ANSWER: B

ATTACHMENTS:

KA NUMBER: 002/000/K1.09 RO: 4.1 SRO: 4.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: T.S. 3.4.9.2

REFERENCE #2:

PART A

LESSON PLAN:CA NUMBER: 30 TOPIC: CF REV DATE: 04/03/91

SRO ONLY: RO OBJ: 7 SRO OBJ: 7 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 5 TIME: 3.0

All three CA Pumps receive an auto start signal. Three (3) minutes later you notice "B" Motor Driven Pump failed to start. The "A" Motor Driven Pump and the Turbine Driven Pump are running. Explain the CA system response to this situation.

A. CA Pump 1A will experience runout and trip.

B. CA-60, "CA Pump 1A Flow to S/G 1A" will close.

C. CA-58A, "CA Pump A DISCH to S/G 1B ISOL." valve will close.

D. CA Pump 1A will trip 30 seconds after the auto start signal.

ANSWER: C

ATTACHMENTS:

KA NUMBER: 061/000/K4.05 RO: 3.1 SRO: 3.4
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:IDE NUMBER: 23 TOPIC: STM REV DATE: 02/13/92

SRO ONLY: RO OBJ: 8 SRO OBJ: 8 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 6 TIME: 2.0

Reactor Trip Breaker "B" DOES NOT open on a reactor trip. Which one of the following best describes the response of the Steam Dump system:

A. Plant Trip Controller operates atmospheric dumps

B. Plant Trip Controller operates condenser dumps

C. Load Rejection Controller operates atmospheric dumps

D. Load Rejection Controller operates condenser dumps

ANSWER: D

ATTACHMENTS:

KA NUMBER: 041/020/K4.17 RO: 3.7 SRO: 3.9
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1:

REFERENCE #2:

PART A

LESSON PLAN:RN NUMBER: 6 TOPIC: PSS REV DATE: 04/22/92

SRO ONLY: Y RO OBJ: 12 SRO OBJ: 12 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 7 TIME: 1.8

Which of the following will occur as a result of placing 1A D/G LOAD SEQUENCER in 'TEST'.

A. 1A RN pump will NOT start on any signal from Unit 2.

B. 2A RN pump will NOT start on a blackout of 2ETA.

C. Swap to SNSWP on Emergency Lo Pit Level will be blocked.

D. 1A and 2A RN pumps will NOT start on a Unit 1 Safety Injection.

ANSWER: A

ATTACHMENTS: REV STEM PER NRC

KA NUMBER: 000/062/G-8 RO: 3.1 SRO: 3.7
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: CNS/TSI 3.7.4 pg. 3

REFERENCE #2: PT/1/A/4350/01A (B)

PART A

LESSON PLAN:CP NUMBER: 4 TOPIC: CP REV DATE: 04/03/91

SRO ONLY: RO OBJ: 3 SRO OBJ: 3 POINT VALUE: 1.00 pts.

ISS OBJ: 0 PTRQ OBJ: 3 TIME: 3.3

Given the following conditions observed over three 1 hour periods while conducting a unit heatup.

1. - NC Temperature is 200 deg.F
   - A0141 (S/G A after CF isol valve line temp) is 122 deg.F
   - A0148 (S/G A inlet Temp feedwater) is 150 deg.F

2. - NC temp is 285 deg.F
   - A0141 is 128 deg.F
   - A0148 is 153 deg.F

3. - NC temp is 350 deg.F
   - A0141 is 128 deg.F
   - A0148 is 152 deg.F

Which one of the following would explain the trend seen during the heatup?

A. CF-90 (S/G 1A CF Cont. Isolation Byp) may have been inadvertently opened.

B. CA-223 (S/G 1A CA Nozzle Temp Flow Isol) may have been inadvertently closed.

C. CA-149 (S/G 1A CF Byp to CA Nozzle) may have been inadvertently opened.

D. CM-839 (S/G Warming Isolation to Cond 1A) may have been inadvertently closed.

ANSWER: D

ATTACHMENTS:

KA NUMBER: 059/000/G-13 RO: 3.0 SRO: 3.1
KA NUMBER: / / RO: 0.0 SRO: 0.0
KA NUMBER: / / RO: 0.0 SRO: 0.0

REFERENCE #1: OP/1/A/6100/01

REFERENCE #2: