

Indian Point 3
Nuclear Power Plant
P O Box 215
Buchanan, New York 10511
914-736-8000



**New York Power
Authority**

October 19, 1993
IPN-93-126

Docket No. 50-286
License No. DPR-64

Mr. Lee Bettehnausen
Chief, Operations Branch
U. S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Bettenhausen:

Please find enclosed the requested copies of the exam administered to Messrs. Armando, Christman, and Diamond. Also included are the JPM's, Simulator Scenarios, and Evaluations. If any additional information is required please notify Mr. Charles Embry at (914) 736-8904.

Sincerely,

A handwritten signature in cursive script that reads "John H. Garrity".

John H. Garrity
Resident Manager

SW/JHG/jhc

cc: Document Control Desk
U.S. Nuclear Regulatory Commission
Mail Station PI-137
Washington, D.C. 20555

Mr. Thomas Martin (Original)
Regional Administrator
Region I
U.S. Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

9310250017 931019
PDR ADOCK 05000286
PDR



IE42
111

50-286

PASNY

INDIAN POINT 3

EXAM ADMINISTERED TO MESSRS. ARMANDO,
CHRISTMAN, AND DIAMOND.

REC'D W/LTR DTD 10/19/93....9310250017

- NOTICE -

THE ATTACHED FILES ARE OFFICIAL
RECORDS OF THE INFORMATION &
RECORDS MANAGEMENT BRANCH.
THEY HAVE BEEN CHARGED TO YOU
FOR A LIMITED TIME PERIOD AND
MUST BE RETURNED TO THE
RECORDS & ARCHIVES SERVICES
SECTION, T5 C3. PLEASE DO NOT
SEND DOCUMENTS CHARGED OUT
THROUGH THE MAIL. REMOVAL OF
ANY PAGE(S) FROM DOCUMENT
FOR REPRODUCTION MUST BE
REFERRED TO FILE PERSONNEL.

- NOTICE -



Examination Cover/Answer Sheet

COURSE TITLE: LICENSE RENEWAL PROGRAM

EXAMINATION TITLE: LRP-93.1.1

LAST NAME -

FIRST NAME - MIDDLE INITIAL

COMPANY: _____ DEPARTMENT: _____

EXAMINATION DATE -
MONTH DAY YEAR

KEY

AUTHORIZED REFERENCE MATERIAL: _____

MINIMUM PASSING GRADE: _____ OVERALL GRADE: _____

GRADED BY: _____ DATE: _____

INSTRUCTIONS AND GUIDELINES

1. Remain seated and quite during the examination.
2. If you have any questions during the Exam, raise your hand. Your Instructor will provide clarification wherever possible.
3. You are expected to do your own work and not help anyone else.
4. Use only the Authorized Reference Material.
5. At the Completion of this Examination, you are to sign the following Certification:

I CERTIFY THAT I HAVE READ AND UNDERSTAND THE INSTRUCTIONS ABOVE AND THAT ALL ANSWERS CONTAINED IN THIS EXAMINATION ARE MY OWN, IN ADDITION, I HAVE NOT GIVEN OR RECEIVED ANY UNAUTHORIZED ASSISTANCE, NOR USED ANY UNAUTHORIZED REFERENCES.

SIGNATURE _____ DATE _____

LIC-EDS-3.1.5
TYPE B
K/A: 062A4.01 3.2

1.0 POINT

QUESTION: #1

The plant has tripped from 100% power. Approximately 15 minutes after the trip, the Con Ed District Operator calls up to request that 345 KV Breakers 1 & 3 be closed to "establish continuity on the Ring Bus".

Which of the following is the correct response to this request?

- a. Inform the D.O. that the breakers cannot be closed since the Turbine cannot be latched at the present time
- b. Inform the D.O that the breakers cannot be closed until MOD F1-3 is closed
- c. Close the Breakers as requested and as plant conditions permit
- d. Inform the D.O. that you can close either breaker but not both based on the plants Technical Specifications for the present plant condition

ANSWER: c.
REFERENCE:

LIC-NSS-3.1.X
TYPE B
K/A: 003A6.14 3.1

1.0 POINT

QUESTION: #2

Choose the ONE CORRECT statement regarding the operation/use of #1 Seal Bypass Valve 246.

- a. Anytime #1 Seal Return Flow is less than 1 GPM bypass flow is required
- b. A 2 GPM orifice is installed in EACH RCP bypass line to limit bypass flow from the pump
- c. Opening #1 Seal Bypass Valve initiates bypass flow for ALL (4) RCP's
- d. #1 Seal Bypass flow is automatically maintained between 0.5 and 5.0 GPM

ANSWER: c.

REFERENCE: SOP RCS-1 Rev.8 Pg. 4

LIC-SPC-X.X:X
TYPE B
K/A: 045A6.06 3.0

1.0 POINT

QUESTION: #3

Condenser Vacuum is decreasing as the result of a Condenser Air In-Leakage. With the Unit at 450 MWe, which of the following is the specified minimum vacuum that is allowed without requiring the turbine to be tripped?

- a. 26.4"
- b. 25.5"
- c. 22"
- d. 24.4"

ANSWER: c.

REFERENCE: ONOP-C-1 Rev. 5

LIC-ERT-3.1.1.2

#B-62

TYPE B

K/A 150K7.03 (3.9)

150K7.04 (3.9)

1.0 POINT

QUESTION: #4

A major loss of coolant accident is in process. A volunteer is needed to enter an extremely high radiation area to save vital equipment.

Acting as the Emergency Director, make a determination as to which volunteer you would authorize for the job.

- a. Volunteer #1 - Male, Age 28
Total lifetime dose 2.8 REM
600 mr this Quarter
- b. Volunteer #2 - Male, Age 32
Total lifetime dose 75 REM
190 mr this Quarter
- c. Volunteer #3 - Male, Age 52
Total lifetime dose 180 REM
25 mr this Quarter
- d. Volunteer #4 - Male, Age 44
Total lifetime dose 120 REM
800 mr this Quarter

ANSWER:

- c. Volunteer #3 - Male, Age 52 (100%)
Total lifetime dose 180 REM
25 mr this Quarter

REFERENCE:

IP-1027, Rev. 8

LIC-ERT-2.1.5.1
TYPE B
K/A 200K7.50 (3.5)

1.0 POINT

QUESTION: #5

The RO Rover is in the plant taking his readings when the Site Assembly Alarm sounds over the page system. The RO Rover must:

- a. Report to the fire brigade response team.
- b. Go to the TSC and "card in" at the accountability card reader.
- c. Go to the CCR and "card in" at the accountability card reader.
- d. Go to the OSC and "card in" at the accountability card reader.

ANSWER:

- c. Go to the CCR and "card in" at the accountability card reader. (100%)

REFERENCE:

IP-3 Emergency Plan IP-1050 Rev. 18

LIC-FHD-1.1.25.9
TYPE B
K/A 034K7.03 (4.0)

1.0 POINT

QUESTION: #6

The Rx vessel head is being removed in preparation for refueling. The daily sample of the RCS for boron indicates 1875 ppm. The Rx Engineer states that SDM is 11%.

Which of the following statements describes the correct course of action?

- a. Suspend all operations involving core alterations and initiate boration to return Cb to > 1900 ppm.
- b. Core alterations may continue while Cb is increased to > 1900 ppm provided SDM is greater than 10%.
- c. Establish containment integrity until refueling Cb of > 1900 ppm is achieved.
- d. No action required as long as 5% SDM is maintained.

ANSWER:

- a. Suspend all operations involving core alterations and initiate boration to return Cb to > 1900 ppm. (100%)

REFERENCE:

Technical Specifications, Section 3.8.D, Amendment #90

LIC-IXC-5.1.13.1
TYPE B
K/A 015K7.02 (4.0)

1.0 POINT

QUESTION: #7

While the plant is operating at 85% power, the NIS POWER RANGE UPPER DET. HIGH FLUX DEVIATION OR AUTO DEFEAT annunciator (SBF-1 window 11) and the NIS POWER RANGE CHANNEL DEVIATION (SBF-1 window 17) both alarm. The QPTR is calculated and results in a QPTR of 1.03.

In response to this situation, the control room operators must perform which of the following:

- a. Calculate and log the QPTR each shift and after load changes greater than 10% of rated power.
- b. Reduce thermal power to less than 50% within 2 hours and reset the Power Range Nuclear Instrumentation setpoint to 55%.
- c. Reduce the PR Neutron Flux High Trip setpoint by 9% within 2 hours.
- d. Immediately commence a power reduction and be in hot standby within 4 hours.

ANSWER:

- c. Reduce the PR Neutron Flux High Trip setpoint by 9% within 2 hours.

- REFERENCE:
1. Alarm Response Procedure ARP-4, SBF-1, Rev. 17, windows 11 and 17
 2. SOP-RPC-5, Rev. 9, Quadrant Power Tilt Calculation
 3. POP-2.1, Rev. 15 Operations at Power
 4. Technical Specifications, 3.10.3, Quadrant Power Tilt Limits
 5. WOG 015-000-006

LIC-IXC-7.1.5
TYPE B
K/A: 001A2.14 3.0

1.0 POINT

QUESTION: #8

While performing maintenance behind the flight panel, I&C inadvertently causes the Rod Control S/U Pushbutton to "Reset". Assuming that Control Bank "D" is and was at 210 Steps, which of the following values corresponds to the correct setting on the Rod Control Bank Overlap Counter?

- a. 210
- b. 588
- c. 294
- d. 590

ANSWER: b.

REFERENCE: GRAPH RPC-7 Rev. 1

NOTE: Use the initial position and subtract from the maximum with Bank "D" at 226 steps.

Ex: 226 on Bank "D" is 604 on Bank Overlap
210 on Bank "D" is $226 - 210 = 16$ from top
Therefore $604 - 16 = 588$ on Bank Overlap

LIC-ODP-6.1.12
K/A: 200K802 3.5

1.0 POINT

QUESTION: #9

Who is required to sign the CCR Shift Relief and Turnover Checklist PRIOR TO COMPLETION of the shift turnover?

- a. Oncoming SRO & SS and the Offgoing SRO
- b. Oncoming SRO and the Offgoing SRO & SS
- c. Oncoming SS and the Offgoing SS
- d. Oncoming SRO & SS and the Offgoing SRO & SS

ANSWER: a.

REFERENCE: OD-6, Rev. 2

LIC-ESS-1.1.3
K/A: 013K703 4.2

1.0 POINT

QUESTION: #10

The high containment pressure SI actuation is designed to mitigate what plant condition?

- a. Transfer of high energy water/steam from the RCS to the containment
- b. Loss of containment integrity
- c. Excessive iodine concentration in the containment
- d. High hydrogen pressure in the containment

ANSWER: b.

REFERENCE: SD-10, Engineered Safeguards Systems, Rev. 0

LIC-FLO-4.1.5.4
TYPE B
K/A 812K5.35 (3.5)

1.0 POINT

QUESTION: #11

The plant is in hot shutdown with the RCS pressure being maintained at 1000 psia by a 100% quality steam bubble in the pressurizer. If a pressurizer safety valve is leaking to the pressurizer relief tank where the pressure is being maintained at 20 psia, which of the following would be the expected temperature in the tailpipe downstream of the safety valve? (Assume ambient heat losses are negligible).

- a. 240°F
- b. 270°F
- c. 300°F
- d. 330°F

ANSWER:

- c. 300°F

REFERENCE: Mollier Diagram

LIC-HTR-2.1.9.1
TYPE B
K/A 831K1.02 (3.4)

1.0 POINT

QUESTION: #12

During a LOCA, there is evidence that DNB has occurred in the core. The major concern about DNB is that it results in excessively high

- a. Boron concentration.
- b. Fuel clad temperatures.
- c. Moderator temperatures.
- d. Heat fluxes.

ANSWER:

- b. Fuel clad temperatures.

REFERENCE: 1. Westinghouse Thermal-Hydraulic Principles and Applications to the Pressurized Water Reactor

LIC-PSA-2.1.17.3

TYPE B

K/A 008A6.03 (3.1)

008K9.01 (3.0)

1.0 POINT

QUESTION: #13

The normal Component Cooling Water high temperature limit is 110°F. Select the one correct statement describing when this limit may be exceeded.

- a. During high river water temperatures when the limits are increased to 120°F for 48 hours.
- b. During a degraded system operation (i.e. equipment out of service for maintenance) when CCW return temperature limits are increased to 155°F.
- c. During plant heatup when CCW limits are increased to 120°F.
- d. During plant shutdown when the limits are increased to 120°F for two hours during the initial phase of RHR loop operation.

ANSWER:

- d. During plant shutdown when the limits are increased to 120°F for two hours.

- REFERENCE:
- 1. SOP-RHR-1, Residual Heat Removal System, Rev. 10
 - 2. SOP-CC-1B, Component Cooling System Operation, Rev. 10

LIC-EOP-26.1.7.7

TYPE B

K/A: 000038EK3.06

000038EK3.09

REV #: 1

1.0 POINT

QUESTION: #14

A SGTR is in progress on #34 S/G. E-0 has been completed and the operator has just terminated SI per E-3. Pressurizer level has just dropped off scale low and subcooling margin is decreasing.

Which action listed would be the correct response to these conditions?

- a. Start additional charging pumps and/or SI pumps.
- b. Manually actuate safety injection and transition to ECA-3.1.
- c. Manually operate SI pumps as necessary and transition to ECA-3.1
- d. Operate charging pumps only to restore pressurizer level since SI is terminated.

ANSWER:

- c. Manually operate SI pumps as necessary and transition to ECA-3.1.

REFERENCE:

- 1) EOP Background, E-3, Rev. 6, Foldout page.

LIC-RDM-2.1.3
PART B
K/A: 073K4.01 4.1

1.0 POINT

QUESTION: #15

In the Control Room the "Area Mon Hi Rad" alarm comes in. Investigation shows that R-28, the Iodine Monitor for the plant vent is alarming. What automatic actions should the operator verify?

- a. Control Room Ventilation shifts to the 10% incident mode
- b. The waste gas release valve, the VC purge supply and exhaust valves, and the VC pressure relief valves close.
- c. The PAB exhaust dampers divert to the charcoal filters and the bypass shuts.
- d. All sample lines close and the VC supply and exhaust valves open.

Answer: b.

Ref: ONOP-RM-1, Rev. 6

LIC-EOP-5.1.1

TYPE B

K/A: 000036EK3.01 000038EK3.06

REV #: 1

1.0 POINT

QUESTION: #16

The unit was operating at full power when a S/G tube ruptured. A low pressure Rx Trip followed by a low pressure SI occurred. All safeguards equipment functioned as required and all RCP's were tripped per foldout page criteria in E-0.

The following plant conditions now exist:

Ruptured S/G pressure 1040 psig and stable
Core Exit T/C's 505°F and slowly decreasing
RCS pressure 1400 psig and stable
PZR level 0%
Total ECCS flow is 700 gpm

Procedure E-3 directs you to open 1 PZR PORV to reduce RCS pressure. Soon after opening the valve you observe all PZR level channels rapidly increasing. ECCS flow has increased by 50 gpm.

The most probable cause of this indicated level increase is that:

- a. PZR level instruments are not calibrated for temperatures less than 600F
- b. The increased ECCS flow is driving the RCS to a solid water condition
- c. Steam Bubble formation in the RCS is forcing water up the surge line
- d. Backflow has been established from the ruptured S/G

ANSWER:

- c. Steam Bubble formation in the RCS is forcing water up the surge line

REFERENCE:

- 1) E-3 BACKGROUND, STEP 22 NOTE

LIC-EOP-5.1.2.5

TYPE B

K/A: 000038EK3.06

000038EK3.08

REV #: 1

1.0 POINT

QUESTION: #17

A reactor trip with SI has occurred and the operators have entered E-3, Steam Generator Tube Rupture because of the symptoms. The operators note RCS pressure is 1350 psig, subcooling is 14°F, and one SI pump is running. They then stop all RCP's.

The primary reason for stopping the RCPs at this point is to:

- a. Ensure adequate core cooling. Adequate core cooling cannot be maintained during a SGTR with an RCP running.
- b. Protect against a misdiagnosis of the event, operator error, or the occurrence of a multiple-failure event scenario.
- c. Minimize the heat input into the RCS, thereby helping to reduce RCS pressure to equilibrium with secondary pressure.
- d. Reduce flow-induced vibration of the ruptured S/G U-tubes, thereby preventing the rupture from increasing in size.

ANSWER:

- b. Protect against a misdiagnosis of the event, operator error, or the occurrence of a multiple-failure event scenario.

REFERENCE:

- 1) EOP Background, E-3, Rev. 6, Step 1
- 2) E-3, Rev. 6, Step 1

LIC-EOP-9.1.2.4

TYPE B

K/A: 000038EK3.06

000038EA1.04

REV #: 1

1.0 POINT

QUESTION: #18

Operators are performing ECA-3.1, SGTR with Loss of Reactor Coolant - Subcooled Recover Desired, and are preparing to restore PZR level.

Under these conditions, which of the following restoration methods will conserve reactor coolant inventory and provide the operators with the best pressure control?

- a. Dump steam to the condenser from the intact S/Gs.
- b. Open one PZR PORV.
- c. Use auxiliary PZR spray.
- d. Use normal PZR spray.

ANSWER:

- d. Use normal PZR spray.

REFERENCE:

- 1) ECA-3.1, Rev. 6
- 2) EOP Background, ECA-3.1,

LIC-EOP-8.1.2

TYPE B

K/A: 000040EK3.04

000040EA1.10

REV #: 1

1.0 POINT

QUESTION: #19

A Major Steam line break has occurred downstream of the Main Steam Line Isolation Valves. A High Steam Flow Safety Injection has occurred, however ALL 4 MSIV'S FAILED TO CLOSE.

Which of the following describes how AUXILIARY FEED FLOW should be controlled to the FAULTED S/G'S. (Assume cooldown rate is 140°F/Hr)

- a. Maintain at least 355 GPM to any combination of S/G's
- b. Maintain 100 GPM to 2 of the 4 Faulted S/G's
- c. Maintain 100 GPM to EACH of the (4) Faulted S/G's
- d. Maintain 25 GPM to EACH of the (4) Faulted S/G's

ANSWER:

- c. Maintain 100 GPM to EACH of the (4) Faulted S/G's

REFERENCE:

- 1) ECA-2.1

LIC-EOP-11.1.2.5

TYPE B

K/A: 000074EK3.11

000074EK3.10

REV #: 1

1.0 POINT

QUESTION: #20

Accumulators are isolated in FR-C.1, Response to Inadequate Core Cooling when steam generator pressures are decreased to less than 95 psig to prevent:

- a. Accumulators from maintaining RCS pressure.
- b. Backfill of accumulators in case RCS press increases.
- c. Introduction of nitrogen into the RCS.
- d. Complete loss of RCS reserve water inventory.

ANSWER:

- c. Introduction of nitrogen into the RCS.

REFERENCE:

- 1) EOP Background, FR-C.1, Rev. 6

LIC-EOP-12.1.2

TYPE B

K/A: 000054EK3.04

000054EK3.05

REV #: 1

1.0 POINT

QUESTION: #21

All feedwater flow has been lost and the operators are responding to a loss of heat sink per the appropriate Function Restoration Procedure. They are unable to establish any feedwater flow so they attempt a primary bleed and feed. One PORV opens but all attempts to open the second PORV have failed.

At this point, the appropriate response of the operators should be?

- a. Terminate attempts to establish heat sink since (1) PORV is sufficient for RCS heat removal
- b. Keep trying to open the failed PORV and reduce SI flow as necessary to prevent overpressurization of the RCS
- c. Open ALL Rx Vessel Head Vents and depressurize at least 1 S/G
- d. Terminate RCS bleed and feed since with only (1) PORV pressure will increase, SI flow will decrease and RCS inventory will decrease

ANSWER:

- c. Open ALL Rx Vessel Head Vents and depressurize at least 1 S/G

REFERENCE:

- 1) FR-H.1 Step 11, Rev. 6

LIC-EOP-12.1.9.2

TYPE B

K/A: 000054EK3.04

000054EK3.05

REV #: 1

1.0 POINT

QUESTION: #22

The operators are establishing Bleed and Feed in accordance with FR-H.1, Response to Loss of Secondary Heat Sink.

Which of the following BEST describes the actions to be taken if no high-head SI feed is available?

- a. Return to beginning of FR-H.1 to establish a secondary heat sink since severe core uncover could occur with no injection flow.
- b. Return to beginning of FR-H.1 to depressurize the RCS to establish RHR injection flow.
- c. Continue with Bleed and Feed while attempting to start any SI pump since PORV capacity is small enough to allow sufficient time to establish SI flow.
- d. Transition to FR-C.1, Response to Inadequate Core Cooling since core uncover will soon occur and you will have a RED path on the FR-C CSF's which is a higher priority than the FR-H CSF's.

ANSWER:

- a. Return to beginning of FR-H.1 to establish a secondary heat sink since severe core uncover could occur with no injection flow.

REFERENCE:

- 1) FR-H.1, Rev. 6
- 2) EOP Background, FR-H.1, Rev. 6

LIC-EOP-10.1.7.2

TYPE B

K/A: 000007EA2.04

000007EK3.01

REV #: 1

1.0 POINT

QUESTION: #23

The reactor fails to trip when required. The operators take actions as per the Functional Restoration Procedure FR-S.1 and obtain the required plant/system/component responses except that the reactor is still not tripped and emergency boration cannot be initiated because of blockage in the boration flow paths. All PR channels indicate 4% and the startup rate is zero on both IR channels.

Which of the following describes the correct operator actions under these conditions AND the primary reason for taking those actions?

- a. Return to the procedure and step in effect. Power is less than 5%, and the IR startup rate is zero.
- b. Allow the RCS to heat up while continuing efforts to establish emergency boration. The heatup will insert negative reactivity.
- c. To to FR-S.2. This is required by the subcriticality status tree based on current reactor conditions.
- d. Maintain RCS temperatures stable while continuing efforts to establish emergency boration. Stable temperatures preclude positive reactivity insertion by cooldown.

ANSWER:

- b. Allow the RCS to heat up while continuing efforts to establish emergency boration. The heatup will insert negative reactivity.

REFERENCE:

- 1) EOP Background, FR-S.1, Rev. 4
- 2) FR-S.1, Rev. 4

LIC-EOP-14.1.7.3
TYPE B
K/A: 028000K3.01
REV #: 1

1.0 POINT

QUESTION: #24

While implementing FR-Z.1, Response to High Containment Pressure, from the status trees, the H2 concentration in containment is found to be 5% BY VOLUME.

The operator should:

- a. Place the H2 Recombiner in service slowly to reduce pressure spiking in containment.
- b. Purge V.C. with nitrogen.
- c. Go back to Step 1 of FR-Z.1 and rediagnose.
- d. Go back to Procedure and Step in effect.

ANSWER:

- d. Go back to Procedure and Step in effect.

REFERENCE:

- 1) EOP FR-Z.1, Rev. 4

LIC-EOP-18.1.3

TYPE B

K/A: 000009EK3.21

000009EK3.06

REV #: 1

1.0 POINT

QUESTION: #25

A small break LOCA has occurred. All (3) Safety Injection pumps are operating as designed. Twenty minutes after the initial transient, no RCP's are running, core exit T/C's read 530°F (SUBCOOLED), PZR level is 0, and RCS pressure is 1310 psig. At this time, the control room operators begin withdrawing more steam from the S/G's while increasing AFW flow to maintain S/G levels.

How and why should SI flow change as a result of these actions?

- a. Increase. As the RCS cools down the pressure decreases due to increased mass flow rate out the break allowing for increased SI flow
- b. Remains the same. Condensing primary coolant in the S/G tubes keeps the break covered and prevents any RCS depressurization
- c. Decreases. Excessive heat removal from the secondary side will further retard any natural circulation cooling resulting in an increase in RCS temperature and pressure and a reduction in SI flow
- d. Remains the same. RCS pressure not affected by secondary heat removal. RCS pressure will remain at the point where SI flow equalized with break flow.

ANSWER:

- a. Increase. As the RCS cools down the pressure decreases due to increased mass flow rate out the break allowing for increased SI flow

REFERENCE:

- 1) WOG GENERIC ISSUES FOR SI TERMINATION

LIC-EOP-27.1.2.6

TYPE B

K/A: 000009EK3.21

000009EK3.23

REV #: 1

1.0 POINT

QUESTION: #26

During a SBLOCA the RCP trip criteria is met.

Why are the RCP's secured?

- a. To prevent damage to the RCP from loss of net positive suction head.
- b. To prevent core damage resulting from phase separation if there is a subsequent loss of RCS flow.
- c. To reduce RCS pressure thereby increasing injection flow.
- d. To prevent the heat generated by the RCP's from heating the RCS.

ANSWER:

- b. To prevent core damage resulting from phase separation if there is a subsequent loss of RCS flow.

REFERENCE:

- 1) Background Information, ERG, Generic Issues, RCP Trip/Restart, Rev. 1.

LIC-EOP-3.1.2.10

TYPE B

K/A: 000009EK3.21

000009EK3.26

REV #: 1

1.0 POINT

QUESTION: #27

A small-break LOCA is in progress. The reactor has been tripped, and SI is actuated. The operators have progressed into ES-1.2, Post-LOCA Cooldown and Depressurization where the operators are directed to check RCS subcooling based on core exit thermocouples - greater than 20°F.

The purpose of this step is to determine if:

- a. The RCPs can be stopped.
- b. Normal charging flow can be re-established.
- c. SI needs to be actuated.
- d. RCS depressurization can be commenced.

ANSWER:

- d. RCS depressurization can be commenced.

REFERENCES:

- 1) EOP ES-1.2, Rev. 6
- 2) EOP Background ES-1.2, Rev. 6.
- 3) WOG 000-009-007

LIC-EOP-3.1.7.22

TYPE B

K/A: 000071EK3.12

000011EK3.15

REV #: 1

1.0 POINT

QUESTION: #28

A large-break LOCA has occurred. The operators have progressed through E-0, Reactor Trip or Safety Injection and are implementing E-1, Loss of Reactor or Secondary Coolant. The RWST LO-LO level alarm is received, and RWST level indicates 9 ft.

The control room operators should:

- a. Continue in E-1 until directed to ES-1.2, Post-LOCA Cooldown and Depressurization.
- b. Immediately implement ES-1.4, Transfer to Hot Leg Recirculation.
- c. Immediately implement ES-1.3, Transfer to Cold Leg Recirculation.
- d. Immediately implement FR-C.2, Response to Degraded Core Cooling.

ANSWER:

- c. Immediately implement ES-1.3, Transfer to Cold Leg Recirculation.

REFERENCE:

- 1) EOP ES-1.3, Rev. 7, Note and First Caution Preceding Step 1
- 2) Foldout Page for E-1 Series
- 3) EOP Background, ES-1.3, Rev. 7, Step 1 Caution/Note
- 4) ARP-5 Alarm Response, Window #32
- 5) WOG 000-011-003

LIC-EOP-1.1.5.4

TYPE B

K/A: 002000K4.07 002000K5.18

REV #: 1

1.0 POINT

QUESTION: #29

Operators have transitioned to FR-P.1 in response to an orange path on integrity.

Identify which condition would warrant a transition out of FR-P.1 prior to its completion.

- a. an orange path on containment
- b. a yellow path on subcriticality
- c. a yellow path on inventory
- d. an orange path on core cooling

ANSWER:

- d. an orange path on core cooling

REFERENCE:

- 1) OD-12 Rev. 1, Users Guide for Emergency Operating Procedures

LIC-EOP-2.1.2.3

TYPE B

K/A: 000017EK1.01

003000K5.03

REV #: 1

1.0 POINT

QUESTION: #30

The operators are performing a Natural Circulation Cooldown in accordance with ES-0.2. Which of the following is the PRIMARY reason for checking RCS hot leg temperatures less than 550°F in this condition?

- a. Determine if the RCS cooldown has resulted in steam void formation in the upper head of the reactor vessel.
- b. Verify that natural circulation flow still exists between the core and the S/Gs.
- c. Verify that the RCS cooldown has not resulted in a severe challenge to the RCS integrity critical safety functions.
- d. Guarantee that the minimum required RCS subcooling will be maintained during the subsequent depressurization.

ANSWER:

- d. Guarantee that the minimum required RCS subcooling will be maintained during the subsequent depressurization.

REFERENCE:

- 1) ERG HP/LP Background, ES-0.2
- 2) EOP ES-0.2 Rev. 7



Examination Cover/Answer Sheet

COURSE TITLE: LICENSE RENEWAL PROGRAM

EXAMINATION TITLE: LRP-93.1.2

LAST NAME -

FIRST NAME - MIDDLE INITIAL

COMPANY: _____ DEPARTMENT: _____

EXAMINATION DATE
MONTH DAY YEAR

KEY

AUTHORIZED REFERENCE MATERIAL: _____

MINIMUM PASSING GRADE: _____ OVERALL GRADE: _____

GRADED BY: _____ DATE: _____

INSTRUCTIONS AND GUIDELINES

1. Remain seated and quiet during the examination.
2. If you have any questions during the Exam, raise your hand. Your instructor will provide clarification wherever possible.
3. You are expected to do your own work and not help anyone else.
4. Use only the Authorized Reference Material.
5. At the Completion of this Examination, you are to sign the following Certification:

I CERTIFY THAT I HAVE READ AND UNDERSTAND THE INSTRUCTIONS ABOVE AND THAT ALL ANSWERS CONTAINED IN THIS EXAMINATION ARE MY OWN, IN ADDITION, I HAVE NOT GIVEN OR RECEIVED ANY UNAUTHORIZED ASSISTANCE, NOR USED ANY UNAUTHORIZED REFERENCES.

SIGNATURE _____ DATE _____

A-7-2

K/A 059A6.07 (4.0) 059K4.01 (3.8)

1.0 POINT

QUESTION: #1

The operators are in the process of preparing to establish condensate flow. Given the current plant status, which of the following is correct regarding operation of the Main and Bypass Feed Reg. Valves?

- a. Phase A must be reset to allow the valves to open
- b. Feedwater Isolation defeat switches must be placed in the "DEFEAT" position
- c. No additional action is required to open the valves at the present time
- d. The Feedwater Isolation logic must be reset to allow the valves to open

ANSWER:

b

REFERENCE:

- 1. Simulator Indications
- 2. System Description, 21.1, Rev. 0
- 3. System Description, 28.0, Rev. 0

A-7-3

K/A 002K8.11 (4.4)

1.0 POINT

QUESTION: #2

Suppose while conducting the bleed and feed as is currently in progress, primary pressure falls below the intact S/G pressures. Which of the following is the correct course of action?

- a. Suspend FR-H.1 and enter E-1
- b. Continue on with FR-H.1
- c. Return to E-0 Step 1 to rediagnose the event
- d. Enter ES-0.0 to rediagnose the correct procedure to use

ANSWER:

b.

- REFERENCE:
- 1. Simulator Indications
 - 2. EOP Background Doc., FRG Series, Rev. 4

A-7-4
K/A 002K8.11 (4.4)
1.0 POINT

QUESTION: #3

Suppose while responding to this loss of heat sink, as present conditions indicate, 32 SI pump were to trip. Which of the following statements is CORRECT regarding the proper course of action?

- a. Ensure only 1 PORV is open since SI flow capability is limited
- b. If open, close all Rx vessel head vents
- c. Depressurize at least (1) intact S/G to atmospheric
- d. No action required, regarding bleed and feed

ANSWER:

d.

REFERENCE:

- 1. Simulator Indications
- 2. EOP Background Doc. FRG Series, Rev. 4
- 3. FR-H.1 Step 9

A-7-5

K/A 003K8.03 (4.4) 003K9.16 (4.0)

1.0 POINT

QUESTION: #4

Which ONE of the following describes the reason for the present status of the RCP's?

- a. The RCP's were secured to minimize the potential for pressurized thermal shock
- b. The RCP's were secured to protect them from cavitation following the RCS Depressurization
- c. The RCP's were secured to protect against SBLOCA concerns after PORV's are opened
- d. The RCP's were secured to reduce S/G mass depletion rate

ANSWER:

d.

REFERENCE:

- 1. Simulator Indications
- 2. EOP Background Doc., FRG Series, Rev. 4
- 3. FR-H.1 Step 3

A-7-6

K/A 002K8.12 (4.5) 003K6.04 (2.9)

1.0 POINT

QUESTION: #5

Given the plant conditions that presently exist, which of the following actions should the operators take?

- a. Open all Rx Vessel head vents
- b. Close one PZR PORV to establish subcooling.
- c. Depressurize at least (2) S/G's to atmospheric pressure
- d. Initiate Safety Injection

ANSWER:

a.

REFERENCE:

- 1. Simulator Indications
- 2. EOP Background Doc. FRG Series, Rev. 4
- 3. FR-H.1 STEP 13

A-7-8
K/A 503A6.05 (4.5)
1.0 POINT

QUESTION: #6

Given the conditions that presently exist, which ONE of the following actions are the operators required to take?

- a. Transition to FR-C-1
- b. Transition to E-1 due to the PZR LOCA
- c. Remain in FR-H.1 to establish adequate heat sink
- d. Remain in FR-H.1 and begin an SI reduction sequence

ANSWER:

c.

REFERENCE:

1. Simulator Indications
2. EOP Background Document, FRG Series, Rev. 0

A-7-9

K/A 013K6.14 (3.6) 013K7.03 (4.2)

1.0 POINT

QUESTION: #7

For the existing plant condition, why is Containment Isolation Phase "A" activated?

- a. To provide an extra measure of environmental protection should a S/G Tube Rupture/fault occur during the bleed and feed operation
- b. To ensure the reactor coolant released to containment is confined to containment
- c. As a result of SI being actuated and reset without resetting Containment Isolation Phase "A"
- d. Ensure reliable N₂ supply to PORV's by isolating instrument air to containment

ANSWER:

b.

- REFERENCE:
- 1. Simulator Indications
 - 2. System Description, 28.0, Rev. 0

A-7-10

K/A 035K5.31 (4.5) 035K8.10 (4.5)

1.0 POINT

QUESTION: #8

Bleed and feed must be established before S/G dryout at Indian Point 3 for which ONE of the following reasons?

- a. Successful initiation of bleed and feed at Indian Point 3 requires a minimum mass of liquid be available in the S/G's
- b. If actions to establish feed and bleed were delayed until steam generator dryout occurred there would be inadequate RCS and RWST liquid inventory to adequately cooldown the plant
- c. To ensure that when feed flow is reestablished there is still water remaining in the S/G's to minimize thermal shock concerns
- d. Limit thermal stresses on the S/G tubes and tubesheet

ANSWER:

a.

REFERENCE: 1. EOP Background Document, FRG Series, Rev. 4

A-7-11

K/A 035K8.11 (4.5) 035K5.31 (4.5) 035K5.20 (4.0)

1.0 POINT

QUESTION: #9

Which ONE of the following is TRUE about feeding a "hot" and "dry" steam generator?

ASSUME that RCS hot leg temperatures are presently stable at 570 F

- a. There are no circumstances that would warrant feeding a "hot" and "dry" S/G as other means are always available to cooldown the RCS
- b. If all steam generators are "hot" and "dry", at least two would have to be fed in order to provide adequate heat sink restoration
- c. If all steam generators are "hot" and "dry" only one S/G should have feed flow reestablished to it in case the thermal stresses are excessive resulting in a failure in the S/G
- d. Once the decision is made to feed a "hot" & "dry" steam generator it should be fed at a flow rate not to exceed the capability of one motor operated auxiliary feed pump run-out conditions

ANSWER:

c.

REFERENCE: 1. EOP Background Document, FR_{-H.1} and H.5

A-7-12
K/A:
1.0 POINT

QUESTION: #10

Given the existing plant conditions, and using indications available in the control room, select the answer below which describes the reason for 480 volt bus 6A being deenergized.

- a. A fault exists on bus 6A
- b. #32 D/G failed to start
- c. #32 D/G started but failed to close onto bus 6A
- d. The Emergency Feeder Breaker has lost DC control power

ANSWER:

b.

REFERENCE: 1. Simulator Indications

A-7-13

K/A 002K8.11 (4.4) 004K8.04 (4.5)

1.0 POINT

QUESTION: #11

For the existing plant conditions, the following is TRUE concerning the charging pumps:

- a. Charging pumps are not in operation because Containment Isolation Phase "A" is active
- b. Charging pumps are not in operation because they are not required per FR-H.1 if all 3 SI pumps and both Pressurizer PORV's are in service
- c. All available charging pumps are to be started to provide maximum charging flow as per FR-H.1
- d. One charging pump will be restarted to provide RCP seal injection as per FR-H.1

ANSWER:

c.

REFERENCE:

1. Simulator Indications
2. EOP Background Doc., FRG Series, Rev. 4

A-7-14
K/A 061K8.03 (4.5)
1.0 POINT

QUESTION: #12

For the current plant conditions, if the Auxiliary Feedwater System was returned to operable status within the next several minutes, which one of the following statements would be TRUE?

- a. Once a total of 355 GPM AFW flow was established to the S/Gs the "bleed and feed" would immediately be terminated
- b. Once wide range level in at least 2 steam generators has been established $\geq 68\%$ (Avg. W-R level in 3 S/Gs $\geq 61\%$ for adverse containment) the bleed and feed" would immediately be terminated
- c. Once narrow range level in at least one steam generator is $\geq 6\%$ (16% for adverse containment) the "bleed and feed" would immediately be terminated
- d. AFW would be placed in service and bleed and feed continued until at least 1 S/G narrow range level was $> 6\%$ (16%)

ANSWER:

d.

REFERENCE:

1. Simulator Indications
2. EOP Background Doc., FRG Series, Rev. 4

A-7-1

K/A 035K8.09 (4.4)

1.0 POINT

QUESTION: #13

Which ONE of the following conditions must now be satisfied to allow FR-H.1 to be exited and an Optimal Recovery Guideline entered?

- a. At least 1 S/G NR level > 6% (16%) and RCS core exit T/C's and hot leg temperatures are decreasing
- b. Greater than minimum required AFW flow or condensate flow and 1 S/G NR level > 6% (16%)
- c. 1 NR S/G level > 6% (16%)
- d. Core Exit T/C's decreasing and AFW or Condensate flow established

ANSWER:

a.

REFERENCE:

- 1. Simulator Indications
- 2. EOP Background Doc., FRH Series, Rev. 4
- 4. FR-H.1 Steps 20 & 21

A-7-16
K/A 013A2.07 (4.0)
1.0 POINT

QUESTION: #14

Which ONE of the following statements would be TRUE, if an SI was inadvertently actuated during the feed and bleed process?

- a. Feedwater Isolation would eliminate condensate flow as a potential source of water to the S/G's
- b. The AFW pumps would be locked out until SI was reset
- c. Any SI equipment operating would remain in operation
- d. SI equipment would strip and restart according to its timing sequence

ANSWER:

c.

- REFERENCE:
- 1. Simulator Indications
 - 2. Safeguards Logic Diagram

A-7-17

K/A: 200A6.39 (3.8)

1.0 POINT

QUESTION: #15

SELECT the appropriate Emergency Plan Classification for the event(s) in progress. Base your classification on the status of the plant at the present time using only those indications available to you in the simulator. DO NOT assume any additional operator actions will be taken.

In the space provided below, indicate the specific conditions per E-Plan Table 4-1 that you used to arrive at your classification.

CHOICE:

- a. NUE
- b. Alert
- c. Site Area Emergency
- d. General Emergency

ANSWER:

- b. ITEM XIV.1

REFERENCE: SIMULATOR INDICATIONS
E-PLAN TABLE 4.1

JOB PERFORMANCE MEASURE

TITLE: CONTROL STEAM GENERATOR LEVELS LOCALLY USING #31 ABFP

NUMBER: 08400310

REV.: 2

DATE: 10/21/92

TIME VALIDATION: _____

OPERATIONS REVIEW _____

TRAINING APPROVAL _____

JOB PERFORMANCE MEASURE

Title: CONTROL S/G LEVELS LOCALLY
USING #31 ABFP

Number: 08400310

Student Name: _____

Date: _____

Examiner: _____

Application: SRO/RO/NPO

Results: SAT/UNSAT

Recommended Location: PLANT

Recommended Method: PERFORM/SIMULATE

Actual Location: PLANT

Actual Method: PERFORMED/SIMULATED/DISCUSSED

Examiner Comments:

Related Task Number

0840400401

Related Ability Number

References:

- ONOP-FP-1A, REV. 7

Estimated Completion Time: 15 MINUTES

JOB PERFORMANCE MEASURE

- JPM Initiation:* GIVE THE CANDIDATE THE CONDITIONS AND INITIATING CUE SHEET.
- Directions to Candidate:* WHEN I TELL YOU TO BEGIN, YOU ARE TO COMPLETE ACTIONS NECESSARY TO SIMULATE LOCALLY STARTING #31 ABFP AND COMMENCE FEEDING #31 AND #32 S/G'S USING LOCAL CONTROL OF THE AUX FEED REG. VALVES. YOU ARE TO INFORM ME WHEN YOU HAVE COMPLETED THIS TASK.
- BEFORE YOU START I WILL DESCRIBE THE INITIAL CONDITIONS, INITIATING CUES AND WILL ANSWER ANY QUESTIONS YOU MIGHT HAVE.
- UTILIZE ALL TOOLS AND REFERENCE MATERIALS APPROPRIATE TO THE TASK.
- MAKE ANY CALLS, REPORTS OR REQUESTS TO THE JPM EVALUATOR.
- Conditions:* THE REACTOR AND TURBINE ARE TRIPPED. THE PLANT IS IN THE HOT SHUTDOWN CONDITION. THE CONTROL ROOM HAS BEEN EVACUATED DUE TO A FIRE. NORMAL 480 VOLT POWER IS AVAILABLE TO ALL 480 VOLT BUSES.
- Initiating Cue:* YOU ARE DIRECTED TO ADJUST AND MAINTAIN #31 OR #32 S/G LEVEL AT APPROXIMATELY 80% USING #31 ABFP.
- (JPM EVALUATOR)
- Standard:* ACTUAL S/G LEVELS FOR 31/32 S/G'S ARE BEING MAINTAINED AT 80% USING #31 ABFP.
- Tools and Equipment:* NONE
- Handouts:* ONOP-FP-1A
GRAPH GP-5B
- Notes for Examiner:* IF THIS JPM IS TO BE SIMULATED, AFTER THE CANDIDATE HAS SIMULATED EACH STEP'S ACTION(S), TELL HIM/HER THAT THE STANDARDS HAVE BEEN SATISFIED, UNLESS OTHERWISE NOTED WITH AN ASTERISK (*) IN THE STEP'S "NOTES FOR EXAMINER".

CONDITIONS AND INITIATING CUE

Conditions:

THE REACTOR AND TURBINE ARE TRIPPED. THE PLANT IS IN THE HOT SHUTDOWN CONDITION. THE CONTROL ROOM HAS BEEN EVACUATED DUE TO A FIRE. NORMAL 480 VOLT POWER IS AVAILABLE TO ALL 480 VOLT BUSES.

Initiating Cue:

YOU ARE DIRECTED TO ADJUST AND MAINTAIN #31 OR #32 S/G LEVEL AT APPROXIMATELY 80% USING #31 ABFP.

JOB PERFORMANCE MEASURE

Step 1: OBTAIN AND REVIEW ONOP-FP-1A.

Standards: CANDIDATE REVIEWS ONOP-FP-1A.

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 2(C): TAKE LOCAL CONTROL OF 31 ABFP.

Standards: SIMULATE PLACING #31 ABFP LOCAL/REMOTE SWITCH IN "LOCAL".

Notes to Examiner: LOCAL/REMOTE SWITCH IN "LOCAL". THE CANDIDATE MAY DISCUSS THAT THIS WILL BRING UP AN ALARM IN THE CCR. THE DISCUSSION IS NOT NECESSARY FOR THE PERFORMANCE OF THE JPM.

Comments:

SAT/UNSAT _____
Initials

Step 3(C): START #31 ABFP.

Standards: SIMULATE PUSHING #31 ABFP LOCAL START PUSHBUTTON.

Notes to Examiner: STEPS 3 THROUGH 7 MAY BE ACCOMPLISHED SEQUENTIALLY OR IN PARALLEL.

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 4: DEFEAT LOCAL CONTROL VALVE INTERLOCKS ON VALVE CONTROLLER.

Standards: SIMULATE TAB PUSHED IN: #31 406A OR,
#32 406B

Cue: INFORM OPERATOR TO DEMONSTRATE OPERATIONS OF ONLY (1) ONE CONTROL VALVE.

Notes to Examiner:

- 1) TAB MAY BE RELEASED ONCE LEVER MOVED PAST INTERLOCK POSITION.
- 2) CONTROLLING VALVE POSITION USING MANUAL HANDWHEEL IS ALSO ALLOWED. THIS REQUIRED ISOLATING THE AIR SUPPLY TO THE CONTROLLER AND BLEEDING OFF PRESSURE. THEN USE HANDWHEEL TO POSITION VALVE. IF OPERATOR CHOOSES TO USE THE HANDWHEEL METHOD AND CORRECTLY DESCRIBES/SIMULATES THE HANDWHEEL METHOD.

MAKE A NOTE IN THE COMMENTS SECTION, SKIP STEPS 4, 5 AND 6 AND REFER TO STEPS 7 AND 8.

Comments:

SAT/UNSAT _____
Initials

Step 5(C): PLACE BYPASS LEVER IN "OPEN" POSITION.

Standards: SIMULATE PLACING LEVER IN "OPEN": #31 406A
#32 406B

Notes to Examiner: UPPER CONTROL LEVER.

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 6(C): CONTROL VALVE POSITION USING THE "SUPPLY" LEVER.

Standards: SIMULATE CHANGING VALVE POSITION WITH "SUPPLY" LEVER.

Notes to Examiner: LOWER CONTROL LEVER.

Comments:

SAT/UNSAT _____
Initials

Step 7(C): ISOLATE AND BLEED OFF AIR SUPPLY TO THE CONTROL VALVE.

Standards: 1) AIR SUPPLY TO REGULATOR ISOLATED
2) BLEED VALVE ON BOTTOM OF REGULATOR OPEN

-OR-

1) BYPASS LEVER IN "OPEN" POSITION
2) SUPPLY LEVER FULLY CLOCKWISE

Cue: WHEN PROPERLY SIMULATED, INFORM CANDIDATE VALVE IS FULLY OPEN.

Notes to Examiner: 1) VALVE FAILS OPEN ON A LOSS OF AIR
2) THIS STEP ONLY PERFORMED IF HANDWHEEL METHOD IS USED

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 8(C): CONTROL VALVE POSITION USING MANUAL HANDWHEEL.

Standards: SIMULATES CHANGING VALVE POSITION BY ROTATING HANDWHEEL
CLOCKWISE TO CLOSE VALVE AND COUNTER CLOCKWISE TO OPEN VALVE.

Cue: ASK CANDIDATE WHICH DIRECTION (CLOCKWISE OR COUNTER
CLOCKWISE) TO CLOSE VALVE.

Notes to Examiner: THIS STEP ONLY PERFORMED IF HANDWHEEL METHOD IS USED.

Comments:

SAT/UNSAT _____
Initials

Step 9(C): MAINTAIN SG LEVELS AT APPROXIMATELY 80% WIDE RANGE ACTUAL.

Standards: DETERMINE ACTUAL SG LEVEL UTILIZING LOCAL INDICATION AND GRAPH
SP-5B.

Cue: 1) TEMPERATURE IS 500°F
2) INDICATED LEVEL IS 62%
3) HAND STUDENT GRAPH SP-5B WHEN HE DISCUSSES NEED TO USE IT
TO OBTAIN PROPER S/G LEVEL.

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

TITLE: RACK OUT A 6.9KV BREAKER

NUMBER: 08000342

REV.: 2

DATE: 10/19/92

TIME VALIDATION: _____

OPERATIONS REVIEW _____

TRAINING APPROVAL _____

JOB PERFORMANCE MEASURE

Title: RACK OUT A 6.9KV BREAKER

Number: 08000342

Student Name: _____

Date: _____

Examiner: _____

Application: SRO/RO/NPO

Results: SAT/UNSAT

Recommended Location: ELECTRICAL LAB

Recommended Method: PERFORM

Actual Location: IN-PLANT\ELECTRICAL LAB

Actual Method: PERFORM/SIMULATE/DISCUSS

Examiner Comments:

Related Task Number

0840400801

Related Ability Number

080A5.04

References:

- SOP-EL-5, REV. 12, OPERATIONS OF ON-SITE SOURCES

Estimated Completion Time:

JOB PERFORMANCE MEASURE

JPM Initiation: GIVE THE CANDIDATE THE CONDITIONS AND INITIATING CUE SHEET.

Directions to Candidate:

WHEN I TELL YOU TO BEGIN, YOU ARE TO COMPLETE ACTIONS NECESSARY TO PLACE THE 6.9KV BREAKER IN THE RACKED OUT (DISCONNECT POSITION) AND LOCKED USING THE APPROPRIATE PROCEDURE AND FOLLOWING ALL SAFETY RULES AND CAUTIONS. YOU ARE TO INFORM ME WHEN YOU HAVE COMPLETED THIS TASK.

BEFORE YOU START I WILL DESCRIBE THE INITIAL CONDITIONS, INITIATING CUES AND ANSWER ANY QUESTIONS YOU MIGHT HAVE.

UTILIZE ALL TOOLS AND REFERENCE MATERIALS APPROPRIATE TO THE TASK.

MAKE ANY CALLS, REPORTS OR REQUESTS TO THE JPM EVALUATOR

Conditions:

THE PLANT IS AT 80% POWER. #32 HEATER DRAIN PUMP HAS FAILED AND AN OPERATING ORDER HAS BEEN ISSUED TO PREPARE THE PUMP FOR MAINTENANCE.

Initiating Cue:

YOU ARE DIRECTED TO RACK OUT AND LOCK THE 6.9KV BREAKER FOR #32 HEATER DRAIN PUMP.

(JPM EVALUATOR)

Standard:

6.9KV BREAKER IS PLACED IN THE DISCONNECT POSITION WHILE ADHERING TO THE FOLLOWING SAFETY PRECAUTIONS:

1. DC CONTROL POWER IS REMOVED
2. BREAKER IS VERIFIED OPEN
3. BREAKER IS LOCKED IN THE DISCONNECT POSITION

Tools and Equipment:

1. 6.9KV BREAKER LEVERING CRANK
2. HOLDOFF LOCK AND KEY

Handouts:

SOP-EL-5, REV. 12

Notes for Examiner:

IF THIS JPM IS TO BE SIMULATED, AFTER THE CANDIDATE HAS SIMULATED EACH STEP'S ACTION(S), TELL HIM/HER THAT THE STANDARDS HAVE BEEN SATISFIED, UNLESS OTHERWISE NOTED WITH AN ASTERISK (*) IN THE STEP'S "NOTES FOR EXAMINER".

CONDITIONS AND INITIATING CUE

Conditions: THE PLANT IS AT 80% POWER. #32 HEATER DRAIN PUMP HAS FAILED AND AN OPERATING ORDER HAS BEEN ISSUED TO PREPARE THE PUMP FOR MAINTENANCE.

Initiating Cue: YOU ARE DIRECTED TO RACK OUT AND LOCK THE 6.9KV BREAKER FOR #32 HEATER DRAIN PUMP.

JOB PERFORMANCE MEASURE

Step 6(C): MOVE THE BREAKER TO THE DISCONNECT POSITION.

Standards: CANDIDATE ROTATES THE LEVERING CRANK COUNTER CLOCKWISE WHILE HOLDING IT IN UNTIL THE BREAKER REACHES THE DISCONNECT POSITION.

Notes for Examiner:

Comments:

SAT/UNSAT _____
Initials

Step 7(C): LOCK THE BREAKER IN THE DISCONNECT POSITION.

Standards: CANDIDATE ATTACHES THE LOCK TO THE LEVERING SHAFT.

Notes for Examiner:

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

TITLE: FAILURE OF/RECOVER FROM CONTROLLING S/G FEED FLOW
CHANNEL OR S/G #31

NUMBER: 05900210

REV.: 2

DATE: 10/28/92

TIME VALIDATION: _____

OPERATIONS REVIEW _____

TRAINING APPROVAL _____

JOB PERFORMANCE MEASURE

Title: FAILURE OF/RECOVER FROM CONTROLLING
S/G FEED FLOW CHANNEL FOR S/G #31

Number: 05900210

Student Name: _____

Date: _____

Examiner: _____

Application: SRO/RO

Results: SAT/UNSAT

Recommended Location: SIMULATOR

Recommended Method: PERFORM

Actual Location: SIMULATOR/CONTROL ROOM/IN PLANT

Actual Method: PERFORM/SIMULATE/DISCUSS

Examiner Comments:

Related Task Number

0590400301

Related Ability Number

059A5.55

References:

- ONOP-RPC-1, REV. 9

Estimated Completion Time: 5 MINUTES

SIMULATOR SETUP

JPM Number: 05900210

- Initial Conditions:*
- IC-12, 100% STEADY-STATE POWER
 - ENSURE FEED FLOW TRANSMITTER FT-418B IS THE CONTROLLING CHANNEL.
 - FAIL FT-418B LOW (CRW12B)
 - MAL CFW 12B
 - VALUE = 0
 - RAMP = 0
 - DELAY = 30 S
 - ACTIVATE
 - LEAVE IN FREEZE

JOB PERFORMANCE MEASURE

JPM Initiation: GIVE THE CANDIDATE THE CONDITIONS AND INITIATING CUE SHEET.

Directions to Candidate: WHEN I TELL YOU TO BEGIN, YOU ARE TO IDENTIFY THE MALFUNCTIONED INSTRUMENT CONTROL CHANNEL AND TO TAKE APPROPRIATE ACTIONS PER THE APPLICABLE ONOP. YOU ARE TO INFORM ME WHEN YOU HAVE COMPLETED THIS TASK.

BEFORE YOU START I WILL DESCRIBE THE INITIAL CONDITIONS, INITIATING CUES AND WILL ANSWER ANY QUESTIONS YOU MIGHT HAVE.

UTILIZE ALL TOOLS AND REFERENCE MATERIALS APPROPRIATE TO THE TASK.

RESPOND TO ALL ANNUNCIATORS AND REQUIRED CALLS/REPORTS AS IF YOU WERE THE ONLY OPERATOR IN THE CONTROL ROOM.

Conditions: STEADY STATE, 100% POWER, NO TECH. SPEC. ACTION STATEMENTS IN EFFECT AND NO EQUIPMENT OUT OF SERVICE.

Initiating Cue: YOU ARE DIRECTED TO TAKE APPROPRIATE ACTIONS PER THE APPLICABLE ONOP FOR AN INSTRUMENT CONTROL CHANNEL FAILURE.

(JPM EVALUATOR)

Standard: CANDIDATE IDENTIFIED AND COMPLETED THE ACTIONS IN ONOP-RPC-1, PART 'P', FOR A "FEEDWATER FLOW CHANNEL FAILED LOW".

Tools and Equipment: NONE

Handouts: NONE

Note for Examiner: IF THIS JPM IS TO BE SIMULATED, AFTER THE CANDIDATE HAS SIMULATED EACH STEP'S ACTION(S), TELL HIM/HER THAT THE STANDARDS HAVE BEEN SATISFIED, UNLESS OTHERWISE NOTED WITH AN ASTERISK (*) IN THE STEP'S "NOTES FOR EXAMINER".

CONDITIONS AND INITIATING CUE

Conditions: STEADY STATE, 100% POWER, NO TECH. SPEC. ACTION STATEMENTS IN EFFECT AND NO EQUIPMENT OUT OF SERVICE.

Initiating Cue: YOU ARE DIRECTED TO TAKE APPROPRIATE ACTIONS PER THE APPLICABLE ONOP FOR AN INSTRUMENT CONTROL CHANNEL.

JOB PERFORMANCE MEASURE

Step 1: OBTAIN AND REVIEW ONOP-RPC-1

Standards: CANDIDATE REVIEWS ONOP-RPC-1, SECTION P - FEEDWATER FLOW CHANNEL FAILED LOW IN ONOP-RPC-1.

Notes to Examiner: CANDIDATE MAY ELECT TO TRANSFER CONTROL TO THE "A" CHANNEL FIRST. THIS ACTION IS ACCEPTABLE.

Comments:

SAT/UNSAT _____
Initials

Step 2(C): TRANSFER CONTROL TO OTHER CHANNEL.

Standards: CANDIDATE SELECTED FEEDWATER FLOW CHANNEL FT-418A FOR S/G #31 LEVEL CONTROL.

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 3(C): TRIP THE APPROPRIATE BISTABLE(S)

Standards: CANDIDATE TRIPPED BISTABLE SF>FWF FOR FI-418B, LOOP 1B (PROTECTION RACK - WHITE, A-9)

Notes to Examiner:

Comments:

SAT/UNSAT _____
Initials

Step 4: TAKE REQUIRED ACTION TO REPAIR THE FAULTED CHANNEL AND RETURN IT TO SERVICE.

Standards: CANDIDATE NOTIFIED SHIFT SUPERVISOR AND I & C DEPT. TO FIX THE FAILED FEED FLOW CHANNEL 418B.

Notes to Examiner:

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

TITLE: TERMINATE ECCS FLOW W/VERIFICATION

NUMBER: 00600110

REV.: 2

DATE: 10/21/92

TIME VALIDATION: _____

OPERATIONS REVIEW _____

TRAINING APPROVAL _____

JOB PERFORMANCE MEASURE

Title: TERMINATE ECCS FLOW W/VERIFICATION

Number: 00600110

Student Name: _____

Date: _____

Examiner: _____

Application: SRO/RO

Results: SAT/UNSAT

Recommended Location: SIMULATOR

Recommended Method: PERFORM

Actual Location: SIMULATOR/CONTROL ROOM

Actual Method: PERFORMED/SIMULATED/DISCUSSED

Examiner Comments:

Related Task Number

0005100201

Related Ability Number

006A5.04

References:

- EOP ES-1.1, REV. 7
- ERG-HP BACKGROUND, ES-1.1
- ERG-LP BACKGROUND, ES-1.1
- CONTROL BOARD DRAWINGS

Estimated Completion Time: 10 MINUTES.

SIMULATOR SETUP

JPM Number: 00600110

- Initial Conditions:*
- 1) INITIALIZE AT 100% POWER IC-12
 - 2) TRIP LOW PRESSURE SI BISTABLES IN THE RED AND WHITE CHANNELS INITIATING AN SI
 - 3) PERFORM ALL ACTIONS IN E-0
 - 4) VERIFY SI TERMINATION CRITERIA ARE SATISFIED

JOB PERFORMANCE MEASURE

JPM Initiation: GIVE THE CANDIDATE THE CONDITIONS AND INITIATING CUE SHEET.

*Directions
to Candidate:*

WHEN I TELL YOU TO BEGIN, YOU ARE TO COMPLETE ACTIONS NECESSARY TO TERMINATE SI IN ACCORDANCE WITH ES-1.1 SI TERMINATION. YOU ARE TO INFORM ME WHEN YOU HAVE COMPLETED THIS TASK.

BEFORE YOU START I WILL DESCRIBE THE INITIAL CONDITIONS, INITIATING CUES AND WILL ANSWER ANY QUESTIONS YOU MIGHT HAVE.

UTILIZE ALL TOOLS AND REFERENCE MATERIALS APPROPRIATE TO THE TASK.

RESPOND TO ALL ANNUNCIATORS AND REQUIRED CALLS/REPORTS AS IF YOU WERE THE ONLY OPERATOR IN THE CONTROL ROOM.

Conditions:

REACTOR TRIPPED AND SI ACTUATED. THE OPERATORS PERFORMED IMMEDIATE ACTION VERIFICATION IN E-0 AND DETERMINED THAT AN INADVERTENT SI HAS ACTUATED.

Initiating Cue:

YOU ARE DIRECTED TO TERMINATE SI IN ACCORDANCE WITH ES-1.1. SI FLOW IS NOT REQUIRED.

(JPM EVALUATOR)

Standard:

- 1) SI TERMINATED ACCORDING TO ES-1.1.
- 2) SI FLOW VERIFIED NOT REQUIRED

Tools and Equipment: NONE

Handouts: NONE

CONDITIONS AND INITIATING CUE

Conditions:

REACTOR TRIPPED AND SI ACTUATED. THE OPERATORS PERFORMED IMMEDIATE ACTION VERIFICATION IN E-0 AND DETERMINED THAT AN INADVERTENT SI HAS ACTUATED.

Initiating Cue:

YOU ARE DIRECTED TO TERMINATE SI IN ACCORDANCE WITH ES-1.1. SI FLOW IS NOT REQUIRED.

JOB PERFORMANCE MEASURE

Step 1: OBTAIN AND REVIEW ES-1.1.

Standards: CANDIDATE REVIEWS ES-1.1.

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 2(C): ALIGN VALVE CONTROL SWITCHES FOR CONTAINMENT FAN COOLER UNITS.

Standards: CANDIDATE ALIGNED CONTROL SWITCHES.

- 1) CONTAINMENT FAN COOLER UNIT FLOW DAMPER A, B & C CONTROL SWITCHES SET TO CLOSED AND D TO OPEN
- 2) SERV WTR VLVS 1104 AND 1105 TO OPEN

Notes to Examiner: NO INDICATION WILL CHANGE.

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 3(C): POSITION BIT RECIRC VALVES TO CLOSED.

Standards: CANDIDATE SELECTED CLOSE POSITION FOR:

- BIT RECIRC 1851A AND 1851B

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 4(C): VERIFY CONTAINMENT VENTILATION SWITCHES ARE CLOSED.

Standards: CANDIDATE VERIFIES THE FOLLOWING CONTROL SWITCHES ARE CLOSED:

- CONT BLDG PURGE VALVES V1171 & 1173
- CONT BLDG PURGE VALVES V1170 & 1172
- CONT BLDG PRESS RELIEF VALVES, OUTSIDE
- CONT BLDG PRESS RELIEF VALVES, INSIDE

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 5(C): POSITION SW TO DIESEL GENERATORS SWITCHES TO OPEN.

Standards: CANDIDATE DIRECTED (OR ASKED SS/SRO TO DIRECT) NPO TO SET SWITCHES FOR SW TO DIESEL GENERATORS TO OPEN FOR:

SWN-FCV-1176

AND

SWN-FCV-1176A

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 6(C): SECURE VC SUMP PUMP(S).

Standards: CANDIDATE DIRECTED (OR ASKED SS/SRO TO DIRECT) THE NPO TO SECURE VC SUMP PUMP ON WASTE DISPOSAL AND BORON RECYCLE PANEL.

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 7: RESET SI.

Standards: CANDIDATE LIFTED COVERS AND DEPRESSED THE SI RESET TRAIN A AND
RESET TRAIN B PUSHBUTTONS,

AND

VERIFIED SI ACTUATED STATUS LIGHT NOT LIT AND THE TRAIN A AND
TRAIN B AUTOBLOCK LITES ARE LIT.

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 8(C): RESET CONTAINMENT ISOLATION PHASE "A" AND PHASE "B".

Standards: CANDIDATE RESET CONTAINMENT ISOLATION PHASE "A" AND PHASE "B".

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 9(C): STOP SI PUMPS AND PLACE IN AUTO.

Standards: CANDIDATE SECURED SI PUMPS BY STOPPING THE SI PUMPS AND PLACING THEM IN AUTO:

- HIGH-HEAD SI PUMPS 31, 32, 33
- RHR PUMPS 31, 32

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 10(C): CHECKS IF ANY CHARGING PUMP IS RUNNING.

- Standards:*
- 1) CANDIDATE DETERMINES NO CHARGING PUMPS ARE RUNNING.
 - 2) VERIFIES CCW FLOW TO RCP'S.
 - 3) VERIFIES CHARGING/SEAL INJECTION FLOWPATH AVAILABLE.
 - 4) ENSURES ADEQUATE POWER AVAILABLE (150KW/16 AMPS)
 - 5) STARTS A CHARGING PUMP & ESTABLISHES FLOW AS NECESSARY
 - 6) VERIFIES LCV-112B & LCV-112C ENERGIZED

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 11(C): OPENS CHG LINE FLOW CONTROL VALVE.

Standards: CANDIDATE VERIFIES HCV-142 STATUS BY CHECKING:

- HCV-142 POTENTIOMETER SET TO THE OPEN POSITION
- 100% OPEN VALVE DEMAND INDICATED ON CONTROLLER

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 12(C): OPEN CHARGING HEADER ISOLATION.

Standards: CANDIDATE VERIFIED OPENED CHARGING LINE ISOL VALVE NO. 204B BY OBSERVING OPEN INDICATING LIGHT LIT.

Notes to Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 13(C): VERIFIES SI FLOW IS NOT REQUIRED.

Standards: CANDIDATE MONITORED:

- SUBCOOLING MARGIN IS 20°F OR MORE.
(FOR ADVERSE CONTAINMENT SEE ATTACHMENT 2)
- PRESSURIZER LEVEL INDICATES GREATER THAN 4%.
(24% FOR ADVERSE CONTAINMENT)

Notes to Examiner: INFORM THE CANDIDATE THAT THIS JPM IS CONCLUDED.

Comments:

SAT/UNSAT _____

Initials

JOB PERFORMANCE MEASURE

TITLE: TRANSFER TO EXTERNAL COLD LEG RECIRCULATION (ALTERNATE PATH)

NUMBER: 00000610

REV.: 0

DATE: 10/7/92

TIME VALIDATION: _____

OPERATIONS REVIEW _____

TRAINING APPROVAL _____

JOB PERFORMANCE MEASURE

Title: TRANSFER TO EXTERNAL COLD LEG
RECIRCULATION (ALTERNATE PATH)

Number: 00000610

Student Name: _____

Date: _____

Examiner: _____

Application: SRO/RO

Results: SAT/UNSAT

Recommended Location: SIMULATOR

Recommended Method: PERFORM

Actual Location: SIMULATOR/CONTROL ROOM

Actual Method: PERFORMED/SIMULATED/DISCUSSED

Examiner Comments:

Related Task Number

0005100401

0005100701

Related Ability Number

005A5.07

006A5.08

008A5.05

026A5.05

076A5.05

References:

- ES-1.3, REV. 7

Estimated Completion Time: 20 MINUTES

SIMULATOR SETUP

JPM Number: 00000610

Initial Conditions: INITIALIZE IN IC-12 (100%, EQUIL. XE, EOL)
TAG OUT INTERNAL RECIRCULATION PUMP 31
INSERT MALFUNCTION CNS3B (TRIP OF RECIRCULATION PUMP #32)
INITIATE A DBA LOCA (COLD LEG AT 100%) MALF RCS1A
TRIP ALL RCPS

ENERGIZE THE FOLLOWING VALVES BY SETTING ASSOCIATED LOAs TO F (FALSE):

1. 743 - RHR7
2. 744 - RHR4
3. 842 - SIS18
4. 843 - SIS19
5. 882 - RHR5
6. 1810 - SIS31
7. 1870 - RHR8
8. 883 - RHR6

SET THE FOLLOWING LOAs:

1. SWS54=0 TO CLOSE SWN-FCV-1111
2. SWS55=0 TO CLOSE SWN-FCV-1112
3. SWS96=T TO OPEN SWN-FCVs-1176/1176A

PERFORM STEPS 3-12 OF ES-1.3

TYPE: SET ACNMPIT = 3E6

TYPE: SET ASISRWST = .75E6

VERIFY RWST LEVEL LESS THEN 9.2 FT AND VC LEVEL GREATER THEN 48'4"
FREEZE SIMULATOR

JOB PERFORMANCE MEASURE

JPM Initiation:

GIVE THE CANDIDATE THE CONDITIONS AND INITIATING CUE SHEET.

*Directions
to Candidate:*

WHEN I TELL YOU TO BEGIN, YOU ARE TO COMPLETE ACTIONS NECESSARY TO TRANSFER TO COLD LEG RECIRCULATION.

BEFORE YOU START I WILL DESCRIBE THE INITIAL CONDITIONS, INITIATING CUES AND WILL ANSWER ANY QUESTIONS YOU MIGHT HAVE.

YOU ARE TO UTILIZE ALL TOOLS AND REFERENCE MATERIALS APPROPRIATE TO THE TASK.

YOU ARE TO RESPOND TO ALL ANNUNCIATORS AND REQUIRED CALLS/REPORTS AS IF YOU WERE THE ONLY OPERATOR IN THE CONTROL ROOM, MAKING ANY CALLS, REPORTS OR REQUESTS TO THE JPM EVALUATOR.

TO COMPLETE THIS JPM SUCCESSFULLY YOU MUST PERFORM EACH CRITICAL ELEMENT CORRECTLY.

Conditions:

TRANSFER TO COLD LEG RECIRCULATION IS REQUIRED. PROCEDURE ES-1.3 IS IN EFFECT. STEP 1 THROUGH 12 ACTIONS HAVE BEEN COMPLETED AND THE EXPECTED RESPONSES OBTAINED. RECIRCULATION PUMP #31 IS OUT OF SERVICE.

Initiating Cue:

YOU ARE DIRECTED TO GO TO COLD LEG RECIRCULATION USING ES-1.3. REVIEW ALL CAUTIONS AND NOTES PRIOR TO STEP 1 BEFORE CONTINUING WITH PROCEDURE AT STEP 13.

(JPM EVALUATOR)

Standard:

RECIRCULATION SWITCHES 1, 6, 7 AND 8 ARE ON, SWITCHES 2, 3 AND 4 ARE OFF, BOTH RHR HEAT EXCHANGERS ARE AVAILABLE, AND RECIRCULATION FLOW ADJUSTED AS NECESSARY.

Tools and Equipment:

NONE

Handouts:

ES-1.3, REV. 7

Notes for Examiner:

IF THIS JPM IS TO BE SIMULATED, AFTER THE CANDIDATE HAS SIMULATED EACH STEP'S ACTION(S), TELL HIM/HER THAT THE STANDARDS HAVE BEEN SATISFIED, UNLESS OTHERWISE NOTED WITH AN ASTERISK (*) IN THE STEP'S "NOTES FOR EXAMINER".

CONDITIONS AND INITIATING CUE

Conditions:

TRANSFER TO COLD LEG RECIRCULATION IS REQUIRED. PROCEDURE ES-1.3 IS IN EFFECT. STEP 1 THROUGH 12 ACTIONS HAVE BEEN COMPLETED AND THE EXPECTED RESPONSES OBTAINED. RECIRCULATION PUMP #31 IS OUT OF SERVICE.

