INITIAL EXAM SUBMITTAL

Waterford 3 Examination Question
Examination Bank

Examination Question Number 1

Description:	Downpower with Turbine and boration not matched			**Question ID:**	5656
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-010-005	0	0	2/5/99	CVC, RCS

NRC KA Number	RO	SRO	Training Material	Objective
3.2-002-A1.03	3.7	3.8	W-3-LP-OPS-PPN02	3

QUESTION

A plant downpower is in progress. T_{REF} if 565°F and dropping. T_{AVE} is 570°F and steady. Direct boration is in progress at 20 gpm, and the Main Turbine is unloading at 30 MW/min. Select which is true regarding this downpower.

A. Turbine load rate is excessive for the boration rate, as evidenced by the steady T_{AVE} indication.

B. Turbine load rate is excessive for the boration rate, as evidenced by dropping T_{REF} indication.

C. Boration rate is excessive for the turbine load rate, as evidenced by the dropping T_{REF} indication.

D. Boration rate is excessive for the turbine load rate, as evidenced by the steady T_{AVE} indication.

ANSWER

A Turbine load rate is excessive for the boration rate, as evidenced by the steady T_{AVE} indication.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 2

Description:	Raising SIT level to raise boron concentration			**Question ID:**	5657
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-009-008	15	0	7/7/99	SI

NRC KA Number	RO	SRO	Training Material	Objective
3.2-006-A1.13	3.5	3.7	W-3-LP-OPS-SI00	5

QUESTION

The results of a routine boron sample of Safety Injection Tank 2B are out of spec low. The CRS directs you to drain and refill SIT 2B from the RWSP. You are required to do **ALL** of the following **EXCEPT**:

A. Contact the System Engineer to calculate an estimated boron concentration.

B. Allow the HPSI return header to recirculate back to RWSP for 10 minutes.

C. Document in the Station Log that the HPSI header sample results are in specification as determined by Chemistry Department.

D. Recirculate the RWSP for a minimum of 5 hours with the LPSI Pump or 20 hours with the HPSI Pump prior to filling the required SIT.

ANSWER

D Recirculate the RWSP for a minimum of 5 hours with the LPSI Pump or 20 hours with the HPSI Pump prior to filling the required SIT.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 3

Description:	HPSI injection on loss of SDC.			**Question ID:**	5679
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-131	1	1	2/9/99	RCS, SI

NRC KA Number	RO	SRO	Training Material	Objective
3.2-006-K1.03	4.2	4.3	W-3-LP-OPS-SI00	2, 6

QUESTION

A loss of Shutdown Cooling event is in progress. No LPSI Pumps are running. HPSI Pump A was started IAW OP-901-131, Shutdown Cooling Malfunction for RCS makeup. Which of the following is correct concerning restoring a Shutdown Cooling Train?

A. Vent and start LPSI Pump A, since HPSI Pump A is injecting to Hot Leg 1.

B. Vent and start LPSI Pump A, since HPSI Pump A is injecting to Hot Leg 2.

C. Vent and start LPSI Pump B, since HPSI Pump A is injecting to Hot Leg 1.

D. Vent and start LPSI Pump B, since HPSI Pump A is injecting to Hot Leg 2.

ANSWER

C. Vent and start LPSI Pump B, since HPSI Pump A is injecting to Hot Leg 1.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 4

Description:	Pressurizer Pressure Control			**Question ID:**	5658
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
Sys Desc for PLC				PPC

NRC KA Number	RO	SRO	Training Material	Objective
3.3-010-A3.02	3.6	3.5	W-3-LP-OPS-PLC00	3, 5

QUESTION

Pressurizer level is recovering following a Letdown malfunction. As level rises, the Pressurizer Pressure Control System responds by:

A. Pressurizer Pressure Controller output rises, Pressurizer Spray Controller output rises, Pressurizer Proportional Heaters' current 0 amps, and the Spray Valves throttle to maintain pressure.

B. Pressurizer Pressure Controller output rises, Pressurizer Spray Controller output rises, Pressurizer Proportional Heaters' current at maximum, and the Pressurizer Back-up Heaters cycle on to maintain pressure.

C. Pressurizer Pressure Controller output drops, Pressurizer Spray Controller output drops, Pressurizer Proportional Heaters' current 0 amps, and the Spray Valves throttle to maintain pressure.

D. Pressurizer Pressure Controller output drops, Pressurizer Spray Controller output drops, Pressurizer Proportional Heaters' current at maximum, and the Pressurizer Back-up Heaters cycle on to maintain pressure.

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 5

Description:	PZR Level Control Malfunction			**Question ID:**	1484
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	Used Bank	**History:**	RO class 4-16-99		

Reference	Revision	Change	Date	Plant Systems:
OP-901-110	3	1	9/2/98	PLC, PPO

NRC KA Number	RO	SRO	Training Material	Objective
3.2-011-K4.01	3.3	3.7	W-3-LP-OPS-PLC00	06
3.2-011-K6.03	2.9	3.3		
3.2-011-K1.01	3.6	3.9		

QUESTION

- The plant is operating at full power.
- Pressurizer level control is selected to channel X.
- The low level heater cutoff switch is selected to BOTH.
- Channel X level indicates 0%
- Channel Y level indicates 55%.

Which of the following automatic actions will occur?

A. Backup charging pump stops if running, letdown flow goes to minimum, pressurizer heaters trip.

B. Backup charging pumps start, letdown flow increases, pressurizer heaters full on.

C. Backup charging pump stops if running, letdown flow increases, pressurizer proportional heaters full on.

D. Backup charging pumps start, letdown flow goes to minimum, pressurizer heaters trip

ANSWER

D. Backup charging pumps start, letdown flow goes to minimum, pressurizer heaters trip

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 6

Description:	Automatic bypassing of the high log power trip			**Question ID:**	5678
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-903-102	09	05	3/30/99	PPS

NRC KA Number	RO	SRO	Training Material	Objective
3.7-012-K4 06	3.2	3.5	W-3-LP-OPS-PPS00	4

QUESTION

The high log power trip bypass is automatically removed on any channel that power drops below:

A. $1x10^{-6}$, as detected by the safety log power for that channel

B. $8.5x10^{-5}$, as detected by PAC for that channel

C. $1x10^{-4}$, as detected by the safety log power for that channel

D. $5x10^{-4}$, as detected by the CPC for that channel.

ANSWER

C. $1x10^{-4}$, as detected by the safety log channel

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 7

Description:	CWP for Target CEA's vs. CEAC's			**Question ID:**	3081
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	Used Bank	**History:**	RO class 9/98		

Reference	Revision	Change	Date	Plant Systems:
OP-004-003	06	02	10/13/98	CPC

NRC KA Number	RO	SRO	Training Material	Objective
3.1-001-K4.08	3.2*	3.4	W-3-LP-OPS-CPCO1	4
3.1-014-K4.06	3.4	3.7		

QUESTION

You are withdrawing Reg Group 6 CEAs, IF one CEA in the group stops moving while the rest continue to withdraw, WHICH of the following will prevent any further group withdrawal when reached (assume Group 6 is at 130 inches when misalignment occurs)

A. 4.95 inch misalignment detected by CPC target CEAs

B. 5.5 inch misalignment detected by CEACs

C. 5.5 inch misalignment detected by CPC target CEAs

D. 4.95 inch misalignment detected by CEACs

ANSWER

B. 5.5 inch misalignment detected by CEACs

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 8

Description:	Tcold fails high, Pressurizer level setpoint fails, CVCS responds			**Question ID:**	5659
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-110	3	1	9/2/98	CVC

NRC KA Number	RO	SRO	Training Material	Objective
3.7-016-K3.02	3.4*	3.5*	W-3-LP-OPS-PLC00	7

QUESTION

A reactor start-up is in progress. The reactor is not yet critical. Reactor Reg 2 is selected on CP-2 and the T_{COLD} selector switches for loop 1 and 2 are in NORM. The T_{AVE} LOOP SELECTOR on both Reactor Reg drawers 1 and 2 are in BOTH. What is the proper plant response if the normal T_{COLD} RTD for loop 1 fails high?

A. No change due to Reactor Reg 2 being selected.

B. Letdown flow goes to maximum.

C. Letdown flow goes to minimum, both back-up Charging Pumps start.

D. No change due to setpoint failing to current Pressurizer level.

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 9

Description:	Actions on RAS to minimize off site and in-plant exposure			**Question ID:**	5660
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-002	08	0	9/9/98	SI

NRC KA Number	RO	SRO	Training Material	Objective
3.5-026-K4.08	4.1*	4.3*	W-3-LP-OPS-PPE02	11, 25

QUESTION

A large break LOCA has occurred, and a RAS has actuated. What actions must be taken to minimize radiation exposure to plant and off site personnel?

A. Verify LPSI Pumps A and B are secured after verifying adequate Safety Injection Sump level.

B. Secure all Charging Pumps and isolate the Charging penetration.

C. Close SI-106 A and B, ESF Pumps' suction from the RWSP.

D. Close SI-120 A (B) and SI-121 A (B), SI Recirculation isolations to the RWSP.

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 10

Description:	Containment Spray riser level and Tech Spec compliance			**Question ID:**	5680
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
OP-903-001	22	3	7/26/99	CS
TS 3.6.2				

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
2-1-33	3.4	4	W-3-LP-OPS-CS00	6

QUESTION

The plant is operating in mode 4 with the following conditions:

- RCS pressure is 410 psia
- Containment Spray Train B is aligned for mode 1-4 operation
- Containment Spray Train B riser level is 185 ft
- Barometric pressure, from the PMC, is 29.95 inhg
- Average Containment pressure is 15.3 psia

Which of the following is correct regarding Containment Spray Train B.

A. Containment Spray Train B is INOPERABLE due to riser level below tech spec minimum level.

B. Containment Spray Train B is not required for operability for the listed conditions.

C. Containment Spray Train B is OPERABLE

D. Containment Spray Train B is INOPERABLE due to RCS pressure being >400 psia in mode 4.

ANSWER

A. Containment Spray Train B is INOPERABLE due to riser level below tech spec minimum level.

COMMENTS

Supply student with OP-903-001, attachment 11.1 and 11.17 and Tech Spec 3.6.2.1

Waterford 3 Examination Question
Examination Bank

Examination Question Number 11

Description:	Which signals automatically isolate Containment Purge.			**Question ID:**	5662
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-002-010	13	2	9/18/98	HVR

NRC KA Number	RO	SRO	Training Material	Objective
3.8-029-k1.03	3.6	3.8	W-3-LP-OPS-HVR00	1, 4

QUESTION

Containment Purge will be automatically secured on all of the following **EXCEPT**:

A. HI-HI alarm signal on either Plant Stack PIG gas channel

B. HI-HI alarm signal on the Containment PIG gas channel

C. Containment Isolation Actuation Signal

D. HI-HI alarm signal on any Containment Purge Area Rad Monitor.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 12

Description:	CC-620 closures			**Question ID:**	5655
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
Sys Desc for CC				CC, FS

NRC KA Number	RO	SRO	Training Material	Objective
3.8-033-A3.01	2.5*	2.7*	W-3-LP-OPS-CC00	3

QUESTION

All of the following will close CC-620, Fuel Pool Heat Exchangers temperature control valve, **EXCEPT**: (consider each item separately)

A. Operator closes CC-200 A and CC-727 with control switch on CP-8

B. Safety Injection Actuation Signal

C. Loss of control power

D. CCW Surge Tank level switch, CC ILS7013 B fails low, closing CC-200 B and CC-563.

ANSWER

C. Loss of control power

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 13

Description:	Escalating Steam Generator tube leak.			**Question ID:**	5664
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-202	2	1	6/23/99	RCS

NRC KA Number	RO	SRO	Training Material	Objective
3.4-035-A2.01	4.5	4.6	W-3-LP-OPS-PPO20	3

QUESTION

Plant conditions are as follows:

- Main Steam Line 1 Rad Monitor and Condenser Off Gas Rad Monitor readings are elevated and rising.
- At 0930, RCS leakage was determined to be 0.5 gpm from the calculated Steam Generator leakage displayed on PMC Group MCES, and verified by Chemistry samples.
- The CRS has implemented OP-901-202, Steam Generator Tube Leakage or High Activity and ordered a plant shutdown IAW OP-010-005, Plant Shutdown.
- At 1015 the SNPO announces that the leak rate into Steam Generator 1 has risen to 0.75 gpm, as on PMC Group MCES.

Given these conditions, which statement is true?

A. A rapid plant shutdown is required because total leakage into Steam Generator 1 rose by 0.25 gpm in less than 60 minutes.

B. Continue the normal plant shutdown unless leakage into Steam Generator 1 exceeds 1.0 gpm.

C. Continue the normal plant shutdown unless secondary coolant specific activity exceeds 0.1 µci/gm dose equivalent I-131.

D. Trip the Reactor and initiate Safety Injection Actuation and Containment Isolation Actuation.

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 14

Description:	Atmospheric Dump Valve failure and plant response			**Question ID:**	5740
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-500-011	10	2	11/11/97	MS

NRC KA Number	RO	SRO	Training Material	Objective
3.4-039-K5.08	3.6	3.6	W-3-LP-OPS-MS00	1, 4

QUESTION

The plant is operating at 100% when the PNPO notices T_{COLD} dropping and Power rising. Which of the following would give these indications?

A. Atmospheric Dump Valve #1 failed open.

B. Emergency Feedwater Pump AB tripped on overspeed.

C. EH-118, EH Emergency Trip Header Interface, fails open.

D. MOOG valve for Governor Valve #4 failed, closing Governor #4.

ANSWER

A. Atmospheric Dump Valve #1 failed open

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 15

Description:	What remains energized on loss of 2A bus			**Question ID:**	5743
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-003-016	8	4	7/13/99	ED

NRC KA Number	RO	SRO	Training Material	Objective
3.6-062-K2.01	3.3	3.4	W-3-LP-OPS-AIR00	3

QUESTION

The plant is in mode 3 with preparation being made for a reactor startup when the Startup Transformer feeder to the 2A bus trips open. All automatic actions occurred as designed. Which of the following components will still have power available?

A. Reactor Drain Tank Pump

B. Instrument Air Compressor A

C. Blowdown Pump A

D. Spent Resin Transfer Pump

ANSWER

B. Instrument Air Compressor A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 16

Description:	Loss of 125 volt DC bus, A-DC			**Question ID:**	5665
Tier:	2	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-313	1	,0	4/19/94	CED, DC

NRC KA Number	RO	SRO	Training Material	Objective
3.6-063-K3.02	3.5	3.7	W-3-LP-OPS-CED00	3,4
			W-3-LP-OPS-PPO30	3

QUESTION

Which of the following sets of Reactor Trip Breakers open as a direct result of de-energizing the 125 volt DC bus, A-DC?

A. 1, 2, 5, 6

B. 3, 4, 7, 8

C. 1, 3, 5, 7

D. 2, 4, 6, 8

ANSWER

C. 1, 3, 5, 7

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 17

Description:	Emergency Diesel Fuel Oil Storage Tank level drop			**Question ID:**	5667
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
TS 3.8.1				EDG
OP-009-002	17	04	7/8/99	

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
3.6-064-K6.08	3.2	3.3	W-3-LP-OPS-EDG00	7

QUESTION

EGF-104 A, Diesel Fuel Oil Storage Tank A Drain, has been leaking by its packing. Annunciator "EDG A Fuel Oil Strg Tk Lvl Hi/Lo" alarms and the Outside watch reports that level is reading 94.0%. He has tightened down on the packing, and the leak has stopped. What is the impact on the Emergency Diesel Generator A?

A. Emergency Diesel Generator A is inoperable. Perform OP-903-066 within 1 hour.

B. Emergency Diesel Generator A is still operable for 5 days, provided fuel oil is on site within 48 hours.

C. Emergency Diesel Generator A is operable with no other actions required.

D. Emergency Diesel Generator A is still operable, provided fuel oil is ordered within 48 hours and on site within 5 days.

ANSWER

B. Emergency Diesel Generator A is still operable for 5 days, provided fuel oil is on site within 48 hours.

COMMENTS

Provide student with the Tank Curves Data Book and Tech Spec 3.8.1.1.

Waterford 3 Examination Question
Examination Bank

Examination Question Number 18

Description:	LWM Discharge indications			**Question ID:**	5669
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-007-004	14	03	6/12/98	LWM

NRC KA Number	RO	SRO	Training Material	Objective
3.7-073-A4.01	3.9	3.9	W-3-LP-OPS-LWM00	4

QUESTION

A discharge of Waste Condensate Tank B has been established. Flow is at 47 gpm with the M/A station LWM-IFIC-0647 in automatic. LWM-441 is open and LWM-442 is throttled. Later, the indications at CP-4 show that flow is 0 gpm, LWM-IFIC-0647 output is 100%, and both LWM-441 and 442 are full open. Which best explains what has happened.

A. The LWM Rad Monitor, PRMIRE-0647, reached it's high alarm setpoint and secured the release.

B. Discharge flow reached its high flow setpoint and secured the release.

C. M/A station LWM-IFIC-0647 failed, securing the release.

D. Waste Condensate Pump B tripped on low Waste Condensate Tank level, securing the release.

ANSWER

D Waste Condensate Pump B tripped on low Waste Condensate Tank level, securing the release.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 19

Description:	Actions on loss of Circ Water and dropping vacuum.			**Question ID:**	5671
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-007-004	14	3	6/12/98	CW, LWM

NRC KA Number	RO	SRO	Training Material	Objective
3.8-075-A2.03	2.5	2.7	W-3-LP-OPS-LWM00	8

QUESTION

The plant is in Mode 3 with RCS temperature being controlled by MS-319 A, Main Steam Bypass 1A. Steam Generators are being fed with the Auxiliary Feedwater Pump. Waste Condensate Tank B is being discharged to Circ Water. Circ Water Pumps A & B are running. The SUT A feeder to the A1 bus trips open. Which of the following is correct?

A. MS-319 A will shut if vacuum drops to 14 inhg.

B. The operator is required to immediately open both Atmospheric Dump Valves to 50% open.

C. A complete loss of Main Feedwater will occur if vacuum drops to 14 inhg.

D. The operator is required to immediately secure the Waste Condensate Tank release.

ANSWER

D. The operator is required to immediately secure the Waste Condensate Tank release.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 20

Description:	Actuation of ARR fire supression			**Question ID:**	5675
Tier:	2	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-009-004	11	2	5/18/98	FPD, FPP

NRC KA Number	RO	SRO	Training Material	Objective
3.8-086-A4.02	3.5	3.5	W-3-LP-OPS-FP00	2, 10

QUESTION

FP-601 A is closed due to a small leak in the fire header in Containment. Fire alarms are received on the FDMCP for the E-13 A for the Airborne Radiation Removal Unit A. The appropriate actions are:

A. Dispatch the RCA watch to the –4 wing area to actuate FPM-1 and verify FP-601 A automatically opens.

B. Pull the manual pull station on the Control Room north wall to actuate FPM-1 and verify FP-601 A automatically opens.

C. Pull the manual pull station on the Control Room north wall to actuate FPM-1 and open FP-601 A with the control switch on CP-8.

D. Verify that FPM-1 automatically actuated and open FP-601 A with the control switch on CP-8.

ANSWER

C. Pull the manual pull station on the Control Room north wall to actuate FPM-1 and open FP-601 A with the control switch on CP-8.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 21

Description:	CEA T.S. applied to Continuous Rod Withdrawal			**Question ID:**	5661
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
TS 3.1.3				CED, TS

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A1-AK3.02	3.2	4.3	W-3-LP-OPS-CED0	8
			W-3-LP-OPS-CED00	9

QUESTION

Reactor power is 100% and ASI control is in progress. The PNPO inserts Reg Group 6. When the PNPO releases the IN-HOLD-OUT switch to the Hold position, CEA 23 continues to insert into the core. The PNPO takes the CEDMCS Mode Selector Switch to OFF and CEA 23 insertion stops. Final position of CEA 23 is 118.5". All other CEAs in Reg Group 6 are at 125.25". Reg Group 6 is placed on the HOLD Bus to troubleshoot the cause of the malfunction. Which of the following actions is correct?

A. Declare CEA 23 inoperable and verify SDM within one hour.

B. Declare CEA 23 inoperable and comply with actions for exceeding Long Term Steady State Insertion Limits.

C. Declare Reg Group 6 inoperable and be in Hot Standby within 6 hours.

D. Declare Reg Group 6 inoperable and reduce power to < 70% within one hour in accordance with the COLR.

ANSWER

B

COMMENTS

Supply T.S. 3.1.3.1-3.1.3.7, including COLR pages, to examinees

Waterford 3 Examination Question
Examination Bank

Examination Question Number 22

Description:	Indications of a Dropped CEA			**Question ID:**	5663
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-102	3	0	12/10/98	CED, PPO

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A3-AA2.03	3.6	3.8	W-3-LP-OPS-PPO10	1

QUESTION

All of the following indications would be present if CEA 1 dropped to the bottom of the core at 12.5 EFPD and 100% power, with the exception of:

A. A large Azimuthal Power Tilt

B. A large decrease in RCS temperature

C. The Rod Bottom Light Illuminates

D. A decrease in RCS pressure

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 23

Description:	Verification of Two Phase Natural Circulation Flow			**Question ID:**	5668
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-002	8	0	9/9/98	PPE, RCS

NRC KA Number	RO	SRO	Training Material	Objective
4.1-E11-EA2.09	4.2	4.3	W-3-LP-OPS-PPE02	11

QUESTION

A large break LOCA occurred 20 minutes ago and the following conditions exist:

- RCS Pressure = 500 psia
- Representative CET Temperature = 600°F
- RVLMS is fluctuating between 20% and 0% plenum level
- EFAS-1 and EFAS-2 are initiated, S/G 1 and S/G 2 levels are between 68% and 71% with EFW flow controllers in automatic
- Individual HPSI flow = 200 gpm/cold leg
- LPSI train A and B flow rate = 0 gpm
- Charging Pump A and B are running, Charging Pump AB is secured with AB assignment switch in NORM

Determine the status of two-phase natural circulation flow.

A. Representative CET temperature does not meet the criteria for satisfactory two-phase natural circulation flow.

B. HPSI flow does not meet the criteria for satisfactory two-phase natural circulation flow.

C. All criteria are met for satisfactory two-phase natural circulation flow.

D. Charging pump status does not meet the criteria for satisfactory two-phase natural circulation flow.

ANSWER

A

COMMENTS

Supply Steam Tables and Attachment 2-B of OP-902-009

Waterford 3 Examination Question
Examination Bank

Examination Question Number 24

Description:	Minimum Pzr level requirements during a charging malfunction			**Question ID:**	5670
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-112	2	0	6/30/97	CVC, RCS, PPO

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A22-AK1.03	3	3.4	W-3-LP-OPS-PPO10	3

QUESTION

The plant is at 100% power with T_{cold} at 545°F and T_{hot} 603°F. The running charging pump tripped on low suction pressure due to the VCT Outlet Valve, CVC-183 closing with no apparent cause. Letdown isolated on high temperature due to the loss of the running charging pump. Determine the minimum required Pressurizer level to remain at power for the given conditions.

A. 6.0%

B. 33.1%

C. 43.0%

D. 55.6%

ANSWER

C

COMMENTS

Supply examinee with copy of Attachment 1 of OP-901-112

Waterford 3 Examination Question
Examination Bank

Examination Question Number 25

Description:	Time to exceed 200 degrees after a loss of Shutdown cooling			**Question ID:**	5672
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-131	1	1	2/9/99	PPO, SDC

NRC KA Number	RO	SRO	Training Material	Objective
2-4-9	3.3	3.9	W-3-LP-OPS-REQ21	3

QUESTION

The plant is in Mode 5 preparing to perform refueling. Steam Generator manways are detensioned but not removed. RCS level is at midloop. The reactor was shutdown 96 hours ago. RCS temperature is 130°F. Determine the duration that SDC can be lost before entering Mode 4 conditions.

A. 6 minutes

B. 7 minutes

C. 12 minutes

D. 15 minutes

ANSWER

C

COMMENTS

Supply examinee with Attachments 2 and 3 of OP-901-131

Waterford 3 Examination Question
Examination Bank

Examination Question Number 26

Description:	Estimation of S/G tube leakage using charging and letdown mismatch			**Question ID:**	5673
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-202	2	1	6/23/99	CVC, RCS, PPO

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A37-AA2.04	3.4	3.7	W-3-LP-OPS-PPO20	3

QUESTION

A tube leak is in progress in S/G 1. The following conditions are noted:

- RCS Pressure is 2225 psia and rising
- PZR level is 55% and steady
- VCT level is 49% and lowering
- Letdown Flow = 30 GPM
- Charging Pumps A and AB are running
- RCP1A CBO = 1.5 GPM
- RCP1B CBO = 1.7 GPM
- RCP2A CBO = 1.5 GPM
- RCP2B CBO = 1.3 GPM

Assuming no additional leakage from the RCS to other sources, determine the leak rate into S/G 1.

A. 8 GPM

B. 14 GPM

C. 52 GPM

D. 58 GPM

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 27

Description:	Diagnose SGTR w/stuck open S/G safety			**Question ID:**	5674
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-009	0	0	9/9/98	PPE

NRC KA Number	RO	SRO	Training Material	Objective
4.1-E38-EA2.02	4.5	4.8	W-3-LP-OPS-PPE01	12

QUESTION

After a reactor trip the following parameter values and trends are noted:

- PZR Level = 0%
- RCS Press = 1500 psia and lowering
- Loop 1 TC = 500°F and rapidly trending down
- Loop 2 TC = 530°F and slowly trending down
- Containment pressure = 14.9 psia and steady
- Containment Avg. Temp. = 105°F and lowering
- Containment area rad monitors = no alarms with readings trending down
- CVC-101, 103, and 109 are open
- RAB rad monitors = no alarms with steady readings
- MSL 1 rad monitor = alert alarm and trending up
- MSL 2 rad monitor = no alarm and steady
- S/G 1 WR level = 46% and dropping slowly
- S/G 2 WR level = 75% and steady

Assuming that all other equipment responded as designed, determine the events in progress.

A. MSLB and LOCA inside Containment

B. MSLB outside Containment and Letdown ISLOCA

C. Letdown ISLOCA and SGTR

D. MSLB outside containment and SGTR

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 28

Description:	Resetting Overspeed Trip and Manual Restart of EFW PUMP AB			**Question ID:**	5677
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-009-003	11	2	4/21/99	EFW, PPE

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A54-AA1.02	4.4	4.4	W-3-LP-OPS-EFW00	13

QUESTION

A Loss of Main Feedwater is in progress with Emergency Feedwater restoring level to both Steam Generators when EFW Pump AB trips on electrical overspeed. The cause is determined to be improper draining of the steam line. Summarize the proper method for resetting and manually starting EFW Pump AB.

A. Reset the mechanical overspeed latch mechanism, depressurize the steam supply line, open the stop valve and verify EFW pump speed stabilizes between 4375 and 4450 RPM.

B. Close MS-401A and B, reset the mechanical overspeed latch mechanism, open the stop valve, open MS-401A and B, verify EFW pump speed stabilizes between 4375 and 4450 RPM.

C. Close MS-401A and B, depressurize the steam supply line, open the stop valve, open MS-401A and B, verify EFW pump speed stabilizes between 4375 and 4450 RPM.

D. Close MS-401A and B, depressurize the steam supply line, open MS-401A and B, open the stop valve, verify EFW pump speed stabilizes between 4375 and 4450 RPM.

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 29

Description:	Instrumentation/equipment affected by a loss of AB-DC			**Question ID:**	5676
Tier:	1	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-313	1	0	4/19/94	DC

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A58-AK1.01	2.8	3.1*	W-3-LP-OPS-PPO30	3

QUESTION

The AB DC bus has developed a short resulting in the loss of both AB battery chargers and the AB Battery. Which of the following is directly affected by the loss?

A. FWPT A and B Governor Valves

B. Main Turbine Trip Circuitry

C. FWPT A and B Trip Circuitry

D. CVC-209, Charging Header Isolation Valve

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 30

Description:	Interrelation between liquid release and DCT Rad Monitor			**Question ID:**	5681
Tier:	1	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-004-001	7	0	4/16/99	PPO, SP, PRM

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A59-AK2.01	2.7	2.8	W-3-LP-OPS-RMS00	2

QUESTION

The CCW system is operating with high activity due to leakage from a reactor coolant pump. DCT A develops a leak. How is an inadvertent release to offsite areas prevented?

A. DCT Sump 1 Radiation Monitor detects the high activity in the sump and closes the common discharge valve of the DCT Sump 1 pumps.

B. DCT Sump 1 Radiation Monitor detects the high activity in the sump and stops the DCT Sump 1 pumps.

C. DCT Sump 1 is normally aligned to the Liquid Waste System and only aligned to the storm sewers after a satisfactory sample is obtained.

D. DCT Sump 1 pump breakers are normally left open and are only closed after a satisfactory sample is obtained.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 31

Description:	Basis for selecting North or South CR Outside Air Intakes to provide makup air flow			**Question ID:**	5683
Tier:	1	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-401	0	0	4/2/93	HVC, PPO

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A61-AK3.02	3.4	3.6	W-3-LP-OPS-PPO40	3

QUESTION

OP-901-401, High Airborne Activity in the Control Room has been entered due to an inadvertent release of a Waste Gas Decay Tank with a temperature inversion condition. The Control Room Supervisor orders the SNPO to determine which set of Control Room Outside Air Intakes (CROAI) should be opened for makeup to the Control Room envelope. What should the SNPO base this decision on?

A. The running Control Room Emergency Filtration Unit

B. The running Control Room Normal Air Handling Unit

C. The CROAI farthest from the Plant Stack

D. The lowest pair of CROAI radiation monitor readings

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 32

Description:	Prioritization of Safety Functions in OP-902-008			**Question ID:**	5684
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-008	11	0	9/9/98	PPE

NRC KA Number	RO	SRO	Training Material	Objective
2-4-6	3.1	4.0	W-3-LP-OPS-PPE08	6

QUESTION

OP-902-008, Safety Function Recovery Procedure has been implemented. Refer to the attached Safety Function Tracking Sheet and determine the priority for addressing the safety functions.

A. 1, 2, 3, 4, 5, 6, 7, 8, 9

B. 1, 7, 5, 2, 8, 3, 4, 6, 9

C. 1, 6, 2, 3, 7, 4, 5, 8, 9

D. 1, 7, 2, 3, 8, 4, 5, 6, 9

ANSWER

B

COMMENTS

Check (✔) the following on the Safety Function Tracking Sheet:
Success Path in Use – RC-3, MVA-DC-1, MVA-AC-2, IC-2, PC-1, HR-2, CI-1, CPTC-2, CCGC-1
SFSC Met – MVA-DC-1, MVA-AC-2, PC-1, CPTC-2, CCGC-1

Waterford 3 Examination Question
Examination Bank

Examination Question Number 33

Description:	Determination of Inadequate S/G Level to Throttle HPSI			**Question ID:**	5685
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-002	8	0	9/9/98	PPE

NRC KA Number	RO	SRO	Training Material	Objective
4.1-E9-EK2.03	3.0	3.3	W-3-LP-OPS-PPE02	11

QUESTION

A small break LOCA is in progress and the following conditions are noted:

- PZR level is 10% and slowly rising
- PZR pressure is 570 psia and slowly rising
- RVLMS indicates 100% plenum level and 0% head lead level
- RCS Representative CET temperature is 450°F and slowly lowering
- S/G 1 level is 45% NR and dropping slowly
- S/G 2 level is 48% NR and steady
- EFW pumps are running, EFW Flow Controllers are in manual

To throttle HPSI flow which of the following is true?

A. Level in at least one S/G must be raised.

B. Reactor Vessel level must be raised.

C. PZR level must be raised.

D. RCS Subcool Margin must be raised.

ANSWER

A

COMMENTS

Supply examinees with copy of steam tables

Waterford 3 Examination Question
Examination Bank

Examination Question Number 34

Description:	Manual Restoration of Power to Startup Channel			**Question ID:**	5686
Tier:	1	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-500-008	11	0	12/10/98	ENI, PPR

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A32-AA1.01	3.1*	3.4*	W-3-LP-OPS-ENI00	4

QUESTION

The plant is at 2 E-07% reactor power after a reactor trip when ENI Safety Channel B middle detector fails high. The PNPO notes that Startup Channel 2 has de-energized and the Startup Channel 2 Offnormal annunciator is flashing. What is the recommended action to restore power to the startup channel?

A. De-energize Safety Channel B ENI drawer at CP-10.

B. De-energize Safety Channel B ENI drawer at Sups MB.

C. Place the HV Control Switch to Alternate in Startup Channel 2 drawer.

D. Place the HV Control Switch to Primary in Startup Channel 2 drawer.

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 35

Description:	PZR tailpipe temperature of open PZR Safety Valve			**Question ID:**	5687
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	Modified Bank (used)	**History:**	1997 SRO NRC exam (previous version)		

Reference	Revision	Change	Date	Plant Systems:
CE Steam Table Mollier Diagram				PPE, RCS

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A8-AK1.01	3.2	3.7	W-3-LP-OPS-TYH04	21

QUESTION

Given the following plant conditions and assumptions:

- A PZR Safety Valve is stuck open
- PZR pressure is 500 psia and steady
- Quench Tank pressure is 15 psig and steady
- Quench Tank Temperature is 200°F
- The reactor has tripped
- Assume ambient heat losses are negligible and the steam quality in the pressurizer is 100%

Determine the expected temperature indicated downstream of the open PZR Safety Valve.

A. 200°F

B. 250°F

C. 330°F

D. 465°F

ANSWER

C

COMMENTS

Modified from 1997 Waterford III SRO examination
Supply examinees with copy of CE Steam tables with Mollier Diagram

Waterford 3 Examination Question
Examination Bank

Examination Question Number 36

Description:	Actions in EOPs associated with an ATWS			**Question ID:**	5688
Tier:	1	**Group:**	2	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-000	8	0	9/8/98	PPE

NRC KA Number	RO	SRO	Training Material	Objective
4.1-E29-EK3.12	4.4	4.7	W-3-LP-OPS-CVC00	3
			W-3-LP-OPS-PPO10	4
			W-3-LP-OPS-PPE01	8

QUESTION

OP-902-000 requires initiation of emergency boration if more than one CEA is not fully inserted. What is the basis for closing the VCT Outlet Valve, CVC-183, during this operation?

A. To ensure only the Boric Acid Makeup Tanks provide flow to the suction of the Charging pumps.

B. To prevent filling the VCT with water from the Boric Acid Makeup Tanks.

C. To prevent losing adequate NPSH to the Charging pumps as VCT level lowers.

D. To prevent filling the Boric Acid Makeup Tanks with water from the VCT.

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 37

Description:	Actions required for failed open Steam Bypass Valve and SGTR during OP-902-000			**Question ID:**	5689
Tier:	1	**Group:**	2	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-000	8	0	9/8/98	PPE

NRC KA Number	RO	SRO	Training Material	Objective
4.1-E7-EA1.03	4.2	4.1	W-3-LP-OPS-PPE01	10

QUESTION

A manual reactor trip is initiated in accordance with OP-901-202, Steam Generator Tube Leakage or High Activity. During the performance of Standard Post Trip Actions the PNPO notes that RCS T_C is 532°F and lowering. The SNPO notes that one steam bypass valve controller is failed at 100% output. What is the preferred action to be taken in this situation?

A. Allow RCS temperature to continue to lower until T_H reaches 520°F, then take manual control of steam bypass control valves to maintain T_H less than 520°F.

B. Take manual control of steam bypass control valves and restore T_C to between 535°F and 555°F.

C. Manually initiate a Main Steam Isolation Signal and verify the Atmospheric Dump Valves control T_C between 535°F and 555°F.

D. Manually close the Main Steam Isolation Valves and verify the Atmospheric Dump Valves control T_C between 535°F and 555°F.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 38

Description:	Requirement to trip reactor for excessive RCS leakage			**Question ID:**	5690
Tier:	1	**Group:**	3	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-111	1	0	10/15/97	PPO

NRC KA Number	RO	SRO	Training Material	Objective
2-4-4	4	4.3	W-3-LP-OPS-PPO10	3

QUESTION

Given the following conditions:

- OP-901-111, RCS Leak has been entered due to excessive RCS leakage
- RCS Tavg is 573°F and steady
- AB charging pump is OOS
- Charging pumps A and B are running
- Letdown secured to determine location of RCS leak
- RCS Leakage = 90 gpm

Which of the following is the appropriate action to be performed in accordance with OP-901-111?

A. Maintain RCS conditions stable to prevent loss of PZR level, while attempting to locate the leak.

B. Commence a normal shutdown in accordance with OP-010-005, Plant Shutdown, and be in Mode 3 within 6 hours.

C. Commence a rapid plant shutdown in accordance with OP-901-212, Rapid Plant Power Reduction and be in Mode 3 within 1 hour.

D. Perform a manual reactor trip, manually initiate SIAS and CIAS, and go to OP-902-000, Standard Post Trip Actions.

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 39

Description:	Behavior of IA pressure following a LOOP			**Question ID:**	5691
Tier:	1	**Group:**	3	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-AIR00				IA

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A56-AA1.37	3.4	3.5	W-3-LP-OPS-AIR00	1

QUESTION

Given the following initial conditions:

- IA compressor A is running; IA compressor B is in standby
- Four CW pumps are running
- TC Pump A is running
- SA compressors B and C are running
- SA to IA Cross-connect Valve setpoint is 100 psig
- Instrument Air and Station Air usage are within the capacity of one air compressor
- SUT A and B are supplying in-house loads

Determine the response of the Instrument Air system after the actuation of SUT A Lockout Relay 87STA.

A. IA pressure drops until action is taken to manually cross-connect Instrument Air and Station Air, then IA pressure recovers.

B. IA pressure drops until IA compressor B starts automatically, then IA pressure recovers.

C. IA pressure continues to drop until alternate cooling is aligned to IA compressor B and the compressor is started manually, then IA pressure recovers.

D. IA pressure drops until Station Air and Instrument air are automatically cross-connected, then IA pressure varies around the setpoint of the automatic valve.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 40

Description:	Affect on CVCS when PZR level controller fails low			**Question ID:**	5692
Tier:	1	**Group:**	3	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-110	03	01	9/2/98	PLC, PPO

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A28-AK2.03	2.6	2.9	W-3-LP-OPS-CVC00	3

QUESTION

The PZR level controller on CP-2 failed low with the letdown flow controller in Auto. The letdown flow controller is affected in the following way:

A. The letdown flow controller fails to 0% output.

B. The letdown flow controller fails to 100% output.

C. The letdown flow controller fails to a preset minimum output.

D. The letdown flow controller fails to a preset maximum output.

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 41

Description:	CEA position information Reed Switch Vs. Pulse Counter			**Question ID:**	5693
Tier:	2	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
Sys Desc for CED				CED

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
3.1-001-A3.02	3.7	3.6	W-3-LP-OPS-CED00	4
			W-3-LP-OPS-CPC00	4

QUESTION

All of the following provide the capability to monitor actual position for an individual CEA using magnetic reed switches **EXCEPT** the:

A. CEA Position Display CRT on CP-2

B. Digital CEA INDV indicator on CP-2

C. CEAC Channels 1 and 2 on CP-7

D. Targeted CPC Channel on CP-7

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 42

Description:	Determine the amount of Boron required to withdraw Group 6 CEAs out			**Question ID:**	5694
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-002-005	14	8	2/21/99	CED

NRC KA Number	RO	SRO	Training Material	Objective
3.1-001-A4.05	3.7	3.7	W-3-LP-OPS-CVC00	11

QUESTION

Given the following conditions:

- The plant has been operating at 100% power for 275 days
- Reg Group 6 CEAs are inserted to 120" for ASI control and ASI is moving to the bottom of the core
- Tavg = 573°
- RCS Boron Concentration = 400 ppm
- Core Burnup = 450 EFPD
- Boric Acid Makeup Tank (BAMT) A and B Boron Concentration = 5500 ppm

Determine the number of gallons of Boric Acid that must be added to the RCS from the BAMTs to withdraw Reg Group 6 CEAs to 150".

A. 122 gallons

B. 138 gallons

C. 144 gallons

D. 244 gallons

ANSWER

A

COMMENTS

Supply examinees with Plant Data Book curves 1.4.3.1-1.4.5.2, 1.5.2.1, 1.5.2.3, 1.5.3.1, 1.5.3.3, 1.5.4.1, and 1.5.4.3
Supply examinees with copy of OP-002-005, Attachment 11.6

Waterford 3 Examination Question
Examination Bank

Examination Question Number 43

Description:	Determine the effect of starting a RCP with a large primary to secondary delta-T			**Question ID:**	5695
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
TS 3.4.8				RCP, TS, RCS

NRC KA Number	RO	SRO	Training Material	Objective
3.4-003-A1.07	3.4*	3.4	W-3-LP-OPS-RCP00	9, 13
			W-3-LP-OPS-RCS00	9, 11

QUESTION

The following conditions exist:

- RCS is filled and vented and the PZR is solid
- RCS pressure is being controlled by both letdown backpressure control valves
- RCS pressure = 370 psia
- CET temperature = 130°F
- Steam Generator 1 water temperature = 220°F
- All RCPs are secured

Which of the following is true when starting RCP 1A under these conditions.

A. RCS pressure would rise to the setpoint of the LTOP reliefs; the combined capacity of both LTOP reliefs is required to protect the RCS from overpressurization.

B. RCS pressure would lower but be controlled by the letdown backpressure control valves above the minimum pressure for running the RCP.

C. RCS pressure would rise above the setpoint of the LTOP reliefs; the RCS is protected from overpressurization by the capacity of one LTOP relief.

D. RCS pressure would drop below the pressure for operating a RCP causing cavitation of the RCP and possible damage to the impeller and seals.

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 44

Description:	Effect of VCT level transmitter failing low			**Question ID:**	5696
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
OP-002-005	1	0	2/21/9	CVC
OP-901-113	01	00	2/2/98	

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
3.2-004-K4.12	3.1	3.4	W-3-LP-OPS-CVC00	3

QUESTION

VCT level transmitter CVC-ILT-0227 fails low. Select the effect of this failure on the CVC system.

A. A continuous automatic makeup demand signal would be present; high and low level alarms are disabled.

B. Automatic diversion of the VCT inlet valve on high level is disabled; Charging pump suction automatically aligns to the RWSP and the VCT suction path isolates.

C. A continuous automatic makeup demand signal would be present; Charging pump suction automatically aligns to the RWSP and the VCT suction path isolates.

D. Automatic diversion of the VCT inlet valve on high level is disabled; high and low level alarms are disabled.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 45

Description:	Limiting conditions for operations and safety limits for RCPs			**Question ID:**	5697
Tier:	2	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
TS 3.4.1				RCP, RCS

NRC KA Number	RO	SRO	Training Material	Objective
2-2-22	3.4	4.1	W-3-LP-OPS-RCP00	8

QUESTION

All of the following are true concerning the OPERABILITY of reactor coolant loops in MODE 3 except:

A. Only one RCP must be OPERABLE in each loop.

B. OPERABILITY of the required RCPs is verified by correct breaker alignment and power availability.

C. Only one RCP is required to be in operation to satisfy the requirements of the LCO.

D. Securing all RCPs is **NOT** allowed by the LCO.

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 46

Description:	Interrelations between CVCS and PLCS			**Question ID:**	5698
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-PLC00				CVC

NRC KA Number	RO	SRO	Training Material	Objective
3.1-004-K1.01	3.6	4	W-3-LP-OPS-PLC00	1

QUESTION

Given the following initial conditions:

- The plant is at 100% power
- PZR level and Tavg are at programmed setpoint
- All systems are operating in automatic

Governor Valve #1 fails closed. Describe the response of the PLC and CVC systems.

A. The PZR level controller output rises, the letdown flow control valves throttle open to raise letdown flow, and letdown backpressure control valves throttle open to return letdown pressure to setpoint.

B. The PZR level controller output rises, the letdown flow control valves throttle open to raise letdown flow, and letdown backpressure control valves throttle closed to return letdown pressure to setpoint.

C. The PZR level controller output lowers, the letdown flow control valves throttle closed to lower letdown flow, and the letdown backpressure control valves throttle open to return letdown pressure to setpoint.

D. The PZR level controller output lowers, the letdown flow control valves throttle closed to lower letdown flow, and the letdown backpressure control valves throttle closed to return letdown pressure to setpoint.

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 47

Description:	Initiation signals for ESF circuit logic			**Question ID:**	5699
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
TS 3.3.2				PPS

NRC KA Number	RO	SRO	Training Material	Objective
3.2-013-K1.01	4.2	4.4	W-3-LP-OPS-CC00	3

QUESTION

Given the following initial conditions:

- Containment Pressure = 17.6 psia
- PZR Pressure = 1700 psia
- SG 1 Pressure = 700 psia
- SG 2 Pressure = 800 psia
- SG 1 NR Level = 0%
- SG 2 NR Level = 17%

Which of the following components would not receive an automatic initiation signal as a result of the above parameters?

A. SI-139B, Cold Leg 1B LPSI Flow Control Valve

B. EFW-229B, SG 2 Backup EFW Isolation Valve

C. CC-963A, SDC HX A CCW Outlet Flow Control Valve

D. FW-166A, SG 1 Startup Feedwater Regulating Valve

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 48

Description:	RCP seal failure and subsequent shutdown			**Question ID:**	5712
Tier:	1	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-130	02	00	4/6/98	RCP

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A15/17-AK1.02	3.7	4.1	W-3-LP-OPS-PPO10	3,4
			W-3-LP-OPS-RCP00	13

QUESTION

You are the dayshift PNPO. Shortly after relieving the shift, the lower seal fails on Reactor Coolant Pump 1A. The decision is made to continue operation with increased monitoring for further degradation. At 10:30 RCP 1A seal pressures are as follows:

Vapor 0 psia

Upper 1000 psia

Middle 2250 psia

Which of the following are appropriate?

A. The upper seal has failed, trip the reactor, trip RCP 1A, and perform Standard Post Trip actions.

B. The upper seal has failed, commence a rapid plant shutdown IAW OP-902-212.

C. The vapor seal has failed, commence a rapid plant shutdown IAW OP-902-212.

D. The vapor seal has failed, trip the reactor, trip RCP 1A, and perform Standard Post Trip actions.

ANSWER

D. The vapor seal has failed, trip the reactor, trip RCP 1A, and perform Standard Post Trip actions.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 49

Description:	Operational Characteristics of natural circ			**Question ID:**	5713
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-002	8	0	9/9/98	PPE, SI, RCS

NRC KA Number	RO	SRO	Training Material	Objective
4.4-A13-AK2.2	3.4	3.6	W-3-LP-OPS-PPE05	1

QUESTION

All of the following represent operational characteristics important for natural circulation **EXCEPT**:

A. controlling Atmospheric Dump Valves at or below saturation pressure for T_{COLD}
B. maintaining RCS pressure IAW 28 deg subcooled curve
C. maintaining Safety Injection flow IAW flow curves
D. initiating hot and cold leg injection 2-4 hours post LOCA

ANSWER

D. initiating hot and cold leg injection 2-4 hours post LOCA

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 50

Description:	Emergency boration on loss of 3A bus			**Question ID:**	5708
Tier:	1	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-103	00	01	9/22/95	CVC, PPE
OP-902-000	08	00	9/8/98	

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A24-AA2.02	3.9	4.4	W-3-LP-OPS-PPE01	9
			W-3-LP-OPS-PPO10	2

QUESTION

The reactor has just tripped due to a loss of off site power. Both Emergency Diesel Generators started as required, but EDG A's output breaker failed to close. As the PNPO, what are your required actions when you notice 2 CEAs stuck out?

A. Commence Emergency Boration using both Gravity Feed valve A & B.
B. Commence Emergency Boration using BAM Pump B and Gravity feed valve B.
C. Commence Emergency Boration using both BAM Pump A & B
D. Commence Emergency Boration using BAM Pump A and Gravity Feed valve A.

ANSWER

A. Commence Emergency Boration using both Gravity Feed valve A & B.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 51

Description:	CCW leak and Essential Chillers			**Question ID:**	5710
Tier:	1	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-510	03	00	6/2/98	CC, PPO, CHW

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A26-AA1.02	3.2	3.3	W-3-LP-OPS-CC00	3,7
			W-3-LP-OPS-PPO10	4

QUESTION

The plant is operating at 100% when a 1300 gpm leak develops on the supply piping to Shutdown Cooling Heat Exchanger A. The CCW System responds properly to the failure. CCW Surge Tank level for train A is 0%, train B is 55%. Which of the following components still has the means available to perform its design function?

A. Containment Fan Cooler C
B. Essential Chiller A
C. Emergency Diesel Generator A
D. High Pressure Safety Injection Pump A

ANSWER

B. Essential Chiller A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 52

Description:	Pressurizer Pressure Controller failure without action			**Question ID:**	5714
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
OP-901-120	02	00	12/8/97	PPC, PPS
OP-004-006	13	00	10/19/98	

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
4.2-A27-AK2.03	2.6	2.8	W-3-LP-OPS-PLC00	5,7

QUESTION

The plant is at 100% power when the output on Pressurizer Pressure controller, RC-IPIC-0100 fails high. Which response describes why the reactor trips if no operator action is taken?

A. Low pressure trip from the Core Protection Calculators.
B. Low pressure trip from the Plant Protection System.
C. High pressure trip from the Core Protection Calculators.
D. High pressure trip from the Plant Protection System.

ANSWER

A. Low pressure trip from the Core Protection Calculators.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 53

Description:	Actions to stabilize the RCS during an ESD			**Question ID:**	5715
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-009	00	00	9/9/98	EFW, PPE, MS

NRC KA Number	RO	SRO	Training Material	Objective
4.4-E5-EA1.2	3.5	3.9	W-3-LP-OPS-PPE04	4

QUESTION

A Main Steam line break has occurred inside Containment on Steam Generator 2. Standard Post Trip actions are in progress. Which one of the following is correct regarding stabilizing the Reactor Coolant System?

A. When standard Post Trip actions are complete, open #1 ADV 100% and manually feed with EFW after EFAS auto actuation.
B. When standard Post Trip actions are complete, open #1 ADV 50% and manually initiate EFAS and begin feeding in manual.
C. When Pressurizer pressure or T_{CET} begin to rise, open #1 ADV 100% and manually initiate EFAS and begin feeding in manual.
D. When Pressurizer pressure or T_{CET} begin to rise, open #1 ADV 50% and manually feed with EFW after EFAS auto actuation.

ANSWER

C. When Pressurizer pressure or T_{CET} begin to rise, open #1 ADV 100% and manually initiate EFAS and begin feeding in manual.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 54

Description:	Excess steam demand and PTS			**Question ID:**	5735
Tier:	1	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-009	0	0	9/9/98	PPE

NRC KA Number	RO	SRO	Training Material	Objective
4.4-A11-AK1.1	3.1	3.3	W-3-LP-OPS-PPE04	4

QUESTION

Plant conditions are as follows:

- RCS pressure 1100 psia, slowly lowering
- T_{CET} 465 ° F, slowly lowering
- Containment pressure 27.45 psia
- Pressurizer level 0 %
- SG #1 pressure 375 psia, 35% WR
- SG #2 pressure 725 psia, 60% WR
- Containment temp 200 ° F

Which of the following describes the correct actions for this event?

A. When RCS pressure turns, stabilize pressure greater than HPSI shutoff head using Pressurizer spray.
B. When T_{CET} starts to rise, fully open 1 Steam Bypass valve to stabilize RCS temperature.
C. Manually initiate EFAS for SG #1 and commence feeding in manual to restore level in SG #1.
D. Immediately open Aux. Spray valves to lower RCS pressure and maximize HPSI flow to restore Pressurizer level.

ANSWER

A. When RCS pressure turns, stabilize pressure greater than HPSI shutoff head using Pressurizer spray.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 55

Description:	Loss of Condenser vacuum and Steam Bypass			**Question ID:**	5718
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-220	2	0	7/31/97	PPO, SBC

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A51-AK3.01	2.8*	3.1*	W-3-LP-OPS-PPO20	3
			W-3-LP-OPS-SBC00	2

QUESTION

A plant downpower is in progress due to lowering Condenser vacuum. The shift is implementing OP-901-220, Loss of Condenser Vacuum along with OP-010-005, Plant Shutdown. Which of the following Main Condenser vacuum parameters correctly describes the associated actuations?

A. 23 INHG, Main Turbine trips.

B. 20 INHG, Main Feed Pumps trip.

C. 14 INHG, Condenser Vacuum Pumps shift to hogging.

D. 3.4 INHG, Steam Bypass valves close.

ANSWER

D 3.4 INHG, Steam Bypass valves close.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 56

Description:	Isolating CCW to the RCP on Station Blackout			**Question ID:**	5734
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-005	10	0	9/9/98	CC, RCP, PPE

NRC KA Number	RO	SRO	Training Material	Objective
4.1-E55-EK3.02	4.3	4.6	W-3-LP-OPS-PPE05	3,7

QUESTION

OP-902-005, Station Blackout Recovery, directs the operator to verify closed CC-641, CC-710, and CC-713 to isolate Component Cooling Water to Containment. What is the reason for this?

A. To prevent thermal shocking the CEDM Coolers upon restart of the Component Cooling Water Pumps.
B. To prevent water hammer in Containment Bldg. piping upon restart of the Component Cooling Water Pumps.
C. To prevent thermal shocking the RCPs upon restart of the Component Cooling Water Pumps.
D. To prevent runout of the Component Cooling Water Pumps upon restart.

ANSWER

C. To prevent thermal shocking the RCPs upon restart of the Component Cooling Water Pumps.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 57

Description:	Sequence of events following fault on 3BS load circuit (new SUPS)			**Question ID:**	5528
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	Bank	**History:**	Not Used		

Reference	Revision	Change	Date	Plant Systems:
OP-006-005	10	0	3/12/99	ID

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A57-AA2.17	3.1	3.4	W-3-LP-OPS-ID00	1
3.6-062-A2.02	2.2	2.6	W-3-LP-OPS-RF00	3

QUESTION

A 100% short to ground on the circuit to CVC-103 has occurred. The power supply is from a circuit on PDP 91B, which is supplied from 3BS vital SUPS. Which of the following sequence of events will occur when the SUPS senses the fault?

A. The SUPS will automatically shut down.
B. The transfer switch will automatically transfer to the alternate supply, the circuit breaker for supply to CVC-103 will open on overload, and the transfer switch will return to the normal source.
C. The transfer switch will automatically transfer to the alternate supply, the circuit breaker for supply to CVC-103 will open on overload. The SUPS can then be returned to normal source by the operator using the "inverter to normal" pushbutton.
D. The circuit breaker supplying CVC-103 will open and the SUPS will remain in service.

ANSWER

B. The transfer switch will automatically transfer to the alternate supply, the circuit breaker for supply to CVC-103 will open on overload, and the transfer switch will return to the normal source

COMMENTS

DCP-3546 (RF09)

Waterford 3 Examination Question
Examination Bank

Examination Question Number 58

Description:	ACC-126 failure, effects on CCW Surge Tank			**Question ID:**	5736
Tier:	1	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
Sys Desc for CC				ACC, CC

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A62-AA1.03	3.6*	3.6	W-3-LP-OPS-CC00	3

QUESTION

Plant conditions are as follows:

CCW Surge Tank level is 85 % and rising. CCW radiation monitors on train A and B are reading normal. Outside air temperature is 88 °F. Which selection describes the event in progress?

A. A leak has developed in the Letdown Heat Exchanger.
B. A leak has developed in the EDG A Jacket Water cooler.
C. Train A Dry Cooling Tower Fan Sequencer has failed, driving all fans to fast.
D. ACC-126 A m/a station has failed to manual with 0 output, ACCW Pump A is running.

ANSWER

D. ACC-126 A m/a station has failed to manual with 0 output, ACCW Pump A is running.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 59

Description:	Emergency Boration during CR evacuation			**Question ID:**	4124 N
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	Used Bank	**History:**	1996 RO NRC exam		

Reference	Revision	Change	Date	Plant Systems:
OP-901-502	5	1	7/8/99	PPO

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A68-AK3.18	4.2	4.5	W-3-LP-OPS-PPO51	08
4.2-A67-AK3.04	3.3	4.1		

QUESTION

A Control Room evacuation has been ordered due to a fire in CP-2 and CP-3. The PNPO was not able to trip the reactor prior to evacuation. Why is emergency boration required?

A. The Main Turbine will not trip when the reactor is tripped outside the control room.

B. The MSR temperature control valve logic cannot be reset from outside the control room.

C. The Feedwater Control System will not shift to the RTO mode when the reactor is tripped from outside the control room.

D. The operator is unable to verify CEA position following a trip from outside the control room.

ANSWER

D. The operator is unable to verify CEA position following a trip from outside the control room.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 60

Description:	Evacuation of Control Room, Control of heat sink			**Question ID:**	5711
Tier:	1	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-502	5	1	7/8/99	EFW, PPO, MS

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A68-AA2.05	4.2	4.3	W-3-LP-OPS-PPO51	20, 21

QUESTION

A Control Room evacuation has been ordered due to a Control Room fire. Which of the following describe initial plant cooldown?

A. Controlling Steam Bypass valves, feeding with the Auxiliary Feed Pump

B. Controlling Steam Bypass valves, feeding with Emergency Feedwater

C. Controlling Atmospheric Dump valve, feeding with the Auxiliary Feed Pump

D. Controlling Atmospheric Dump valve, feeding with Emergency Feedwater.

ANSWER

D. Controlling Atmospheric Dump valve, feeding with Emergency Feedwater.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 61

Description:	Override required for Containment Fan Cooler CCW isolations			**Question ID:**	5709
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-009	0	0	9/9/98	CC, CCS

NRC KA Number	RO	SRO	Training Material	Objective
2-4-35	3.3	3.5	W-3-LP-OPS-CCS00	11
			W-3-LP-OPS-PPE01	6

QUESTION

A LOCA inside containment has occurred and OP-902-002 is being implemented. Containment Fan Cooler A trips on electrical overload. Which actions are required?

A. Place the keyswitch on Aux Panel 1 to OVERRIDE, take Containment Fan Cooler A control switch to STOP, and verify CC-808 A and CC-822 A close.
B. Manually gag CC-808 A and CC-822 A closed.
C. Place the keyswitch on Aux Panel 1 to OVERRIDE and verify CC-808 A and CC-822 A close.
D. Place the keyswitch in the –4 wing area to OVERRIDE and verify CC-808 A and CC-822 A close.

ANSWER

C. Place the keyswitch on Aux Panel 1 to OVERRIDE and verify CC-808 A and CC-822 A close.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 62

Description:	Use of Startup Channels for RV level determination			**Question ID:**	27
Tier:	1	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	Bank	**History:**	Not Used		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-MCD03				ENI, MCD

NRC KA Number	RO	SRO	Training Material	Objective
4.1-E74-EK1.02	4.6	4.8	W-3-LP-OPS-MCD03	6

QUESTION

The plant has undergone a large Loss of Coolant Accident. The Reactor Coolant Pumps are secured. There is no safety injection flow. The reactor coolant in the core region is at saturation conditions.

SELECT the expected response of the Excore Nuclear Instrumentation System Startup Channels as the coolant in the core region is initially boiled off.

A. As level in the core drops the level in the down comer drops causing count rate to Rise.

B. As level in the core drops the level in the down comer rises causing count rate to Lower.

C. As level in the core drops there are fewer neutrons generated causing count rate to Lower.

D. As level in the core drops there are more neutrons generated causing count rate to Rise.

ANSWER

a

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 63

Description:	Chemistry dept. responsibilities for high RCS activity			**Question ID:**	4125 N
Tier:	1	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	Used Bank	**History:**	1996 RO NRC exam		

Reference	Revision	Change	Date	Plant Systems:
OP-901-410	0	0	4/16/93	PPO, RCS

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A76-AK3.06	3.2	3.8	W-3-LP-OPS-PPO40	03

QUESTION

All of the following items are sampled and analyzed by the W-3 Chemistry Department when OP-901-410, High Activity in Reactor Coolant System is **EXCEPT**:

A. Cesium Concentration

B. Dose Equivalent Iodine Concentration

C. Dose Equivalent Iodine isotopic analysis

D. Gross RCS activity

ANSWER

A. Cesium Concentration

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 64

Description:	Shift turnover and board walkdowns			**Question ID:**	5721
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-100-007	13	1	5/25/99	ADM

NRC KA Number	RO	SRO	Training Material	Objective
2-1-3	3.0	3.4	w-3-lp-ops-ppa00	2

QUESTION

All of the following are true regarding board walkdowns **EXCEPT**:

A. Each setpoint indicator, switch, and controller should be checked.
B. The PNPO and SNPO should walk down their boards twice each shift.
C. Prior to removing a safety related component from service, each bypass status indicating lamp, controller, and switch should be checked on the opposite train component.
D. A walkdown should be performed in the last 2 hours of the shift on any safety-related components that were manipulated during the shift.

ANSWER

B. The PNPO and SNPO should walk down their boards twice each shift.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 65

Description:	Safety limits and tech spec 6.7.1			**Question ID:**	5722
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
TS 2.1.2				ADM
TS 2.1.1				

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
2-1-11	3	3.8	W-3-LP-OPS-TS00	3
			W-3-LP-OPS-TS03	10

QUESTION

All of the following prohibit critical operation of the plant until authorized by the NRC **EXCEPT**:

A. DNBR goes below 1.26
B. Peak linear heat rate exceeds 21.0 kW/ft
C. Linear power exceeds 108 % rated thermal power
D. Reactor Coolant pressure exceeds 2750 psia.

ANSWER

C. Linear power exceeds 108 % rated thermal power

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 66

Description:	Plant page requirements			**Question ID:**	5724
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-100-001	16	0	2/19/99	ADM, COM

NRC KA Number	RO	SRO	Training Material	Objective
2-1-16	2.9	2.8	W-3-LP-OPS-PPA00	2

QUESTION

Plant Page announcements concerning operation of major plant equipment

A. Should be made twice without an operator in attendance at the piece of equipment, once with an operator in attendance.
B. Should not be made if an operator is in attendance at the piece of equipment.
C. Should be made once without an operator in attendance at the piece of equipment, twice with an operator in attendance.
D. Should always be made once.

ANSWER

A. Should be made twice without an operator in attendance at the piece of equipment, once with an operator in attendance.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 67

Description:	Frequency for updating field control verifications			**Question ID:**	1630
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	Modified Bank	**History:**	Not Used		

Reference	Revision	Change	Date	Plant Systems:
OP-100-001	16	00	2/19/99	PPA
W5.201	3	1	9/15/97	

NRC KA Number	RO	SRO	Training Material	Objective
2-1-21	3.1	3.2	W-3-LP-OPS-PPA01	1

QUESTION

How long is a Field-Controlled copy of an Operation's procedure allowed to be used before reverification is required?

A. 7 days
B. 14 days
C. 30 days
D. 60 days

ANSWER

B. 14 days

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 68

Description:	Criticallity below PDIL			**Question ID:**	4548
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	Bank	**History:**	Not Used		

Reference	Revision	Change	Date	Plant Systems:
OP-010-003	0	1	3/22/99	CED, PPO, PPN

NRC KA Number	RO	SRO	Training Material	Objective
2-1-20	4.3	4.2	W-3-LP-OPS-PPN01	3
2-2-1	3.7	3.6		

QUESTION

While performing a reactor startup, criticality is expected with Group 4 Control Rods below 90 inches. Which one of the following actions must be taken as a result of this?

A. Fully insert all CEAs, verify boron concentration, and recalculate ECC.
B. Commence Emergency Boration, fully insert all CEAs, and verify boron concentration.
C. Fully insert all Reg Group CEAs, verify boron concentration, and recalculate ECC.
D. Trip the reactor and commence Emergency Boration.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 69

Description:	UNT-005-003, Clearance Procedure			**Question ID:**	5385
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	Bank	**History:**	Not Used		

Reference	Revision	Change	Date	Plant Systems:
UNT-005-003	16	0	12/1/98	ADM

NRC KA Number	RO	SRO	Training Material	Objective
2-2-13	3.6	3.8	W-3-LP-OPS-CLR00	04

QUESTION

A Craft Maintenance Tagout

A. Allows several maintenance personnel to operate the tagged component.
B. On Safety Equipment requires an operator to verify tags are hanging correctly.
C. Will use normal red danger tags with CM in the identifier.
D. Requires the holder to attach a label identifying the name of the holder to each craft maintenance tag listed on the craft maintenance tagout.

ANSWER

D.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 70

Description:	Tech Spec 4.0.3			**Question ID:**	5729
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
TS 3.5.1				ADM
TS 4.0.3				

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
2-2-22	3.4	4.1	W-3-LP-OPS-TS02	8, 9

QUESTION

Chemistry Department reported to the Control Room at 1000 on 7/20/99 that the monthly sample for SIT 2A was performed incorrectly and the results are invalid. The late date for the sample was 1430 on 7/11/99. What are the required actions?

A. Declare SIT 2A inoperable and enter tech spec 3.5.1 at 1000 on 7/20/99. Invoke tech spec 4.0.3, and complete the required sample within 24 hours.

B. Declare SIT 2A inoperable and enter tech spec 3.5.1 as of 1430 on 7/11/99. Invoke tech spec 4.0.3 and complete the required sample within 24 hours.

C. Declare SIT 2A inoperable and enter tech spec 3.5.1 as of 1430 on 7/11/99. In the next 6 hours either be in Hot Shutdown or complete the required surveillance.

D. Declare SIT 2A inoperable and enter tech spec 3.5.1 at 1000 on 7/20/99. Declare SIT 2A operable by completing the required surveillance within 1 hour or be in Hot Shutdown in the next 6 hours.

ANSWER

A. Declare SIT 2A inoperable and enter tech spec 3.5.1 at 1000 on 7/20/99. Invoke tech spec 4.0.3, and complete the required sample within 24 hours.

COMMENTS

Provide tech spec 3.5.1

Waterford 3 Examination Question
Examination Bank

Examination Question Number 71

Description:	Very high and locked high radiation areas			**Question ID:**	5730
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
HP-001-107	12	2	6/11/98	RAD

NRC KA Number	RO	SRO	Training Material	Objective
2-3-1	2.6	3	W-3-LP-OPS-PPA00	2
			W-3-LP-OPS-RAD02	6

QUESTION

A Locked High Radiation Area is an area accessible to individuals in which radiation levels could result in an individual receiving a DDE ≥ _____ in 1 hour at 30 cm from the radiation source or any surface that radiation penetrates, and a Very High Radiation Area is an area where an individual would receive a DDE ≥ _____ in 1 hour at 30 cm.

A. 500 rads, 1 rem
B. 1 rem, 500 rads
C. 100 mrem, 1 rem
D. 5 rem, 500 rads

ANSWER

B. 1 rem, 500 rads

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 72

Description:	Power entries with HP-001-213			**Question ID:**	5731
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
HP-001-213	9	2	6/11/98	ADM, RAD

NRC KA Number	RO	SRO	Training Material	Objective
2-3-10	2.9	3.3	W-3-LP-OPS-PPA00	2

QUESTION

Which of the following is true regarding Containment building entries while at power?

A. Entry into the Containment Sump is allowed.
B. A health physics technician escort is not required if a pre-job brief was held.
C. The GMPO permission is required for non-emergency power entries
D. Reactor power shall be held stable, with < 3% power rise per hour.

ANSWER

D. Reactor power shall be held stable, with < 3% power rise per hour.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 73

Description:	Immediate operator action for SDC Malfunction.			**Question ID:**	1195
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	Used Bank	**History:**	RO class 2-3-99		

Reference	Revision	Change	Date	Plant Systems:
OP-901-131	1	1	2/9/99	PPO, SDC

NRC KA Number	RO	SRO	Training Material	Objective
4.2-A25-AA1.03	3.4	3.3	W-3-LP-OPS-REQ21	2
2-4-1	4.3	4.6		

QUESTION

The following plant conditions exist:

- Refueling Outage
- Mode 6
- Shutdown Cooling Trains A&B in service

WHICH of the following conditions requires the operator to secure LPSI Pump B as an Immediate Operator Action?

A. Loop 1 Suction Isol Downstream Outside Valve (SI-407B) is closed.

B. Loop 1 Shutdown Cooling Suction Header Relief Valve (SI-406B) is open.

C. Loop 1 Suction Isol Downstream Outside Valve (SI-407B) is open.

D. Loop 1 Shutdown Cooling Suction Header Relief Valve (SI-406B) is closed.

ANSWER

A. Loop 1 Suction Isol Downstream Outside Valve (SI-407B) is closed.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 74

Description:	Proper communications during the EOPs			**Question ID:**	5738
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OI-038-000	0	0	9/15/98	ADM, PPE

NRC KA Number	RO	SRO	Training Material	Objective
2-4-15	3.0	3.5	W-3-LP-OPS-PPE01	4, 5

QUESTION

The following plant conditions exist:

RCS Pressure is 1100 psia and steady
Pressurizer level is 15% and dropping
S/G #1 level is 20% NR and steady
S/G #1 pressure is 650 psia and dropping
Containment pressure is 27 psia and rising
Tcet is 495 °F and dropping
S/G #2 level is 10% WR and dropping
S/G #2 pressure is 280 psia and dropping

Standard Post Trip Actions of OP-902-000 are completed and OP-902-004, Excess Steam Demand Recovery Procedure is being implemented. Which of the following is an appropriate report to give to the CRS at this time for this event?

A. "Emergency Diesel Generator A trouble".
B. "RWSP level Hi/Lo, level 86% and dropping".
C. "Boric Acid Makeup Tank A level Hi/Lo, level 75% and dropping".
D. "Diverse EFW Active/Trouble".

ANSWER

D. "Diverse EFW Active/Trouble".

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 75

Description:	Determining if Inventory is being met			**Question ID:**	3166
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Comp/Analysis
Source:	Modified Bank (used)	**History:**	RO class 5-18-99 (previous version)		

Reference	Revision	Change	Date	Plant Systems:
OP-902-005	10	0	9/9/98	PPE

NRC KA Number	RO	SRO	Training Material	Objective
2-4-21	3.7	4.3	W-3-LP-OPS-PPE05	1

QUESTION

Plant conditions following a reactor trip due to a loss of offsite power are:

- Pressurizer level - 20% and stable
- Pressurizer pressure - 2000 psia and stable
- Representative CET temperature - 620°F and stable
- RVLMS indicates no levels voided

The RCS inventory safety function is:

A. Being maintained because RVLMS indicates plenum level > 80%.
B. Being maintained because Pressurizer level is ≥ 7% and stable.
C. NOT being maintained because RCS subcooled margin is less than 28°F.
D. NOT being maintained because Pressurizer level is < 33%.

ANSWER

C. NOT being maintained because RCs subcooled margin is less than 28°F.

COMMENTS

Use of steam tables required

Waterford 3 Examination Question
Examination Bank

Examination Question Number 76

Description:	Fire agents in the Fuel Handling Building			**Question ID:**	5732
Tier:	3	**Group:**	N/A	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
FP-001-020	11	0	1/27/98	FPP

NRC KA Number	RO	SRO	Training Material	Objective
2-4-26	2.9	3.3	W-3-LP-OPS-FP00	10

QUESTION

Which of the following is the proper fire extinguishing agent to be used in the +46 elevation of the Fuel Handling Building?

A. Water fog
B. Dry Chemical
C. Water solid stream
D. Foam

ANSWER

C. Water solid stream

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 77

Description:	Bypassing second channel of ESFAS			**Question ID:**	5700
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
OP-903-107	14	2	3/17/99	PPS

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
3.2-013-K5.02	2.9	3.3	W-3-LP-OPS-PPS00	4

QUESTION

The plant is at 100% power. The Channel A PZR Press Lo trip bistable is bypassed due to the Safety Channel A pressure transmitter failing low. Subsequently, Channel D PPS Functional Test is performed as scheduled. Prior to inserting a low Pressurizer pressure signal into Channel D, the SNPO depresses the trip channel bypass pushbutton for the Channel D PZR Press Lo trip bistable. The SNPO then notices his mistake. What is the result of this action if the SNPO stops at this point?

A. Channel A and D are bypassed and trip logic is 1out of 2.

B. Channel A and D are bypassed and trip logic is 2 out of 2.

C. Channel D does **NOT** bypass, Channel A is removed from bypass, a reactor trip and SIAS occur.

D. Channel D does **NOT** bypass, Channel A is removed from bypass, a reactor trip and SIAS do **NOT** occur.

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 78

Description:	Bistables to be bypassed for a failure of the upper detector of a safety NI channel			**Question ID:**	5701
Tier:	2	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
TS 3.3.1				NI

NRC KA Number	RO	SRO	Training Material	Objective
2-1-11	3.0	3.8	W-3-LP-OPS-PPS00	9

QUESTION

The plant is at 100% of rated thermal power. A failure of the Channel A excore nuclear instrument middle detector has occurred. All of the following PPS Channel A trip bistables are required to be bypassed within one hour **EXCEPT**:

A. Linear Power HI

B. Log Power HI

C. DNBR LO

D. LPD HI

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 79

Description:	Effect of a malfunction of the pulse height discriminator on the SU channel NIs			**Question ID:**	5702
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
Sys Desc for NI				NI

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
3.7-015-K6.02	2.6	2.9	W-3-LP-OPS-ENI00	2

QUESTION

The discriminator volts adjust potentiometer in Startup Channel 1 has failed such that discriminator voltage increases. How does this affect Startup Channel 1 when it is energized?

A. Startup Channel 1 reads lower than actual due to fewer gamma pulses meeting the threshold for counting.

B. Startup Channel 1 reads lower than actual due to fewer neutron pulses meeting the threshold for counting.

C. Startup Channel 1 reads higher than actual due to increased amplification of gamma pulses.

D. Startup Channel 1 reads higher than actual due to increased amplification of neutron pulses.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 80

Description:	Effect of open CET thermocouples on RCS Draindown			**Question ID:**	5703
Tier:	2	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-001-003	18	2	8/3/99	INI

NRC KA Number	RO	SRO	Training Material	Objective
3.7-017-A2.01	3.1	3.5	W-3-LP-OPS-REQ13	9

QUESTION

Given the following initial conditions:

- The plant is in MODE 5 preparing for entry into MODE 6.
- An RCS drain down is in progress to install nozzle dams in each steam generator.
- PZR level is currently at 30% Cold Cal.
- Jumpers have been installed on 2 CETs per QSPDS channel to facilitate the drain down all other CETs are disconnected.

The PNPO notes that one of the two dedicated CETs from QSPDS 1 is no longer providing valid readings. Which of the following would be required to remain in compliance with OP-001-003, RCS Drain Down.

A. Ensure the failed CET is covered by an active RCS Perturbation Log form.

B. Stop the RCS drain down prior to lowering RCS level less than 5% Cold Cal PZR level.

C. Stop the RCS drain down prior to lowering RCS level below 18 ft MSL.

D. Restore at least 2 CETs from QSPDS 1 prior to continuing any drain down.

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 81

Description:	Definition of a Severe Accident in SAMG space			**Question ID:**	5222
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	Bank	**History:**	Not Used		

Reference	Revision	Change	Date	Plant Systems:
SAMG-01				SAM

NRC KA Number	RO	SRO	Training Material	Objective
2-1-7	3.7	4.4	W-3-LP-OPS-SAM00	1, 2
2-4-38	2.2	4.0		

QUESTION

Which of the following would prompt entry into the SAMGs?
(Assume core exit thermocouples are available.)

a. SGTR with concurrent steamline break on same SG

b. Partial core uncovery with CETs > 1200F

c. Small break LOCA with vessel level at centerline of hot legs

d. Large break LOCA with all critical safety functions satisfied

ANSWER

b. Partial core uncovery with CETs > 1200F

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 82

Description:	Effects of containment pressure on status of CCS			**Question ID:**	5704
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-902-009	0	0	9/9/98	CCS

NRC KA Number	RO	SRO	Training Material	Objective
3.5-022-K4.02	3.1	3.4	W-3-LP-OPS-CCS00	2

QUESTION

Given the following conditions:

- Containment Temperature = 160°F
- Containment Pressure = 17.5 psia
- All Containment Fan Coolers (CFCs)are OPERABLE

Determine the status of the Containment Cooling System.

A. 3 of 4 CFCs are running in fast speed and discharging through the safety dampers.

B. 4 of 4 CFCs are running in fast speed and discharging through the ring header.

C. 3 of 4 CFCs are running in slow speed and discharging through the ring header.

D. 4 of 4 CFCs are running in slow speed and discharging through the safety dampers.

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 83

Description:	Effect of a prolonged loss of Reactor Cavity Cooling			**Question ID:**	5705
Tier:	2	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-CCS00				RCC

NRC KA Number	RO	SRO	Training Material	Objective
3.5-022-K3.01	2.9	3.2	W-3-LP-OPS-CCS00	1
			W-3-LP-OPS-CCS00	5

QUESTION

Describe the concern associated with a prolonged loss of the Reactor Cavity Cooling Fans with the reactor at 100% power.

A. CEA drops occur due to overheating of CEDM coils.

B. Reactor Cavity concrete becomes embrittled due to dryout.

C. Increased thermal stresses occur across the reactor vessel metal.

D. Incore instrument leads become brittle due to overheating.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 84

Description:	Affect of a condensate pump trip on the FWPTs			**Question ID:**	5719
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-003-003	14	1	6/25/99	CD, FWP

NRC KA Number	RO	SRO	Training Material	Objective
3.4-056-A2.04	2.6	2.8	W-3-LP-OPS-CD00	5
			W-3-LP-OPS-FWP00	2
			W-3-LP-OPS-FW00	3

QUESTION

Given the following initial conditions:

- The plant is at 30% power following a turbine trip and Reactor Power Cutback (RPC) Actuation
- FWPT A and B are in service and supplying the steam generators at a discharge pressure of 1100 psig
- Condensate Pumps A, B, and C are running
- Heater Drain Pumps A, B, and C tripped on low suction pressure during the transient
- Plant loads are being supplied by the Startup transformers

The Startup Transformer feeder breaker to the A1 bus trips on overcurrent followed by a trip of FWPT A and a reactor trip. Determine the cause of the FWPT A trip.

A. Low Suction Pressure trip

B. Low Suction Flow trip

C. Condensate Pump Interlock trip

D. Recirculation Failure trip

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 85

Description:	Determine response of S/G level and FWP to a failed open steam bypass valve			**Question ID:**	5707
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-MS00				FW, FWC
W-3-LP-OPS-FWP00				

NRC KA Number	RO	SRO	Training Material	Objective
3.4-059-A1.07	2.5	2.6	W-3-LP-OPS-FWC00	4
			W-3-LP-OPS-SBC00	3
			W-3-LP-OPS-MS00	14

QUESTION

The plant is at 60% power with FWPT A in service when steam bypass valve MS-319A fails to 100% open. Which of the following describes the response of steam generator levels and FWPT A speed?

A. Steam generator levels initially swell and then lower; FWPT A speed rises and steam generator levels return to setpoint.

B. Steam generator levels initially swell and then lower; FWPT A speed rises to maximum program speed and steam generator levels continue to lower.

C. Steam generator levels initially shrink, FWPT A speed rises to maximum program speed, then steam generator levels return to setpoint and FWPT A speed lowers.

D. Steam generator levels initially shrink; FWPT A speed rises to maximum program speed and steam generator levels continue to lower.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 86

Description:	Effect of RPC actuation on SG levels with FW in manual			**Question ID:**	5720
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-FWC00				FW, FWC

NRC KA Number	RO	SRO	Training Material	Objective
3.4-059-K3.03	3.5	3.7.	W-3-LP-OPS-FW00	3
			W-3-LP-OPS-FWC00	6
			W-3-LP-OPS-FW00	4

QUESTION

The plant is at 100% power. FWCS 1 controllers are in manual due to a failure of one control channel level transmitter. Later a Reactor Power Cutback occurs due to a trip of FWPT B. The SNPO is focused on a problem with the turbine runback circuit. What is the effect on the FW system and the steam generators if the SNPO remains focused on Turbine Runback?

A. SG 1 level rises, FWCS 1 goes into high level override (HLO), and then SG 1 level will cycle around the HLO setpoint.

B. SG 1 level rises to the reactor trip setpoint, FWCS 1 goes into reactor trip override (RTO), SG level returns to normal values.

C. SG 1 level rises to the reactor trip setpoint and then continues to rise until the transient is terminated by a closure of the MFIV.

D. SG 1 level rises to the reactor trip setpoint, FWCS 1 goes into high level override (HLO), SG 1 level will cycle around the HLO setpoint.

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 87

Description:	EFW valve power supplies			**Question ID:**	5706
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-009-003	11	2	4/21/99	EFW

NRC KA Number	RO	SRO	Training Material	Objective
3.4-061-K2.01	3.2*	3.3	W-3-LP-OPS-EFW00	3

QUESTION

The plant is performing a transfer of the AB safety busses from the A train to the B train. Which of the following EFW pump AB valves will lose power during the transfer?

A. MS-401A, EFW Pump AB MS Supply Isolation A

B. MS-401B, EFW Pump AB MS Supply Isolation B

C. MS-416, EFW Pump AB Turbine Stop Valve

D. MS-417, EFW Pump AB Turbine Governor Valve

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 88

Description:	Status of EFW FCVs with failed flow instrument.			**Question ID:**	1786
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	Used Bank	**History:**	RO class 12-11-98		

Reference	Revision	Change	Date	Plant Systems:
Sys Desc for EFW				EFW

NRC KA Number	RO	SRO	Training Material	Objective
3.4-061-A1.01	3.9	4.2	W-3-LP-OPS-EFW00	05
3.4-061-K4.11	2.7	2.9	W-3-LP-OPS-EFW00	06

QUESTION

Given the following plant status, CHOOSE the proper EFW system response. Assume EFAS-1 and EFAS-2 are the only ESFAS Actuations actuated.

S/G #1	S/G #2
39% WR level (decreasing)	53% WR level (decreasing)
EFW Flow transmitter failed high	EFW flow transmitter operating properly
EFW isolation valves - open	EFW isolation valves - open
EFW Primary FCV - Auto	EFW Primary FCV - Auto
EFW Backup FCV- Auto	EFW Backup FCV - Auto

A. S/G 1 Primary FCV opens to preset valve position, and Backup FCV opens to 400 gpm flow value.

B. S/G 2 Primary FCV opens to preset valve position, and Backup FCV opens to 400 gpm flow value.

C. S/G 1 Primary FCV opens to preset valve position, and Backup FCV is closed.

D. S/G 1 Primary FCV opens to preset valve position, and Backup FCV opens to 175 gpm flow value.

ANSWER

C. S/G 1 Primary FCV opens to preset valve position, and Backup FCV is closed.

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 89

Description:	Actions required to release a Waste Condensate Tank with the LWM rad monitor OOS			**Question ID:**	66 B
Tier:	2	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
OP-007-004	14	3	6/12/98	LWM, PRM
TRM 3.3.3				

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
3.9-068-K6.10	2.5	2.9	W-3-LP-OPS-LWM00	5

QUESTION

The LWM radiation monitor is out of service. All of the following are required to be performed for a release of a Waste Condensate Tank to the Circulating Water system **EXCEPT**:

A. Independent performance and verification of valve lineup by two technically qualified individuals.

B. Independent performance and verification of release rate calculations by two technically qualified individuals.

C. Two independent samples are taken and analyzed from the Waste Condensate Tank to be discharged.

D. Perform independent estimation of release flow rate every four hours during the Waste Condensate Tank release.

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 90

Description:	Actions for accidental discharge of tanks not on the discharge permit			**Question ID:**	5723
Tier:	2	**Group:**	1	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-414	0	0	4/16/93	BD, PRM

NRC KA Number	RO	SRO	Training Material	Objective
3.9-068-A4.03	3.9	3.8	W-3-LP-OPS-PPO40	3

QUESTION

Given the following conditions:

- SDC train A is in service, maintaining RCS at 135°F
- SG 1 is in wet layup conditions after a Steam Generator Tube Rupture
- SG 2 is being discharged to Circ Water through the Blowdown system
- SG 1 will be discharged to Circ Water following completion of SG 2 discharge
- SG 1 discharge permit has not been prepared and samples have not been taken of SG 1 contents

During the release the PNPO notices that SG 1 level is lowering, Blowdown Containment Isolation Valves, BD-102A and BD-103A are open, the Circ Water Discharge rad monitor is in high alarm, and the automatic isolation has not occurred. What action should be taken for these conditions?

A. Close BD-303, BD to CW or Waste Pond Isolation Valve to secure the release.

B. Close BD-102A and BD-103A to secure the release of SG 1.

C. Verify BD-109A is closed and continue release.

D. Sample SG 1 and release both SGs simultaneously.

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 91

Description:	GWM Compressor automatic operation to control Gas Surge tank pressure			**Question ID:**	5728
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-007-003	13	0	3/8/99	GWM

NRC KA Number	RO	SRO	Training Material	Objective
3.9-071-A3.02	2.8	2.8	W-3-LP-OPS-GWM00	5

QUESTION

Given the following conditions:

- Both GWM compressors are in AUTO
- GWM Compressor B is selected as lead compressor
- The PNPO is venting the VCT to the Gas Surge Header
- Gas Surge Tank Pressure = 14 psig
- Waste Gas Compressor B Clng Water Flow Lo alarm is locked in

Which waste gas compressors should be running for the given conditions?

A. Waste Gas Compressor A

B. Waste Gas Compressor B

C. Waste Gas Compressors A and B

D. Neither Waste Gas Compressor should be running

ANSWER

C

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 92

Description:	Line source calculation			**Question ID:**	5744
Tier:	2	**Group:**	1	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-RAD02				MCD

NRC KA Number	RO	SRO	Training Material	Objective
3.7-072-K5.01	2.7	3.0	W-3-LP-OPS-RAD02	3

QUESTION

A gamma line source 12 meters long reads 1r/hr, 3 meters from the source. What would radiation levels be at 12 meters?

A. 62.5 mr/hr

B. 125 mr/hr

C. 250 mr/hr

D. 500 mr/hr

ANSWER

B

COMMENTS

L = 12 m; Therefore L/2 = 6 m
For $\leq$ L/2, use $I_1(D_1) = I_2(D_2)$. For > L/2, use $I_1(D_1)^2 = I_2(D_2)^2$
1 R/hr * (3m/6m) = 500mr/hr; 500 mr/hr * $(6m/12m)^2$ = 125mr/hr

Waterford 3 Examination Question
Examination Bank

Examination Question Number 93

Description:	Affect of CVC-140 failing to the bypass position while on SDC purification			**Question ID:**	5725
Tier:	2	**Group:**	3	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-REQ13				CVC, SDC

NRC KA Number	RO	SRO	Training Material	Objective
3.4-005-K1.04	2.9	3.1	W-3-LP-OPS-REQ13	1
			W-3-LP-OPS-REQ13	2

QUESTION

CVC-140, Ion Exchanger Bypass fails to the BYPASS position while on SDC purification. What is the effect of this failure?

A. RCS purification consists of filtration only.

B. An RCS drain is initiated to the VCT or BMS.

C. All SDC purification flow is stopped.

D. Loss of SDC purification cooling occurs.

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 94

Description:	Actions for exceeding 2750 psia and reactor critical			**Question ID:**	5727
Tier:	2	**Group:**	3	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	**Revision**	**Change**	**Date**	**Plant Systems:**
TS 2.1.2				RCS
OP-100-001	16	0	2/19/99	

NRC KA Number	**RO**	**SRO**	**Training Material**	**Objective**
3.5-007-A2.03	3.6	3.9	W-3-LP-OPS-RCS00	8
			W-3-LP-OPS-RCS00	9

QUESTION

The reactor is at 100% power when a turbine trip occurs and SBCS fails to operate. The PNPO notes that RCS pressure is 2775 psia and no reactor trip breakers are open. After performing a manual reactor trip, what actions outside of OP-902-000 are required?

A. Restore RCS pressure to within limits of the Pressure/Temperature limits curves within 5 minutes.

B. Restore RCS pressure to within limits of the Pressure/Temperature limits curves within 1 hour.

C. Restore RCS pressure to between 2025 and 2275 psia within 2 hours.

D. Restore a pressurizer code safety to operable and lower RCS pressure to < 2500 psia within 15 minutes.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 95

Description:	Affect of low ccw surge tank level on pump suction & discharge X-connects with AB assignment switch in A			**Question ID:**	5726
Tier:	2	**Group:**	3	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-002-003	12	1	3/25/99	CC

NRC KA Number	RO	SRO	Training Material	Objective
3.8-008-A1.04	3.1	3.2	W-3-LP-OPS-CC00	3

QUESTION

Given the following initial conditions:

- CCW Pump AB replacing CCW Pump A
- AB Assignment Switch in "A" position
- AB Busses are aligned to the "B" train

CCW surge tank drops to 10%. Describe the effect on CCW Pump AB and the pump suction and discharge cross-connect valves.

A. Pump suction and discharge cross-connect valve to Train A close and CCW Pump AB supplies Train B.

B. Pump suction and discharge cross-connect valve to Train B close and CCW Pump AB supplies Train A.

C. All pump suction and discharge cross-connect valves close and CCW Pump AB trips.

D. All pump suction and discharge cross-connect valves remain open but CCW Pump AB trips.

ANSWER

B

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 96

Description:	Hydrogen sources during an Excess Steam Demand			**Question ID:**	1170
Tier:	2	**Group:**	3	**Cognitive Level:**	Memory/Fund
Source:	Bank	**History:**	Not Used		

Reference	Revision	Change	Date	Plant Systems:
OP-902-004	8	0	9/9/98	PPE

NRC KA Number	RO	SRO	Training Material	Objective
3.5-028-K5.03	2.9	3.6	W-3-LP-OPS-MCD04	10
			W-3-LP-OPS-PPE04	1

QUESTION

If Containment Spray is actuated during an Excess Steam Demand, hydrogen analyzers are placed in service. The most probable source of H_2 would be:

A. zirc water reaction

B. steel water reaction

C. zinc and aluminum corrosion

D. radiolysis in the containment sump

ANSWER

c

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 97

Description:	Quick Open of SBC Valves			**Question ID:**	1235
Tier:	2	**Group:**	3	**Cognitive Level:**	Comp/Analysis
Source:	Used Bank	**History:**	RO class 1-13-99		

Reference	Revision	Change	Date	Plant Systems:
W-3-LP-OPS-SBC00				SBC

NRC KA Number	RO	SRO	Training Material	Objective
3.4-041-K4.18	3.4	3.6	W-3-LP-OPS-SBC00	5
3.4-041-K4.17	3.7	3.9		

QUESTION

The following plant conditions exist: The plant is at full power. Reactor Cutback is out of service. Reactor trip on turbine trip is enabled. A large load rejection occurs which results in a reactor trip.

The response of the steam bypass control system immediately following generation of the reactor trip signal will be: (assume all SBCS valves available)

A. all valves will quick open

B. valves 1 through 5 will quick open

C. valves 1 through 3 will quick open

D. no valves will quick open

ANSWER

B. valves 1 through 5 will quick open

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 98

Description:	Auto Start of ACC pump due to loss of jockey pump			**Question ID:**	5717
Tier:	2	**Group:**	3	**Cognitive Level:**	Comp/Analysis
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-002-003	12	1	3/25/99	ACC

NRC KA Number	RO	SRO	Training Material	Objective
3.4-076-K2.01	2.7	2.7	W-3-LP-OPS-CC00	3
			W-3-LP-OPS-CC00	4

QUESTION

Which of the following events/conditions will result in an automatic start of an ACC pump?

A. Loss of power to MCC 313A

B. WCT Basin temperature exceeds 95°F

C. Sequencer test switch taken to the TEST position

D. Manual start of an Emergency Diesel Generator

ANSWER

A

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 99

Description:	Conditions requiring implementation of steps in OP-901-511, IA malfunction			**Question ID:**	5716
Tier:	2	**Group:**	3	**Cognitive Level:**	Memory/Fund
Source:	New	**History:**	N/A		

Reference	Revision	Change	Date	Plant Systems:
OP-901-511	4	1	7/15/99	IA

NRC KA Number	RO	SRO	Training Material	Objective
2-4-11	3.4	3.6	W-3-LP-OPS-PPO50	3

QUESTION

IA pressure is noted to lower from 110 psig to 90 psig and stabilizes. The leak is located and isolated 30 minutes after the initial drop in air pressure. All of the following actions are required for this condition **EXCEPT**:

A. Verify all IA and SA air compressors are operating properly.

B. Verify SA backup supply to IA Press Cntl Valve, SA-125 is open.

C. Verify IA air Dryer bypass is open.

D. Place Essential Air in service to safety-related valves.

ANSWER

D

COMMENTS

Waterford 3 Examination Question
Examination Bank

Examination Question Number 100

Description:	TS Loss of Containment Integrity			**Question ID:**	3495
Tier:	2	**Group:**	3	**Cognitive Level:**	Memory/Fund
Source:	Used Bank	**History:**	1996 RO NRC exam		

Reference	Revision	Change	Date	Plant Systems:
TS 3.9.4				CB, TS, RF, FHS

NRC KA Number	RO	SRO	Training Material	Objective
3.5-103-K3.03	3.7	4.1	W-3-LP-OPS-CB00	6
			W-3-LP-OPS-REQ04	02

QUESTION

WHICH ONE (1) of the following conditions is **NOT** allowed during Core Alterations.

A. Equipment Hatch closed with ONLY four (4) bolts.

B. One (1) Air Lock door is OPEN.

C. Containment Purge is in progress.

D. An electrical penetration's seals removed.

ANSWER

D. An electrical penetration's seals are removed for repairs.

COMMENTS

DATE:

DESCRIPTION	NOTE	MODE	T. S.	COMP #	LIMIT	UNITS	04-12	12-20	20-04
Cl Gas Mon Chnl Chk:		1 - 4	4.3.3.7.1	CP-53					
Channel A				HVC-IAIT-5400A	CC 2	PPM			
Channel B				HVC-IAIT-5400B	CC 2	PPM			
BRGM Channel Check:		1 - 4	4.3.3.7.3	PMC/LOCAL					
Channels A & B	52.0			GD BRGM	CC PASS	√			
Channel A	52.1			Water, H2O	N/A	PPHT			
Channel B	52.1			Water, H2O	N/A	PPHT			
Channel Check lower limit	52.1				Highest Value X 0.80	PPHT			
Lowest value ≥ Channel Check lower limit	52.1				YES	√			
Loose Parts Monitoring Channel Check:	43.0	1 - 2	TRM 4.3.3.9.a	CP - 32					
Channel A					ON,No Alarm	√			
Channel B					ON,No Alarm	√			
EFW Pmp Disch Temp:	37.0	1 - 3		Local					
EFW Pump A				EFW-ITI-8301A	< 120°F	√			
EFW Pump AB				EFW-ITI 8301AB	< 120°F	√			
EFW Pump B				EFW-ITI 8301B	< 120°F	√			
CS Riser Level Indication	4.0 48.0	1 - 4	4.6.2.1a	Local					
CS A Train				CS-ILI-7123AS	≥ 186	Ft			
CS B Train				CS-ILI-7123BS	≥ 186	Ft			
BAMTs Temperature Verification:	38.0	1 - 4	4.1.2.2.a 4.1.2.8.b	Local					
BAMT A HI/LO Temp Alarm				G - 1006	No Alarm	√			
BAMT B HI/LO Temp Alarm				G - 1007	No Alarm	√			
REMARKS:									

2

3

Question 10

Modes 1 - 4 Technical Specification Surveillance Log Notes

1.0 Determine SHUTDOWN MARGIN using OP-903-090, Shutdown Margin for Modes 3 - 4 and Mode 2 (Keff < 1) or using OP-004-019, Estimated Critical Configuration. Column F of Attachment 12.1 of OP-004-019 can be used to satisfy SHUTDOWN MARGIN of 5.15 % in Mode 3 per Technical Specification 4.1.1.1 when Shutdown Bank CEAs are not fully inserted **[CR-98-0970]**. This is done by verifying that the actual RCS boron concentration is not lower that 20 ppm < the Critical Boron Concentration of Column F and the question "Allowable CEA Range is verified to be above Transient Insertion Limit for critical operations (Group 4 ≥ 90 inches)" is answered yes. Determine SHUTDOWN MARGIN using OP-903-090 for Modes 1-5 in all cases involving inoperable CEA's within 1 hour. Attach documentation to Attachment 11.1. NA if in Mode 1or 2 (Keff ≥ 1) and all CEA's operable.

1.1 Determine SHUTDOWN MARGIN using OP-903-090, Shutdown Margin, for Modes 3 - 4. Refer to COLR fig. 1. Attach documentation to Attachment 11.1. NA if in Mode 1 or 2 (Keff ≥ 1) or if any CEA is not fully inserted.

2.0 The Containment average air temperature limit (≥ 90 °F to ≤ 120 °F) is based on engineering calculations and does not represent instrument inaccuracies. Taking instrument inaccuracies into account, the indicated limit for Containment average air temperature is (≥96 °F to ≤ 114 °F). The Containment average air temperature shall be the arithmetic average of three running CFC Inlet temperatures and shall be determined once per 24 hours. With Containment Average Air Temperature below 96°F, either restore the Containment Temperature to ≥ to 96°F within 1 hour, or reduce thermal power to ≤ 70% of RATED THERMAL POWER within the next 6 hours. Maintaining Containment Air Temperature ≥ 96°F ensures that Fuel Peak Centerline Temperature accident analysis are accurate for a LOCA/Emergency Core Cooling Condition. With the Containment Average Air Temperature ≥ 114 °F, reduce the Containment Average Air Temperature to within the limit within 8 hours, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

3.0 If either Boron Dilution alarm is inoperable, then verify Primary Makeup to Dilution Tee and Chem Add Tank, PMU-136, Locked Closed or power removed from all Charging Pumps. N/A if both Boron Dilution alarms are operable, or in Modes 1 and 2.

3.1 In Mode 3 and 4, verify plant conditions comply with TS. 3.1.2.9.a.2 or 3.1.2.9.b.2 at least once per 24 hours. NA if not in Modes 3 or 4.

4.0 Containment Spray Riser Level is not applicable in Mode 4 with RCS Pressure ≤ 400 PSIA.

40.0 In Mode 4, the operable S/G must be in the same loop as the operable RCP.

41.0 Verify Regulating Group CEA's within Insertion Limits by completing Attachment 11.7 Regulating Group CEA Insertion Limits

42.0 Verify PLCEA Group CEA's within Insertion Limits by completing Attachment 11.8, PLCEA Group Insertion Limits.

43.0 On CP-32 Signal Conditioning Rack, check no CHANNEL MODULE SIGNAL LOSS LED'S are illuminated for any channel. Place alternate sensor in service for each location by changing the position of A(B) toggle switches in rear of CP-32. On Signal Conditioning Rack, check no CHANNEL MODULE SIGNAL LOSS LED's illuminated. To clear VALVE MON/LOOSE PARTS MON/SYSTEM TROUBLE annunciator (K-10, Cabinet L), press ALR/AK pushbutton on Interface Module.

44.0 Average Cold Leg Temperature is the mathematical average of the RCS Cold Leg Temperatures. The Reactor Coolant Cold Leg Temperature shall be determined to be between 541 °F and 558 °F in Mode 1 > 30 % Power.

44.1 Verify Tcold ≥ 520 °F within 15 minutes prior to achieving criticality and at least once per 30 minutes with Tcold < 530 °F in Mode 1 & 2.

44.2 If the penetration is isolated with temperature above the limit specified, then the temperature may drift down without concern and TS 3.6.1.1 need not be entered.

45.0 Required temperature due to Containment Isolation concerns for systems that isolate during an accident. If temperature cannot be maintained in spec then enter Tech Spec 3.6.1.1 for that penetration.

46.0 If outside Wet Bulb air temp < 40 °F, then the Wet Cooling Tower Fans shall not be run in manual. Wet Cooling Tower Fans switch position may be NA if outside Wet Bulb air temp ≥ 40 °F.

47.0 Maintain ≤ 87 % level in RWSP to ensure containment instrumentation is not flooded during a design basis accident.

48.0 Due to instrument inaccuracies, maintain ≥ 186 ft indicated level. If additional margin is needed due to an inability to fill a riser or an unexpected level drop, then verify actual riser level is ≥ 184 feet using Attachment 11.17, Containment Spray Riser Level to meet the requirements of Tech Spec 3.6.2.1. If calculation is used, then record calculated values in riser level blocks on Attachment 11.1. Transmit Attachment 11.17 with Tech Spec Logs when used.

11.17 CONTAINMENT SPRAY RISER LEVEL CALCULATION

DATE_____

DESCRIPTION	NOTE	MODE	T. S.	COMP #	LIMIT	UNITS	04-12	12-20	20-04
Riser Level Calculation		1 - 4		PMC					
Containment Pressure				A42200		PSIA			
Containment Pressure				A42201		PSIA			
Containment Pressure				A42202		PSIA			
Containment Pressure				A42204		PSIA			
Containment Pressure				A42205		PSIA			
Containment Pressure				A42206		PSIA			
Containment Pressure				A42207		PSIA			
Average of Pressure Indications				(Total ÷ 7) ②		PSIA①			
Barometric Pressure				PMC PT. C48516④		INHG			
Pressure Conversion				Barometric Press x 0.4912		PSIA①			
Delta Pressure				Cntmt. Minus Barometric		PSIA			
Level Conversion				Delta Pressure Conversion x 2.32		FTW③			
Actual CS Riser A Level		1 - 4	4.6.2.1a	Indicated Level A – Result of Level Conversion	≥184	Indicated Ft Calculated Ft			
Actual CS Riser B Level		1 - 4	4.6.2.1a	Indicated Level B – Result of Level Conversion	≥ 184	Indicated Ft Calculated Ft			

REMARKS: ① Round result to two decimal places. ② If an instrument is out of service, then adjust the divisor accordingly. ③ Round result to one decimal place. ④ If local reading used, then record M&TE data on TS Logs Remarks and WA. Add 0.05 INHG to local reading to obtain a value equivalent to Met Tower PMC point

CONTAINMENT SYSTEMS

3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

CONTAINMENT SPRAY SYSTEM

LIMITING CONDITION FOR OPERATION

3.6.2.1 Two independent containment spray systems shall be OPERABLE with each spray system capable of taking suction from the RWSP on a containment spray actuation signal and automatically transferring suction to the safety injection system sump on a recirculation actuation signal. Each spray system flow path from the safety injection system sump shall be via an OPERABLE shutdown cooling heat exchanger.

APPLICABILITY: MODES 1, 2, 3, and 4*.

ACTION:

With one containment spray system inoperable, restore the inoperable spray system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours; restore the inoperable spray system to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.2.1 Each containment spray system shall be demonstrated OPERABLE:

a. At least once per 12 hours by verifying that the water level in the containment spray header riser is > 149.5 feet MSL elevation.

b. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is correctly positioned to take suction from the RWSP.

c. By verifying, that on recirculation flow, each pump develops a total head of greater than or equal to 219 psid when tested pursuant to Specification 4.0.5.

d. At least once per 18 months, during shutdown, by:

   1. Verifying that each automatic valve in the flow path actuates to its correct position on a CSAS test signal.

*With Reactor Coolant System pressure > 400 psia.

SURVEILLANCE REQUIREMENTS (Continued)

2. Verifying that upon a recirculation actuation test signal, the safety injection system sump isolation valves open and that a recirculation mode flow path via an OPERABLE shutdown cooling heat exchanger is established.

3. Verifying that each spray pump starts automatically on a CSAS test signal.

e. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

DIESEL OIL STORAGE TANKS A & B

VALUE		DESCRIPTION	FORMULAS
0.8333333	=(L1)	length of lower indication level from bottom, in feet	L1=10"
45.75	=(U1)	length of upper indication level from bottom, in feet	U1=IR+L1
46	=(L)	length from bottom to top in feet	L=46
12.458333	=(D)	Inner diameter of tank in feet	D=12' 6"-(2*Th)
6.2291667	=(R)	Inner radius of tank in feet	R=D/2
44.916667	=(IR)	Inst. calibration range in feet	IR=U1-L1
7.48052	=(CF)	correction factor of cubic feet to gallons	
41946.854	=(TG)	total tank volume in gallons	$TG = \pi * R^2 * L * CF$
45.75	=(OH)	overflow height from bottom in feet	OH=45' 9"
41718.882	=(OV)	volume at overflow in gallons	$OV = \pi * R^2 * OH * CF$
0.0208333	=(Th)	Tank thickness in feet	Th=.25"

Tank Type: : Vertical Cylinder Flat Bottom

FORMULA FOR VOLUME AS A FUNCTION OF PERCENT

$$G = \pi * R^2 * (IR * (\% / 100) + L1) * CF$$

(G) calculated gallons per indicated level
(IV) Indicated value

REFERENCES
EMDRAC # 1564-2525
1564-2526

INSTRUMENT CALIBRATION RECORD
Loop # EGF-IL-6994A, B

NOTE: The Indicated Values are based upon ideal tank volumes and have not been corrected for the actual instrument calibrations.

Indicated Level vs Fluid Volume
EGF-IL-6994A, B

(IV) Ind. value(%)	(FT) Ind. value(ft)	(G) gallons	(IV) Ind value(%)	(FT) Ind. value(ft)	(G) gallons	(IV) Ind. value(%)	(FT) Ind. value(ft)	(G) gallons
0	0.83	759.9	34	16.11	14686.0	68	31.38	28612.0
1	1.28	1169.5	35	16.55	15095.5	69	31.83	29021.6
2	1.73	1579.1	36	17.00	15505.1	70	32.28	29431.2
3	2.18	1988.7	37	17.45	15914.7	71	32.72	29840.8
4	2.63	2398.3	38	17.90	16324.3	72	33.17	30250.4
5	3.08	2807.9	39	18.35	16733.9	73	33.62	30660.0
6	3.53	3217.4	40	18.80	17143.5	74	34.07	31069.5
7	3.98	3627.0	41	19.25	17553.1	75	34.52	31479.1
8	4.43	4036.6	42	19.70	17962.7	76	34.97	31888.7
9	4.88	4446.2	43	20.15	18372.3	77	35.42	32298.3
10	5.33	4855.8	44	20.60	18781.9	78	35.87	32707.9
11	5.77	5265.4	45	21.05	19191.4	79	36.32	33117.5
12	6.22	5675.0	46	21.50	19601.0	80	36.77	33527.1
13	6.67	6084.6	47	21.94	20010.6	81	37.22	33936.7
14	7.12	6494.2	48	22.39	20420.2	82	37.67	34346.3
15	7.57	6903.8	49	22.84	20829.8	83	38.11	34755.9
16	8.02	7313.3	50	23.29	21239.4	84	38.56	35165.4
17	8.47	7722.9	51	23.74	21649.0	85	39.01	35575.0
18	8.92	8132.5	52	24.19	22058.6	86	39.46	35984.6
19	9.37	8542.1	53	24.64	22468.2	87	39.91	36394.2
20	9.82	8951.7	54	25.09	22877.8	88	40.36	36803.8
21	10.27	9361.3	55	25.54	23287.3	89	40.81	37213.4
22	10.72	9770.9	56	25.99	23696.9	90	41.26	37623.0
23	11.16	10180.5	57	26.44	24106.5	91	41.71	38032.6
24	11.61	10590.1	58	26.89	24516.1	92	42.16	38442.2
25	12.06	10999.7	59	27.33	24925.7	93	42.61	38851.8
26	12.51	11409.2	60	27.78	25335.3	94	43.06	39261.3
27	12.96	11818.8	61	28.23	25744.9	95	43.50	39670.9
28	13.41	12228.4	62	28.68	26154.5	96	43.95	40080.5
29	13.86	12638.0	63	29.13	26564.1	97	44.40	40490.1
30	14.31	13047.6	64	29.58	26973.7	98	44.85	40899.7
31	14.76	13457.2	65	30.03	27383.2	99	45.30	41309.3
32	15.21	13866.8	66	30.48	27792.8	100	45.75	41718.9
33	15.66	14276.4	67	30.93	28202.4			

NOTES:
To avoid overflow, do not fill above 99.9 percent 45' 8 1/2".

Pump suction located approximately .833 feet from the tank bottom. (759.9 gallons)

Question 17

Rc

3/4.8 ELECTRICAL POWER SYSTEMS
3/4.8.1 A.C. SOURCES
OPERATING
LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent circuits between the offsite transmission network and the onsite Class 1E distribution system, and

b. Two separate and independent diesel generators, each with:

1. Diesel oil feed tanks containing a minimum volume of 339 gallons of fuel, and

2. A separate diesel generator fuel oil storage tank containing:

a. A minimum volume of 38,760 gallons of fuel, or

b. A fuel oil volume less than 38,760 gallons and greater than 38,000 gallons of fuel for a period not to exceed 5 days (provided replacement fuel oil is onsite within the first 48 hours), and

3. A separate fuel transfer pump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

a. With one offsite circuit of 3.8.1.1a inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1a within 1 hour and at least once per 8 hours thereafter. Restore the offsite A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one diesel generator of 3.8.1.1b inoperable, demonstrate the OPERABILITY of the offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1a (separately for each offsite A.C. circuit) within 1 hour and at least once per 8 hours thereafter. If the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator (unless it has been successfully tested in the last 24 hours) by performing Surveillance Requirement 4.8.1.1.2a.4 within 8 hours unless the absence of any potential common mode failure for the remaining diesel generator is demonstrated. Restore the diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one offsite A.C. circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining offsite A.C. circuit by performing Surveillance Requirement 4.8.1.1.1a within 1 hour and at least once per 8 hours thereafter; and, if the diesel generator became inoperable due to any cause other than an inoperable support system, an independently testable component, or preplanned preventive maintenance or testing, demonstrate the OPERABILITY of the remaining OPERABLE diesel generator by performing Surveillance Requirement 4.8.1.1.2a.4 within 8 hours (unless it is already operating) unless the absence of any potential common mode failure for the remaining diesel generator

ACTION (Continued)

is demonstrated. Restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore the other A.C. power source (offsite A.C. circuit or diesel generator) to OPERABLE status in accordance with the provisions of ACTION statement a or b, as appropriate, with the time requirement of that ACTION statement based on the time of initial loss of the remaining inoperable A.C. power source. A successful test of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2a.4 performed under this ACTION statement satisfies the diesel generator test requirement of ACTION statement a or b.

d. With one diesel generator inoperable, in addition to ACTION b. or c. above, verify that:

(1) All required systems, subsystems, trains, components, and devices that depend on the remaining OPERABLE diesel generator as a source of emergency power are also OPERABLE, and

(2) When in MODE 1, 2, or 3, the steam-driven emergency feed pump is OPERABLE.

If these conditions are not satisfied within 2 hours be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

e. With two of the above required offsite A.C. circuits inoperable, restore one of the inoperable offsite A.C. circuits to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours. Following restoration of one offsite A.C. circuit, follow ACTION statement a with the time requirement of that ACTION statement based on the time of initial loss of the remaining inoperable offsite A.C. circuit. A successful test of diesel generator OPERABILITY per Surveillance Requirement 4.8.1.1.2a.4 performed under this ACTION statement satisfies the diesel generator test requirement of ACTION statement a.

f. With two of the above required diesel generators inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Surveillance Requirement 4.8.1.1.1a within 1 hour and at least once per 8 hours thereafter; restore one of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Following restoration of one diesel generator, follow ACTION statement b with the time requirement of that ACTION statement based on the time of initial loss of the remaining inoperable diesel generator.

SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Each of the above required independent circuits between the offsite transmission network and the onsite Class 1E distribution system shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, indicated power availablity, and

b. Demonstrated OPERABLE at least once per 18 months by transferring manually and automatically unit power supply from the normal circuit to the alternate circuit.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE*:

a. At least once per 31 days on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in the diesel oil feed tank,

2. Verifying the fuel level in the diesel generator fuel oil storage tank,

3. Verifying the fuel transfer pump can be started and transfers fuel from the storage system to the diesel oil feed tank,

4. Verifying the diesel starts**. The generator voltage and frequency shall be at least 3920 volts and 58.8 Hz in • 10 seconds after the start signal. The steady state voltage and frequency shall be maintained at 4160 + 420, -240 volts and 60 ± 1.2 Hz. The diesel generator shall be started for this test by using one of the following signals:

a) Manual.

b) Simulated loss-of-offsite power by itself.

c) Simulated loss-of-offsite power in conjunction with an ESF actuation test signal.

d) An ESF actuation test signal by itself.

*All planned starts for the purpose of surveillance in this section may be preceded by a prelube period as recommended by the manufacturer.

**A modified diesel generator start involving idling and gradual acceleration to synchronous speed may be used for this surveillance requirement as recommended by the manufacturer. When modified start procedures are not used, the time, speed, voltage, and frequency tolerances of this surveillance requirement must be met.

5. Verifying the generator is synchronized, loaded to an indicated 4000-4400 Kw* in accordance with the manufacturer's recommendation and operates for at least an additional 60 minutes#, and

6. Verifying the diesel generator is aligned to provide standby power to the associated emergency busses.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the diesel oil feed tanks.

c. At least once per 92 days and from new fuel oil prior to addition to the storage tanks, by obtaining a sample of fuel oil in accordance with ASTM-D270-1975, and by verifying that the sample meets the following minimum requirements and is tested within the specified time limits:

1. As soon as sample is taken (or prior to adding new fuel to the storage tank) verify in accordance with the test specified in ASTM-D975-77 that the sample has:

a) A water and sediment content of less or equal to 0.05 volume percent.

b) A kinematic viscosity @ 40°C of greater than or equal to 1.9 centistokes, but less than or equal to 4.1 centistokes.

c) A specific gravity as specified by the manufacturer @ 60/60°F of greater than or equal to 0.85 but less than or equal to 0.99 or an API gravity @ 60°F of greater than or equal to 11 degrees but less than or equal to 35 degrees.

2. Verify an impurity level of less than 2 mg of insolubles per 100 ml when tested in accordance with ASTM-D2274-70; analysis shall be completed within 7 days after obtaining the sample but may be performed after the addition of new fuel oil; and

*This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variation due to changing bus loads shall not invalidate the test.

#This surveillance requirement shall be preceded by and immediately follow without shutdown a successful performance of 4.8.1.1.2a.4 or 4.8.1.1.2d.

SURVEILLANCE REQUIREMENTS (Continued)

3. Verify the other properties specified in Table 1 of ASTM-D975-1977 and Regulatory Guide 1.137, Revision 1, October 1979, Position 2.a., when tested in accordance with ASTM-D975-1977; analysis shall be completed within 14 days after obtaining the sample but may be performed after the addition of new fuel oil. Failure to meet this requirement shall not affect diesel generator OPERABILITY; however, corrective action shall be initiated within 72 hours to return the fuel oil supply to within acceptable limits.

d. At least once per 184 days a diesel generator fast start test shall be performed in accordance with TS 4.8.1.1.2a.4. Performance of the 184 day fast start test satisfies the 31 day testing requirements specified in TS 4.8.1.1.2a.4.

e. At least once per 18 months during shutdown by:

1. Verifying the generator capability to reject a load of greater than or equal to 498 kW while maintaining voltage at 4160 + 420,-240 volts and frequency at 60 +4.5, -1.2 Hz.

2. Verifying the generator capability to reject a load of an indicated 4000-4400 kW without tripping. The generator voltage shall not exceed 5023 volts during and following the load rejection.

3. Simulating a loss-of-offsite power by itself, and:

a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.

b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses and the permanently connected loads within 10 seconds after the auto-start signal, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 + 420,-240 volts and 60 + 1.2, -0.3 Hz during this test.

4. Verifying that on an SIAS actuation test signal (without loss-of-offsite power) the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes. The steady-state generator voltage and frequency shall be 4160 + 420,-240 volts and 60 ± 1.2 Hz within 10 seconds after the auto-start signal; the generator voltage and frequency shall be maintained within these limits during this test.