Initiating Cue:

YOU ARE DIRECTED TO GO TO COLD LEG RECIRCULATION USING ES-1.3. REVIEW ALL CAUTIONS AND NOTES PRIOR TO STEP 1 BEFORE CONTINUING WITH PROCEDURE AT STEP 13.

(JPM EVALUATOR)

JOB PERFORMANCE MEASURE

Step 1: REVIEW ES-1.3

Standards: CANDIDATE REVIEWED ES-1.3, REV. 7 AND LEFT OPEN TO STEP 13.

Notes for Examiner:

Comments:

SAT/UNSAT _____
Initials

Step 2(C): PLACE RECIRCULATION SWITCH 1 TO ON POSITION.

Standards: CANDIDATE PLACED RECIRCULATION SWITCH 1 TO ON POSITION, PLACED HHSI PUMP 32 IN PULLOUT, VERIFIED SWITCH 1 FUNCTION COMPLETE LIGHT IS LIT.

- A. VERIFY HHSI PUMP 32 - TRIPPED
 - B. VERIFY HHSI PUMP 32 SUCTION VALVES 887A, 887B - CLOSED
 - C. PLACE HHSI PUMP 32 IN PULLOUT
 - D. VERIFY CONTAINMENT SPRAY PUMP STATUS:
 - SPRAY PUMP 31 - RUNNING
- AND
- SPRAY PUMP 32 - TRIPPED
 - E. VERIFY SPRAY PUMP 32 DISCHARGE VALVE 866B - CLOSED
 - F. VERIFY SWITCH 1 FUNCTION COMPLETE LIGHT - LIT

Cue: * AFTER CANDIDATE SIMULATED TURNING SWITCH #1 TO ON, TELL HIM/HER THAT IT'S "FUNCTION COMPLETE LIGHT" IS LIT

Notes for Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 3(C): PLACE RECIRCULATION SWITCH 3 TO ON POSITION.

Standards: CANDIDATE PLACED RECIRCULATION SWITCH 3 TO ON POSITION, VERIFY SWITCH 3 FUNCTION COMPLETE LIGHT IS LIT

- A. VERIFY RHR PUMPS 31 AND 32 - TRIPPED
- B. VERIFY RHR SUCTION VALVE 882 AND DISCHARGE VALVE 744 - CLOSED
- C. VERIFY SWITCH 3 FUNCTION COMPLETE LIGHT - LIT

Cue: * AFTER CANDIDATE SIMULATED TURNING SWITCH #3 ON TELL HIM/HER THAT ITS "FUNCTION COMPLETE LIGHT" CAME ON.

Notes for Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 4(C): VERIFY PUMP ALIGNMENT

Standards: CANDIDATE VERIFIES PUMP ALIGNMENT:

- A. VERIFY AT LEAST ONE NON-ESSENTIAL SERVICE WATER PUMP RUNNING
- B. VERIFY AT LEAST TWO CCW PUMPS RUNNING
- C. VERIFY 822A & 822B OPEN

Cue: * AFTER CANDIDATE LOCATES EACH PUMP SWITCH, TELL HIM/HER THAT TWO OF EACH OF THE PUMPS IS RUNNING.

Notes for Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 5(C): MANUALLY ALIGN ONE RECIRC PUMP

Standards: CANDIDATE:

- A. OPENS RECIRCULATION PUMP HEADER DISCHARGE VALVES 1802A AND 1802B
- B. VERIFY ADEQUATE POWER TO START A PUMP
- C. STARTS #32 RECIRC PUMP
- D. IDENTIFIES NEITHER PUMP RUNNING AND GOES TO STEP 29.

Cue: * AFTER CANDIDATE SIMULATED TURNING SWITCH TO START RECIRC PUMP, TELL HIM/HER THAT THE PUMP STARTED AND TRIPPED.

Notes for Examiner:

Comments:

SAT/UNSAT _____
Initials

Step 6(C): ALIGN RHR PUMPS FOR RECIRCULATION FLOW.

Standards: CANDIDATE:

- A. PLACE RECIRC SWITCH 3 TO OFF.
- B. VERIFIES FOLLOWING VALVES:
 - 744 OPEN
 - 882 CLOSED
 - 883 CLOSED
- C. OPENS CTMT. SUMP TO RHR PUMPS SUCTION VALVES IN ORDER:
 - 1) 885B
 - 2) 885A
- D. CLOSE HCV 638 AND 640
- E. START ONE RHR PUMP
- F. OPEN HCV 638 AND 640 TO ESTABLISH RECIRC FLOW AT ≤ 4000 GPM (< 3000 GPM PER HX)
- G. CLOSE VALVES 1802A AND 1802B

Notes for Examiner:

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 7(C): CHECK IF LOW-HEAD RECIRCULATION ADEQUATE

Standards: CANDIDATE CHECKED IF LOW-HEAD RECIRCULATION WAS ADEQUATE BY CHECKING AT LEAST 3 OF 4 FLOWS >0 FLOW AND THE SUM OF THE 2 LOWEST (NON-ZERO) FLOWS AT LEAST 600 GPM (460 GPM):

Cue: * INFORM CANDIDATE THAT ALL (4) FLOW INDICATORS SHOW ABOUT 800 GPM EACH.

Notes for Examiner: NONE

Comments:

SAT/UNSAT _____

Initials

JOB PERFORMANCE MEASURE

Step 8(C): PLACE RECIRCULATION SWITCH 6 TO ON POSITION

Standards: CANDIDATE PLACED RECIRCULATION SWITCH 6 TO ON POSITION, VERIFIED SWITCH 6 FUNCTION LIGHT WAS LIT:

- A. VERIFY ALL RUNNING HHSI PUMPS - TRIPPED
- B. VERIFY SWITCH 6 FUNCTION COMPLETE LIGHT - LIT

Cue: * AFTER SWITCH IS ON, INFORM CANDIDATE FUNCTION COMPLETE LIGHT IS LIT.

Notes for Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 9: START ADDITIONAL RECIRCULATION EQUIPMENT.

Standards: CANDIDATE:

- A. STARTS A SECOND NON-ESSENTIAL SERVICE WATER PUMP
- B. STARTS SECOND RHR PUMP

Notes for Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

JOB PERFORMANCE MEASURE

Step 10(C): PLACE RECIRCULATION SWITCH 8 TO ON POSITION

Standards: CANDIDATE PLACED RECIRCULATION SWITCH 8 TO ON POSITION, VERIFIED SWITCH 8 FUNCTION COMPLETE LIGHT WAS LIT:

- A. VERIFY CONTAINMENT SPRAY PUMP TEST LINE VALVE 1813 - CLOSED
- B. VERIFY RWST TO HHSI PUMPS VALVE 1810 - CLOSED
- C. VERIFY SWITCH 8 FUNCTION COMPLETE LIGHT-LIT

Cue: * AFTER SWITCH IS ON, INFORM CANDIDATE FUNCTION COMPLETE LITE IS LIT.

Notes for Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

Step 11: CLOSE THE FOLLOWING TEST LINE TO RWST VALVES

Standards: CANDIDATE CLOSED THE FOLLOWING VALVES:

- HHSI VALVES 842, 843

Cue: * INFORM CANDIDATE THAT THE VALVES ARE CLOSED AFTER THE CORRECT ACTION TO CLOSE THE VALVES IS TAKEN.

Notes for Examiner: NONE

Comments:

SAT/UNSAT _____
Initials

SIMULATOR EVALUATION SCENARIO

Scenario # 20

Time Req'd: 60 min.

Revision: 0

ATWS/Faulted/Ruptured SG

I. SESSION GOALS

- A. Evaluate shift members ability to comply with IP3 procedures and operating philosophy.
- B. Evaluate shifts ability to mitigate the event.
- C. Evaluate shifts ability to protect the public.

II. ACTIVITY NARRATIVE

- A. The shift assumes the watch in IC-12 : EOL, equilibrium Xenon, RCS boron at 225 ppm.

System orders a 10% power reduction and VAR adjustment while testing new transmission feeders.

During the load reduction the automatic voltage regulator begins an oscillation that cannot be controlled. Subsequently, the base adjuster fails resulting in a generator trip.

The reactor fails to trip. The operators respond to the ATWS event. During the ATWS, 33 ABFP fails to start. The operators start 32 AFWP to establish the required feedflow.

On the ensuing transient, two of the 31 SG safety valves fail and stick open. A ΔP SI occurs. If the operators transition to ES-0.1, they will have to return to E-0 to perform the immediate actions for a safety injection and diagnosis of a faulted SG. Following the SI a tube rupture occurs in the 31 SG.

The scenario is terminated following the RCS depressurization in ECA-3.1.

SIMULATOR EVALUATION SCENARIO
SES-20

B. Malfunctions/Overrides

<u>Description</u>	<u>Setup</u>
1. Initialize the simulator	IC-12
2. Fail automatic and manual reactor trips NPO trips the reactor after emergency boration established	a. MAL RPS2A b. T = 0 c. ACT d. MAL RPS2B e. T = 0 f. ACT
3. Failure of 33 ABFP to Auto Start	a. MAL CFW1C b. 0 c. ACT
4. Automatic voltage regulator failure	a. MAL GEN1 b. 24 c. R=200 d. C e. =SGENRM.LE.975 f. ACT
5. Exciter Failure	a. MAL GEN4 b. T=300 c. C d. =JMLGEN1.EQ.TRUE e. ACT
6. Fail 31 SG Safety Valves	a. MAL SGN4A b. LIFT PRESSURE=600 c. RESET PRESSURE=0 d. T=5 e. C f. =JMLGEN4.EQ.JTRUE g. ACT

SIMULATOR EVALUATION SCENARIO
SES-20

B. Malfunctions/Overrides (cont'd)

Description

Setup

6. Fail 31 SG Safety Valves (cont)

- a. MAL SGN4B
- b. LIFT PRESSURE = 600
- c. RESET PRESSURE = 0
- d. T = 5
- e. C
- f. = JMLGEN4.EQ.JTRUE
- g. ACT

7. SGTR in 31 SG Conditional on SI

- a. MAL SGN5A
- b. 25%
- c. R = 120
- d. T = 120
- e. C
- f. = JPPLAS1.EQ.JTRUE
- g. ACT

SIMULATOR EVALUATION SCENARIO
SES-20

C. Remote Functions

<u>Description</u>	<u>Setup</u>
1. FCV-1111/1112 SHUT	a. LOA SWS54 b. 0 c. ACT
2. 1176/1176A to OPEN	a. LOA SWS96 b. T c. ACT
3. Secure VC Sump Pumps	a. LOA CNM9 b. 2 c. ACT
	a. LOA CNM10 b. 2 c. ACT
4. PAB Exhaust Fan	a. LOA CNM7 b. TRUE c. ACT
5. BFP AC Oil Pump	a. LOA ATS7 b. 3 c. ACT
6. Secure DC Oil Pumps	a. LOA ATS9 b. 1 c. ACT

SIMULATOR EVALUATION SCENARIO
SES-20

<i>EVENT #/TIME</i>	<i>MALF/OVR</i>	<i>DESCRIPTION</i>
1. 0		System Operator orders power reduction.
2. 0	RPS2A/B	ATWS
3. 0	CFW1C	Failure of 33 ABFP
4. \leq 975 MWe	MAL GEN1	Auto Voltage Regulator Failure
5. Volts Reg Failure + 120	MAL GEN4	Complete exciter failure/generator trip
6. SI + 18	OVR CNM8D	Containment Fan Cooler 31 fails to start
7. Gen Trip + 60	MAL SGN4A MAL SGN4B	31 SG Safeties stick open
8. SI + 120	MAL SGN5A	Steam Generator Tube Rupture

PROCEDURES USED DURING SCENARIO

1.	OD-06	Shift and Relief Turnover
2.	OD-13	Communication
3.	SOP-EL-15	Operation of Non-Safeguards Equip During EOPs
4.	ARPs	Various Alarm Response Procedures
5.	ONOP-RPC-1	Instrumentation Failures
6.	Curve EL-1	Generator Capability Curve
7.	POP-2.1	Operation at Power
8.	POP-3.1	Plant Shutdown from Full Power Operation to Zero Power Operation.
9.	ONOP-TG-1	Excessive Load Increase or Decrease

The following EOP transition path will be completed :

1.	E-0	Reactor Trip or Safety Injection
2.	FR-S.1	Response to Nuclear Power Generation/ATWS
3.	E-0	Reactor Trip or Safety Injection
4.	E-2	Faulted SG Isolation
5.	E-1	Loss of Primary or Secondary Coolant
6.	E-3	Steam Generator Tube Rupture
7.	ECA-3.1	SGTR with Loss of Reactor Coolant - Subcooled Recovery

SIMULATOR EVALUATION SCENARIO
SES-20

PLANT STATUS

Reactor Power : 100%
Tavg : 567°F
Control Rod Bank and Step : D @ 224
Pressurizer Pressure : 2235#
Pressurizer Level : 46%
Containment Pressure : 0.0#
RWST Level : 37 ft
Containment Temperature : 80°F
CST Level : 29 ft
RCS Boron Concentration : 230 ppm

Plant Evolution in Progress : Testing of transmission lines in progress.
System operator has been ordering
frequent load changes over the last
week.

Major Equipment OOS : NONE

Rad Release in Progress : NONE

SIMULATOR EVALUATION SCENARIO
SES-20

EVENT NAME: Shift Turnover

SES #: 20

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
0		100%, Equilib Xenon, 225 ppm boron SO Transmission Line Testing in progress No Equipment OOS NO Rad release I/P	OD-6			

SIMULATOR EVALUATION SCENARIO
SES-20

SES #: 20

EVENT NAME: Adjust VARS

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
0	SRO	Determines VAR adjustment w/in the capability of generator	Generator Capability Curve EL-1			
	RO	Adjust controls to obtain 200 VARS				
	SO	Orders load reduction to 900 MWe	POP-2.1 POP-3.1			
	SRO	Orders load reduction				
	RO	Lowers governor and base adjuster to reduce load	POP-2.1			

SIMULATOR EVALUATION SCENARIO
SES-20

SES #: 20

EVENT NAME: Voltage Regulator Failure

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	RO	Recognize voltage regulator malfunction				
	SRO	Order manual control	ONOP-TG-1			
	CREW	Recognize Generator Trip/Reactor Trip				

SIMULATOR EVALUATION SCENARIO
SES-20

EVENT NAME: ATWS

SES #: 20

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Recognize Reactor failure to trip	E-0			
	CREW	Respond to ATWS	FR-S.1			
	CREW	Recognize 33 ABFP failure	FR-S.1			
		CRITICAL * (FR-S.1 -- B) - Start AFW pumps and establish <u>>680 gpm</u> before IOAs of FR-S.1 are completed.				

SIMULATOR EVALUATION SCENARIO
SES-20

SES #: 20

EVENT NAME: ATWS

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Manually insert control rods and establish emergency boration	FR-S.1			
		<p>CRITICAL * (FR-S.1 -- C) - Insert negative reactivity into core by at least one of the following methods:</p> <ul style="list-style-type: none"> * De-energize the CRDMs * Manually insert RCCAs * Establish Emergency Boration 				
	CREW	Transitions to E-0	FR-S.1			

SIMULATOR EVALUATION SCENARIO
SES-20

SES #: 20

EVENT NAME: Faulted SG

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	SRO	Determines that transition to E-2 required	E-0			
	CREW	Initiate actions to isolate faulted SG	E-2			
		CRITICAL * (E-2 -- A) Isolate the faulted SG before transition out of E-2.				
	CREW	Identify ruptured SG and transition to E-3 or transition to E-1	E-2			

SIMULATOR EVALUATION SCENARIO
SES-20

SES #: 20

EVENT NAME: SGTR

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	If in E-1, identify ruptured SG and transition to E-3	E-1			
	CREW	Initiate actions to isolate ruptured SG	E-3			
	CREW	Determine 31 SG ruptured/faulted SG	E-3			
	CREW	Determine transition to ECA-3.1 is required when SG pressure < 250 psig	E-3			
	CREW	Perform actions to cooldown the RCS or determine that cooldown limits already exceeded	ECA-3.1			
	CREW	Perform actions to reduce RCS pressure and refill the PZR	ECA-3.1			

SIMULATOR EVALUATION SCENARIO
SES-20

SES #: 20

EVENT NAME: Classification

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
------	----------	-------------------	-----------------------	-------	---------	----------

	SS	Classifies and declares this event as an Alert	E-Plan (IC/EAL) I.B.2 or II.B			
--	----	--	-------------------------------	--	--	--

SIMULATOR EVALUATION SCENARIO
SES-20

SES #: 20

EVENT NAME: Event Termination

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
		Terminate the scenario following RCS depressurization and PZR refill to 18% as per ECA-3.1				

SIMULATOR EVALUATION SCENARIO
SES-20

QUANTITATIVE ATTRIBUTES

1.	Total Malfunctions	: 6
2.	Malfunctions during EOPs	: 4
3.	Abnormal Events	: 2
4.	Major Transients	: 1
5.	ARPs/ONOPs used	: >2
6.	EOPs used	: 1
7.	ECAs/FRPs used	: 0
8.	Simulator run time	: approximately 60 minutes
9.	EOP run time	: approximately 40 minutes
10.	Crew Critical Tasks	: 3

SIMULATOR EXAMINATION SUMMARY SHEET

EVAL R. Libenstein
C Embrey
9/11/93

Crew Members

Name	Position
ED DIAMOND	SS
ED ARMANDO	SRO
Bob Christman	RO

Overall crew rating on the simulator examination:

SAT or UNSAT

Comments:

locally All critical tasks were accomplished. There was a problem diagnosing the SGT R but was finally identified. Communications were not 3 point generally however this did not cause problems with the scenario.

DIAGNOSIS OF EVENTS AND CONDITIONS BASED ON SIGNALS OR READINGS

Did the crew--

(a) recognize off-normal trends and status?

3

2

1

Recognized status and trends quickly and accurately.

Recognized the status and trends at the time of, but not before, exceeding established limits.

Did not recognize adverse status and trends, even after alarms and annunciators sounded.

(b) use information and reference material (prints, books, charts, emergency plan implementation procedures) to aid in diagnosing and classifying events and conditions?

3

2

1

Made accurate diagnosis by using information and reference material correctly and in a timely manner.

Committed minor errors in using or interpreting information and reference material.

Failed to use, or misused, or misinterpreted information or reference material that resulted in improper diagnosis.

(c) correctly diagnose plant conditions based on those control room indications?

3

2

1

Performed timely and accurate diagnosis.

Committed minor errors or had minor difficulties in making diagnosis.

Made incorrect diagnosis, which resulted in incorrect manipulation of any safety control.

Grade for diagnosis of events and conditions based on signals and readings:

SAT or UNSAT

Comments: Had trouble with diagnosis, 31 5/6 tube rupture. Eventually ended up in E-3

UNDERSTANDING OF PLANT/SYSTEMS RESPONSE

Did the crew--

(a) locate and interpret control room indicators correctly and efficiently to ascertain and verify the status/operation of plant systems?

3

2

1

Each crew member located and interpreted instruments accurately and efficiently.

Some crew members committed minor errors in locating or interpreting instruments or displays. Some crew members required assistance.

The crew members made serious omissions, delays, or errors in interpreting safety related parameters.

(b) demonstrate an understanding of the manner in which the plant, systems, and components operate, including setpoints, interlocks, and automatic actions?

3

2

1

Crew members demonstrated thorough understanding of how systems and components operate.

The crew committed minor errors because of incomplete knowledge of the operation of the system or component's operation. Some crew members required assistance.

Inadequate knowledge of safety system or component operation resulted in serious mistakes or in plant degradation.

(c) demonstrate an understanding of how their actions (or inaction) affected systems and plant conditions?

3

2

1

All members understood the effect that actions or directives had on the plant and systems.

Actions or directives indicated minor inaccuracies in understanding by individuals, but the crew corrected the actions.

The crew appeared to act without knowledge of or with disregard for the effects on plant safety.

Grade on understanding of the response of plant and systems:

SAT or UNSAT

Comments: With steam flow continuing should have recognized SGT/R earlier

ADHERENCE/USE OF PROCEDURES

Did the crew--

(a) refer to the appropriate procedures in a timely manner?

3

2

1

The crew used procedures as required and knew what conditions were covered by procedures and where to find them.

The crew committed minor failures to refer to procedures without prompting, which affected the plant's status.

The crew failed to correctly refer to procedure(s) when required, resulting in faulty safety system operation.

(b) correctly implement procedures, including following procedural steps in correct sequence, abiding by cautions and limitations, selecting correct paths on decision blocks, and transitioning between procedures when required?

3

2

1

The crew followed the procedural steps accurately and in a timely manner, demonstrating a thorough understanding of the procedural purposes and bases.

The crew misapplied procedures in minor instances but made corrections in sufficient time to avoid adverse effects.

The crew failed to follow procedures correctly, which impeded recovery from events or caused unnecessary degradation in the safety of the plant.

(c) recognize EOP entry conditions and perform appropriate actions without the aid of references or other forms of assistance?

3

2

1

The crew recognized plant conditions and implemented EOPs consistently, accurately, and in a timely manner.

The crew had minor lapses or errors. Individual crew members needed assistance from others to implement procedures.

The crew failed to accurately recognize degraded plant condition(s) or execute efficient mitigating action(s), even with the use of aids.

Grade on adherence/use of procedures:

SAT or UNSAT

Comments: _____

CONTROL BOARD OPERATIONS

Did the crew--

(a) locate controls efficiently and accurately?

3

2

1

Individual operators located controls and indicators without hesitation.

One or more operators hesitated or had difficulty in locating controls.

The crew failed to locate control(s), which jeopardized system(s) important to safety.

(b) manipulate controls in an accurate and timely manner?

3

2

1

The crew manipulated plant controls smoothly and maintained parameters within specified bounds.

The crew demonstrated minor shortcomings in manipulating controls, but recovered from errors without causing problems.

The crew made mistakes manipulating control(s) that caused safety system transients and related problems.

(c) take manual control of automatic functions, when appropriate?

3

2

1

All operators took control and smoothly operated automatic systems manually, without assistance, thereby averting adverse events.

Some operators delayed or required prompting before overriding or operating automatic functions, but avoided plant transients where possible.

The crew failed to manually control automatic systems important to safety, even when ample time and indications existed.

Grade on control board operations:

SAT or UNSAT

Comments:

CREW OPERATIONS

Did the crew members--

(a) maintain a command role?

3

(2)

1

The crew took early remedial action when necessary .

In minor instances, the crew failed to take action within a reasonable period of time.

The crew failed to take timely action, which resulted in the deterioration of plant conditions.

(b) provide timely, well planned directions to each other that facilitated their performance and demonstrated appropriate concern for the safety of the plant, staff, and public?

3

(2)

1

Supervisor's directives allowed for safe and integrated performance by all crew members.

The supervisors, in minor instances, gave orders that were incorrect, trivial, or difficult to implement.

The supervisor's directive(s) inhibited safe crew performance. Crew members had to explain why order(s) could not or should not be followed.

(c) maintain control during the scenario with an appropriate amount of direction and guidance from the crew's supervisors?

(3)

2

1

Crew members stayed involved without creating a distraction, the crew members anticipated each other's needs, and the supervisors provided guidance when necessary.

Crew members had to solicit assistance from supervisors or each other, interfering with their ability to carry out critical action(s).

Crew members had to repeatedly request guidance. The crew failed to verify successful accomplishment of orders.

CREW OPERATIONS CONTINUED ON NEXT PAGE

COMMUNICATIONS

Did the crew--

(a) exchange complete and relevant information in a clear, accurate and attentive manner?

3

2

1

Crew members provided relevant and accurate information to each other.

Crew communications were generally complete and accurate, but sometimes needed prompting, or the crew failed to acknowledge the completion of evolutions, or to respond to information from others.

Crew members did not inform each other of abnormal indication(s) or action(s). Crew members were inattentive when important information was requested.

(b) keep key personnel outside the control room informed of plant status?

3

2

1

Crew members provided each other with accurate, relevant information throughout the scenarios.

Minor instances of needing to be prompted for information; some incomplete/inaccurate information provided.

Failed to provide needed information.

(c) ensure receipt of clear, easily understood communications from the crew and others?

3

2

1

Requests information/clarification when necessary; understands communications from others.

Minor instances of failing to require or acknowledge information from others.

Failed to request needed information, or inattentive when information is provided; serious misunderstandings among crew members.

Grade on communications:

SAT or UNSAT

Comments: The communication's needs improved although it did not cause problems.

SIMULATOR EVALUATION SCENARIO

Scenario # 25

Time Req'd: 50 min.

Revision: 0

LOCKED ROTOR/MANUAL SI REINITIATION

I. SESSION GOALS

- A. Evaluate shift members ability to comply with IP3 procedures and operating philosophy.
- B. Evaluate shifts ability to mitigate the event.
- C. Evaluate shifts ability to protect the public.

II. ACTIVITY NARRATIVE

- A. The shift assumes the watch in IC-12: EOL, equilibrium Xenon, RCS boron at 225 ppm.

The MTG 1st Stage Pressure transmitter (PT-412B) fails low requiring the operators to take actions per the ONOP.

After the operators take actions for the failed transmitter, RCP #34 vibration slowly begins increasing and the RCP eventually fails due to a locked rotor. This results in a plant trip and a Delta-P SI. The reactor fails to trip automatically and the crew must initiate a manual reactor trip. Auto actuation of SI fails and the crew must manually actuate SI.

During implementation of E-0, SW pumps #31 and #32 fail to start. The operators are able to start #32 to ensure adequate SW for plant cooling.

The operators proceed through the EOP network until SI Termination criteria is met and the transition to ES-1.1 is made. After the SI signal is reset and the SI pumps are placed in "AUTO", MSLB in the VC occurs requiring the crew to reinitiate SI and transitions to E-2.

The scenario is terminated when the crew isolates the faulted SG in accordance with E-2 and transitions to E-1.

SIMULATOR EVALUATION SCENARIO
SES-25

B. Malfunctions/Overrides

<u>Description</u>	<u>Setup</u>
1. Initialize the simulator	IC-12
2. Failure of SI to auto-actuate	a. MAL SIS1A b. ACT a. MAL SIS1B b. ACT
3. Failure of SWP #31 to start auto/manual (pump trips) following unit trip	a. MAL SWS1A b. 0 c. T = 0 d. C e. =LPPLP4.EQJTRUE f. ACT
4. Failure of SWP #32 to start in auto, manual start available	a. MAL SWS1B b. 1 c. T = 0 d. ACT
5. Failure of the reactor to trip automatically, manual available	a. MAL RPS2A b. ACT
6. MTG 1st Stage pressure transmitter PT-412B fails LOW	a. MAL TUR10B b. 0% c. R = 120 d. T = 300 e. ACT
7. RCP #34 vibration increase	a. MAL RCS7D b. 11 c. R = 300 d. T = 600 e. ACT

SIMULATOR EVALUATION SCENARIO
SES-25

B. Malfunctions/Overrides cont'd

<u>Description</u>	<u>Setup</u>
8. RCP #34 failure (Locked Rotor)	a. MAL RCS3 b. 4 c. T = 300 d. C e. = JMRCS7D.EQ.JTRUE f. ACT
9. Steam line #34 ruptures inside VC AFTER SI is reset	a. MAL MSS1D b. 2.3E7 c. R = 60 d. T = 190 e. C f. = JPPLSIR.EQ.JTRUE g. ACT

C. Remote Functions (TO BE DONE AS REQUESTED BY THE CREW)

<u>Description</u>	<u>Setup</u>
1. 1176/1176A to "OPEN" when requested by the SRO	a. LOA SWS96 b. TRUE c. ACT
2. MS trap isolation (SG #32) when requested by the SRO	a. LOA MSS33 b. 0 c. ACT
3. FCV-1111/1112 SHUT	a. LOA SWS54 b. 0 c. ACT

SIMULATOR EVALUATION SCENARIO
SES-25

C. Remote Functions cont'd

<u>Description</u>	<u>Setup</u>
4. SECURE the VC Sump pumps	a. LOA CNM9 b. 2 c. ACT
	a. LOA CNM10 b. 2 c. ACT
5. PAB Exhaust Fan	a. LOA CNM7 b. TRUE c. ACT d. LOA HVA20 e. TRUE f. ACT
6. BFP AC Oil Pump	a. LOA ATS7 b. 3 c. ACT
7. Secure DC Oil Pumps	a. LOA ATS9 b. 1 c. ACT
8. Steam Supply Valve to 32 ABFP	a. LOA MSS21 b. 0 c. ACT
9. Start 32 Inst Air Compressor	a. LOA AIR31 b. 1 c. ACT
10. Reset MCCs and Lighting	a. FILE MCCRESET b. ACT
11. Stop EDGs	a. LOA DSG25, 26, 27 b. T c. ACT

SIMULATOR EVALUATION SCENARIO
SES-25

<i>EVENT #/TIME</i>	<i>MALF/OVR</i>	<i>DESCRIPTION</i>
1. 300	MAL TUR10B	PT-412B fails LOW
2. 600	MAL RCS7D	RCP #34 vibration increase
3. 900	MAL RCS3 MAL SISA/B MAL SWSA/B	RCP #34 locked rotor/Failure of Rx Auto trip/Failure of Auto SI with SWP failures
4. SI Reset + 190	MAL MSS1D	Steamline #34 rupture in VC

PROCEDURES USED DURING SCENARIO

1. OD-06 Shift and Relief Turnover
2. OD-13 Communications
3. SOP-EL-15 Operation of Non-Safeguards Equip During EOPs
4. ARP-05 Alarm Response Procedure (SBF-2)
5. ARP-07 Alarm Response Procedure (SDF)
6. ARP-13 Alarm Response Procedure (SKF)
7. ARP-16 Alarm Response Procedure (SNF)
8. ONOP-RPC-01 Instrument Failures

The following EOP transition path will be completed :

1. E-0 Reactor Trip or Safety Injection
- ~~2. ES-0.1 Reactor Trip Responses~~
3. ES-1.1 SI Termination
4. E-2 Faulted SG Isolation
5. E-1 Loss of Reactor or Secondary Coolant

SIMULATOR EVALUATION SCENARIO
SES-25

PLANT STATUS

Reactor Power : 100%
Tavg : 567°F
Control Rod Bank and Step : D @ 224
Pressurizer Pressure : 2235#
Pressurizer Level : 46%
Containment Pressure : 0.0#
RWST Level : 37 ft
Containment Temperature : 80°F
CST Level : 29 ft
RCS Boron Concentration : 225 ppm

Plant Evolution in Progress : NONE

Major Equipment OOS : NONE

Rad Release in Progress : NONE

SIMULATOR EVALUATION SCENARIO
SES-25

SES #: 25

EVENT NAME: Shift Turnover

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
0		100%, Equilib Xenon, 225 ppm boron NO Evolutions I/P NO Equipment OOS NO Rad release I/P	OD-6			

SIMULATOR EVALUATION SCENARIO
SES-25

SES #: 25

EVENT NAME: PT-404 Fails LOW

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Responds to various alarms	ARP-05 ARP-07 ARP-16			
	CREW	Perform required action for PT-412B failure	ONOP-RPC-01			
	SRO	Directs bistable trip	ONOP-RPC-01			
	RO/ ROVER	Trips bistables	ONOP-RPC-01			

SIMULATOR EVALUATION SCENARIO
SES-25

SES #: 25

EVENT NAME: RCP #34 Vibration

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Responds to RCP vibration alarm	ARP-13			
	SRO	Orders investigation	ARP-13			
	SRO	Notifies SS	OD-13			

SIMULATOR EVALUATION SCENARIO
SES-25

SES #: 25

EVENT NAME: Locked Rotor/Auto RX trip-SI Failure/SWP Failures

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Performs Immediate Operator Actions of E-0 Identify RX trip required/manually initiate CRITICAL * (E-0 -- A) - Manually trip the reactor from the control room before completing E-0, step 1 Identify SI actuation required/manually initiate CRITICAL * (E-0 -- P) - Manually actuate at least one train of SIS actuated safeguards before transition out of E-0	E-0			

SIMULATOR EVALUATION SCENARIO
SES-25

EVENT NAME: Locked Rotor/Auto RX trip-SI Failure/SWP Failures cont'd SES #: 25

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Identify SWP's failure/attempt to restart SWPs CRITICAL * (E-0 -- L) - Manually start at least two ESW pumps before completing the IOA's of E-0	E-0			
	CREW	Identifies SI termination criteria met	E-0			
	CREW	Transitions to ES-1.1	E-0			

SIMULATOR EVALUATION SCENARIO
SES-25

EVENT NAME: SI Termination SES #: 25

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Determines SI Termination met	ES-1.1			
	CREW	Secures SI pumps and places in "AUTO"	ES-1.1			

SIMULATOR EVALUATION SCENARIO
SES-25

EVENT NAME: SI Reinitiation

SES #: 25

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Identify Faulted SG	ES-1.1	SG #34		
	CREW	Manually actuate SI and transition to E-2	ES-1.1			
	CREW	CRITICAL, * (E-0 -- N) - Establish boration flow from at least one HHSI pump before transition out of E-2				
	CREW	Transition to E-2	ES-1.1			

SIMULATOR EVALUATION SCENARIO
SES-25

EVENT NAME: Faulted SG

SES #: 25

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	CREW	Isolates faulted SG	E-2	SG #34		
	CREW	CRITICAL * (E-2 -- A) - Isolate the faulted SG before transition out of E-2				
	CREW	Transition to E-1				
	CREW	Transition to ES-1.1	E-1			

SIMULATOR EVALUATION SCENARIO
SES-25

SES #: 25

EVENT NAME: Classification

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
	SS	Determines and declares E-Plan classification	E-Plan (IC/EAL)			
		Event declared as an NUE	IC-7, EAL-II.A			

SIMULATOR EVALUATION SCENARIO
SES-25

EVENT NAME: Event Termination SES #: 25

TIME	IDA/MALF	EXPECTED RESPONSE	CRITERIA/ STANDARD	GUIDE	K/A REF	COMMENTS
		Terminate the scenario when the crew secures the HHSI pps in accordance with ES-1.1				

SIMULATOR EVALUATION SCENARIO
SES-25

QUANTITATIVE ATTRIBUTES

1.	Total Malfunctions	: 5
2.	Malfunctions during EOPs	: 2
3.	Abnormal Events	: 2
4.	Major Transients	: 2
5.	ARPs/ONOPs used	: 5
6.	EOPs used	: 3
7.	ECAs/FRPs used	: 0
8.	Simulator run time	: approximately 50 minutes
9.	EOP run time	: approximately 35 minutes
10.	Crew Critical Tasks	: 5

SE 3725
EVAL E. O'DONNELL
CEMENT

ES-604

2

Form ES-604-2

SIMULATOR EXAMINATION SUMMARY SHEET

9/11/93

Crew Members

Name	Position
ED Armandu	SS
ED Diamond	SRU
Bob Christman	RU

Overall crew rating on the simulator examination:

SAT or UNSAT

Comments:

All critical tasks were accomplished satisfactorily. Communications was not 3 point but did not cause problems.

DIAGNOSIS OF EVENTS AND CONDITIONS BASED ON SIGNALS OR READINGS

Did the crew--

(a) recognize off-normal trends and status?

3	2	1
Recognized status and trends quickly and accurately.	Recognized the status and trends at the time of, but not before, exceeding established limits.	Did not recognize adverse status and trends, even after alarms and annunciators sounded.

(b) use information and reference material (prints, books, charts, emergency plan implementation procedures) to aid in diagnosing and classifying events and conditions?

3	2	1
Made accurate diagnosis by using information and reference material correctly and in a timely manner.	Committed minor errors in using or interpreting information and reference material.	Failed to use, or misused, or misinterpreted information or reference material that resulted in improper diagnosis.

(c) correctly diagnose plant conditions based on those control room indications?

3	2	1
Performed timely and accurate diagnosis.	Committed minor errors or had minor difficulties in making diagnosis.	Made incorrect diagnosis, which resulted in incorrect manipulation of any safety control.

Grade for diagnosis of events and conditions based on signals and readings:

SAT or UNSAT

Comments: SFO made comment about transition to E-3 the crew corrected and he concurred that E-2 was the correct procedure

UNDERSTANDING OF PLANT/SYSTEMS RESPONSE

Did the crew--

(a) locate and interpret control room indicators correctly and efficiently to ascertain and verify the status/operation of plant systems?

3	2	1
Each crew member located and interpreted instruments accurately and efficiently.	Some crew members committed minor errors in locating or interpreting instruments or displays. Some crew members required assistance.	The crew members made serious omissions, delays, or errors in interpreting safety related parameters.

(b) demonstrate an understanding of the manner in which the plant, systems, and components operate, including setpoints, interlocks, and automatic actions?

3	2	1
Crew members demonstrated thorough understanding of how systems and components operate.	The crew committed minor errors because of incomplete knowledge of the operation of the system or component's operation. Some crew members required assistance.	Inadequate knowledge of safety system or component operation resulted in serious mistakes or in plant degradation.

(c) demonstrate an understanding of how their actions (or inaction) affected systems and plant conditions?

3	2	1
All members understood the effect that actions or directives had on the plant and systems.	Actions or directives indicated minor inaccuracies in understanding by individuals, but the crew corrected the actions.	The crew appeared to act without knowledge of or with disregard for the effects on plant safety.

Grade on understanding of the response of plant and systems:

SAT or UNSAT

Comments: _____

ADHERENCE/USE OF PROCEDURES

Did the crew--

(a) refer to the appropriate procedures in a timely manner?

3	2	1
The crew used procedures as required and knew what conditions were covered by procedures and where to find them.	The crew committed minor failures to refer to procedures without prompting, which affected the plant's status.	The crew failed to correctly refer to procedure(s) when required, resulting in faulty safety system operation.

(b) correctly implement procedures, including following procedural steps in correct sequence, abiding by cautions and limitations, selecting correct paths on decision blocks, and transitioning between procedures when required?

3	2	1
The crew followed the procedural steps accurately and in a timely manner, demonstrating a thorough understanding of the procedural purposes and bases.	The crew misapplied procedures in minor instances but made corrections in sufficient time to avoid adverse effects.	The crew failed to follow procedures correctly, which impeded recovery from events or caused unnecessary degradation in the safety of the plant.

(c) recognize EOP entry conditions and perform appropriate actions without the aid of references or other forms of assistance?

3	2	1
The crew recognized plant conditions and implemented EOPs consistently, accurately, and in a timely manner.	The crew had minor lapses or errors. Individual crew members needed assistance from others to implement procedures.	The crew failed to accurately recognize degraded plant condition(s) or execute efficient mitigating action(s), even with the use of aids.

Grade on adherence/use of procedures:

SAT or UNSAT

Comments: _____

CONTROL BOARD OPERATIONS

Did the crew--

(a) locate controls efficiently and accurately?

3

2

1

Individual operators located controls and indicators without hesitation.

One or more operators hesitated or had difficulty in locating controls.

The crew failed to locate control(s), which jeopardized system(s) important to safety.

(b) manipulate controls in an accurate and timely manner?

3

2

1

The crew manipulated plant controls smoothly and maintained parameters within specified bounds.

The crew demonstrated minor shortcomings in manipulating controls, but recovered from errors without causing problems.

The crew made mistakes manipulating control(s) that caused safety system transients and related problems.

(c) take manual control of automatic functions, when appropriate?

3

2

1

All operators took control and smoothly operated automatic systems manually, without assistance, thereby averting adverse events.

Some operators delayed or required prompting before overriding or operating automatic functions, but avoided plant transients where possible.

The crew failed to manually control automatic systems important to safety, even when ample time and indications existed.

Grade on control board operations:

SAT or UNSAT

Comments:

CREW OPERATIONS

Did the crew members--

(a) maintain a command role?

3

2

1

The crew took early remedial action when necessary .

In minor instances, the crew failed to take action within a reasonable period of time.

The crew failed to take timely action, which resulted in the deterioration of plant conditions.

(b) provide timely, well planned directions to each other that facilitated their performance and demonstrated appropriate concern for the safety of the plant, staff, and public?

3

2

1

Supervisor's directives allowed for safe and integrated performance by all crew members.

The supervisors, in minor instances, gave orders that were incorrect, trivial, or difficult to implement.

The supervisor's directive(s) inhibited safe crew performance. Crew members had to explain why order(s) could not or should not be followed.

(c) maintain control during the scenario with an appropriate amount of direction and guidance from the crew's supervisors?

3

2

1

Crew members stayed involved without creating a distraction, the crew members anticipated each other's needs, and the supervisors provided guidance when necessary.

Crew members had to solicit assistance from supervisors or each other, interfering with their ability to carry out critical action(s).

Crew members had to repeatedly request guidance. The crew failed to verify successful accomplishment of orders.

CREW OPERATIONS CONTINUED ON NEXT PAGE

CREW OPERATIONS
(Continued)

Did the crew members--

(d) use a team approach to problem solving and decision making by soliciting and incorporating relevant information from all crew member?

3

2

1

Crew members were involved in the problem solving process and the decision making process for effective team decision making.

At times, crew members failed to get involved in the decision making process when they should have, detracting from the team oriented approach.

The crew was not involved in making decision(s). The crew was divided over the scenario's progress and this behavior was counter-productive.

Grade on crew operations:

SAT or UNSAT

Comments:

COMMUNICATIONS

Did the crew--

(a) exchange complete and relevant information in a clear, accurate and attentive manner?

3

2

1

Crew members provided relevant and accurate information to each other.

Crew communications were generally complete and accurate, but sometimes needed prompting, or the crew failed to acknowledge the completion of evolutions, or to respond to information from others.

Crew members did not inform each other of abnormal indication(s) or action(s). Crew members were inattentive when important information was requested.

(b) keep key personnel outside the control room informed of plant status?

3

2

1

Crew members provided each other with accurate, relevant information throughout the scenarios.

Minor instances of needing to be prompted for information; some incomplete/inaccurate information provided.

Failed to provide needed information.

(c) ensure receipt of clear, easily understood communications from the crew and others?

3

2

1

Requests information/clarification when necessary; understands communications from others.

Minor instances of failing to require or acknowledge information from others.

Failed to request needed information, or inattentive when information is provided; serious misunderstandings among crew members.

Grade on communications:

SAT or UNSAT

Comments: _____