SURVEILLANCE REQUIREMENTS (Continued)

5. Simulating a loss-of-offsite power in conjunction with an SIAS actuation test signal, and

   a) Verifying deenergization of the emergency busses and load shedding from the emergency busses.

   b) Verifying the diesel starts on the auto-start signal, energizes the emergency busses and the permanently connected loads within 10 seconds after the auto-start signal, energizes the auto-connected emergency loads through the load sequencer and operates for greater than or equal to 5 minutes. After energization, the steady-state voltage and frequency of the emergency busses shall be maintained at 4160 + 420,-240 volts and 60 + 1.2, -0.3 Hz during this test.

   c) Verifying that all automatic diesel generator trips, except engine overspeed and generator differential, are automatically bypassed upon loss of voltage on the emergency bus concurrent with a safety injection actuation signal.

6. Verifying the diesel generator operates for an interval of not less than 24 hours. During 2 hours of this test, the diesel generator shall be loaded to an indicated 4700 to 4900 Kw* and during 22 hours of this test, the diesel generator shall be loaded to an indicated 4000 to 4400 Kw.* The generator voltage and frequency shall be 4160 + 420,-240 volts and 60 ± 1.2 Hz within 10 seconds after the start signal; the steady-state generator voltage and frequency shall be 4160 ± 420 volts and 60 + 1.2, -0.3 Hz during this test. Within 5 minutes after completing this 24-hour test, perform Surveillance Requirement 4.8.1.1.2.a.4.**

7. Verifying that the auto-connected loads and permanently connected loads to each diesel generator do not exceed the 2000-hour rating of 4400 kW.

*This band is meant as guidance to avoid routine overloading of the engine. Loads in excess of this band for special testing under direct monitoring of the manufacturer or momentary variation due to changing bus loads shall not invalidate the test.

**If Surveillance Requirement 4.8.1.1.2.a.4 is not satisfactorily completed, it is not necessary to repeat the preceding 24-hour test. Instead, the diesel generator may be operated at an indicated 4000-4400 kw* for 2 hours or until internal operating temperatures have stabilized.

SURVEILLANCE REQUIREMENTS (Continued)

8. Verifying the diesel generator's capability to:

   a) Synchronize with the offsite power source while the generator is loaded with its emergency loads upon a simulated restoration of offsite power,

   b) Transfer its loads to the offsite power source, and

   c) Be restored to its standby status.

9. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizes the emergency loads with offsite power.

10. Verifying that each fuel transfer pump transfers fuel to its associated diesel oil feed tank by taking suction from the opposite train fuel oil storage tank via the installed cross connect.

11. Verifying that the automatic load sequence timer is OPERABLE with the time of each load block within ±10% of the sequenced load block time.

12. Verifying that the following diesel generator lockout features prevent diesel generator starting only when required:

    a) turning gear engaged
    b) emergency stop
    c) loss of D.C. control power
    d) governor fuel oil linkage tripped

f. At the first refueling outage, and thereafter, at intervals not to exceed 24 months, subject the diesels to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for this class of standby service.

g. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting the diesel generators simultaneously, during shutdown, and verifying that the diesel generators accelerate to at least 600 rpm (60 ± 1.2 Hz) in less than or equal to 10 seconds.

h. At least once per 10 years by:

   1. Draining each diesel generator fuel oil storage tank, removing the accumulated sediment, and cleaning the tank using a sodium hypochlorite solution or equivalent, and

SURVEILLANCE REQUIREMENTS (Continued)

i. By performing a visual inspection of the interior of the diesel generator fuel oil storage tanks each time the tank is drained and, if necessary, clean the tank with a sodium hypochlorite solution, or equivalent.

4.8.1.1.3 Reports - (Not Used)

3/4.1.3 MOVABLE CONTROL ASSEMBLIES

Question 21

CEA POSITION

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full-length (shutdown and regulating) CEAs, and all part-length CEAs which are inserted in the core, shall be OPERABLE with each CEA of a given group positioned within 7 inches (indicated position) of all other CEAs in its group.

APPLICABILITY: MODES 1* and 2*.

ACTION:

a. With one or more full-length CEAs inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in at least HOT STANDBY within 6 hours.

b. With more than one full-length or part-length CEA trippable but misaligned from any other CEA in its group by more than 19 inches (indicated position), be in at least HOT STANDBY within 6 hours.

c. With one full-length or part-length CEA trippable but misaligned from any other CEA in its group by more than 19 inches, operation in MODES 1 and 2 may continue, provided that core power is reduced in accordance with the limits specified in the COLR and within 1 hour the misaligned CEA is either:

   1. Restored to OPERABLE status within its above specified alignment requirements, or

   2. Declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. After declaring the CEA inoperable, operation in MODES 1 and 2 may continue pursuant to the requirements of Specification 3.1.3.6 provided:

      a) Within 1 hour the remainder of the CEAs in the group with the inoperable CEA shall be aligned to within 7 inches of the inoperable CEA while maintaining the allowable CEA sequence and insertion limits specified in the COLR; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.

      b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours.

Otherwise, be in at least HOT STANDBY within 6 hours.

*See Special Test Exceptions 3.10.2 and 3.10.4.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

d. With one or more full-length or part-length CEAs trippable but misaligned from any other CEAs in its group by more than 7 inches but less than or equal to 19 inches, operation in MODES 1 and 2 may continue, provided that core power is reduced in accordance with the limits specified in the COLR and within 1 hour the misaligned CEA(s) is either:

1. Restored to OPERABLE status within its above specified alignment requirements, or

2. Declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. After declaring the CEA inoperable, operation in MODES 1 and 2 may continue pursuant to the requirements of Specification 3.1.3.6 provided:

a) Within 1 hour the remainder of the CEAs in the group with the inoperable CEA shall be aligned to within 7 inches of the inoperable CEA while maintaining the allowable CEA sequence and insertion limits specified in the COLR; the THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.6 during subsequent operation.

b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours.

Otherwise, be in at least HOT STANDBY within the next 6 hours.

e. With one full-length CEA trippable but inoperable due to causes other than addressed by ACTION a., above, and inserted beyond the Long Term Steady State Insertion Limits but within its above specified alignment requirements, operation in MODES 1 and 2 may continue pursuant to the requirements of Specification 3.1.3.6.

f. With one full-length CEA trippable but inoperable due to causes other than addressed by ACTION a., above, but within its above specified alignment requirements and either greater than or equal to 145 inches withdrawn or within the Long Term Steady State Insertion Limits if in full-length CEA group 6, operation in MODES 1 and 2 may continue.

g. With one part-length CEA inoperable and inserted in the core, operation may continue provided the alignment of the inoperable part-length CEA is maintained within 7 inches (indicated position) of all other part-length CEAs in its group and the CEA is maintained pursuant to the requirements of Specification 3.1.3.7.

h. With more than one full-length or part-length CEA trippable but inoperable due to causes other than addressed by ACTION a., above, restore the inoperable CEAs to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours.

SURVEILLANCE REQUIREMENTS

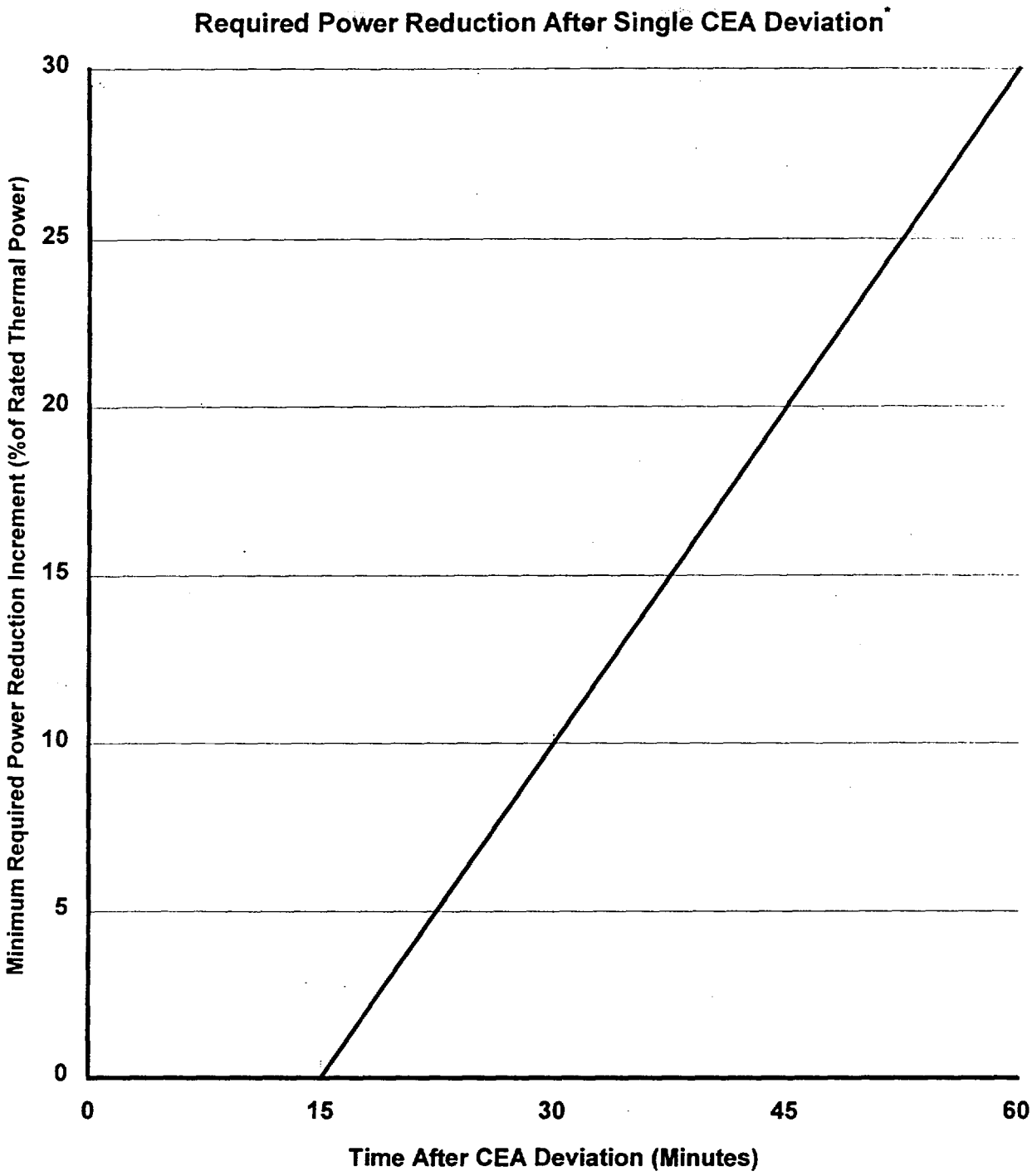
4.1.3.1.1 The position of each full-length and part-length CEA shall be determined to be within 7 inches (indicated position) of all other CEAs in its group at least once per 12 hours except during time intervals when one CEAC is inoperable or when both CEACs are inoperable, then verify the individual CEA positions at least once per 4 hours.

4.1.3.1.2 Each full-length CEA not fully inserted and each part-length CEA which is inserted in the core below 145 inches shall be determined to be OPERABLE by movement of at least 5 inches in any one direction at least once per 92 days.

MOVABLE CONTROL ASSEMBLIES - CEA POSITION

3.1.3.1.a With one full-length or part-length CEA trippable but misaligned from any other CEA in its group by more than 19 inches, operation in MODES 1 and 2 may continue, provided that core power is reduced in accordance with COLR Figure 3.

3.1.3.1.b With one or more full-length or part-length CEAs trippable but misaligned from any other CEAs in its group by more than 7 inches but less than or equal to 19 inches, operation in MODES 1 and 2 may continue, provided that core power is reduced in accordance with COLR Figure 3.



COLR Figure 3

*** When thermal power is reduced to 60% of rated thermal power per this limit curve, further reduction is not required by this technical specification.**

POSITION INDICATOR CHANNELS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.3.2 At least two of the following three CEA position indicator channels shall be OPERABLE for each CEA:

a. CEA Reed Switch Position Transmitter (RSPT 1) with the capability of determining the absolute CEA positions within 5 inches,

b. CEA Reed Switch Position Transmitter (RSPT 2) with the capability of determining the absolute CEA positions within 5 inches, and

c. The CEA pulse counting position indicator channel.

APPLICABILITY: MODES 1 and 2.

ACTION:

With a maximum of one CEA per CEA group having only one of the above required CEA position indicator channels OPERABLE, within 6 hours either:

a. Restore the inoperable position indicator channel to OPERABLE status, or

b. Be in at least HOT STANDBY, or

c. Position the CEA group(s) with the inoperable position indicator(s) at its fully withdrawn position while maintaining the requirements of Specifications 3.1.3.1 and 3.1.3.6. Operation may then continue provided the CEA group(s) with the inoperable position indicator(s) is maintained fully withdrawn, except during surveillance testing pursuant to the requirements of Specification 4.1.3.1.2, and each CEA in the group(s) is verified fully withdrawn at least once per 12 hours thereafter by its "Full Out" limit.

SURVEILLANCE REQUIREMENTS

4.1.3.2 Each of the above required position indicator channels shall be determined to be OPERABLE by verifying that for the same CEA, the position indicator channels agree within 5 inches of each other at least once per 12 hours.

POSITION INDICATOR CHANNELS - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.1.3.3 At least one CEA Reed Switch Position Transmitter indicator channel shall be OPERABLE for each shutdown, regulating or part-length CEA not fully inserted.

APPLICABILITY: MODES 3*, 4*, and 5*.

ACTION:

With less than the above required position indicator channel(s) OPERABLE, immediately open the reactor trip breakers.

SURVEILLANCE REQUIREMENTS

4.1.3.3 Each of the above required CEA Reed Switch Position Transmitter indicator channel(s) shall be determined to be OPERABLE by performance of a CHANNEL FUNCTIONAL TEST at least once per 18 months. The provisions of Specification 4.0.4 are not applicable for performance of this surveillance testing.

*With the reactor trip breakers in the closed position.

CEA DROP TIME

LIMITING CONDITION FOR OPERATION

3.1.3.4 The arithmetic average of the CEA drop times of all full-length CEAs from a fully withdrawn position, shall be less than or equal to 3.0 seconds; and the individual full length (shutdown and regulating) CEA drop time, from a fully withdrawn position, shall be less than or equal to 3.2 seconds from when the electrical power is interrupted to the CEA drive mechanism until the CEA reaches the 90% insertion position with:

a. Tavg greater than or equal to 520°F, and

b. All reactor coolant pumps operating.

APPLICABILITY: MODES 1 and 2.

ACTION:

a. With either the average CEA drop time or any individual CEA drop time of any full length CEA determined to exceed the above limits, restore the CEA drop time to within the above limits before proceeding to MODE 1 or 2.

b. With the CEA drop times within limits but determined at less than full reactor coolant flow, operation may proceed provided THERMAL POWER is restricted to less than or equal to the maximum THERMAL POWER level allowable for the reactor coolant pump combination operating at the time of CEA drop time determination.

SURVEILLANCE REQUIREMENTS

4.1.3.4 The CEA drop time of full-length CEAs shall be demonstrated through measurement prior to reactor criticality:

a. For all CEAs following each removal and reinstallation of the reactor vessel head,

b. For specifically affected individuals CEAs following any maintenance on or modification to the CEA drive system which could affect the drop time of those specific CEAs, and

c. At each refueling outage.

SHUTDOWN CEA INSERTION LIMIT

LIMITING CONDITION FOR OPERATION

3.1.3.5 All shutdown CEAs shall be withdrawn to greater than or equal to 145 inches.

APPLICABILITY: MODES 1 and 2*#**.

ACTION:

With a maximum of one shutdown CEA withdrawn to less than 145 inches withdrawn, within 1 hour either:

a. Withdraw the CEA to greater than or equal to 145 inches, or

b. Declare the CEA inoperable and determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.5 Each shutdown CEA shall be determined to be withdrawn to greater than or equal to 145 inches withdrawn:

a. Within 15 minutes prior to withdrawal of any CEAs in regulating groups during an approach to reactor criticality, and

b. At least once per 12 hours thereafter.

---

*See Special Test Exception 3.10.2.

#With Keff greater than or equal to 1.0.

**Except for surveillance testing pursuant to Specification 4.1.3.1.2.

REGULATING CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.6 The regulating CEA groups shall be limited to the withdrawal sequence and to the insertion limits* specified in the COLR** with CEA insertion between the Long Term Steady State Insertion Limits and the Transient Insertion Limits restricted to:

a. Less than or equal to 4 hours per 24 hour interval,

b. Less than or equal to 5 Effective Full Power Days per 30 Effective Full Power Day interval, and

c. Less than or equal to 14 Effective Full Power Days per calendar year.

APPLICABILITY: MODES 1*** and 2*** #.

ACTION:

a. With the regulating CEA groups inserted beyond the Transient Insertion Limits, except for surveillance testing pursuant to Specification 4.1.3.1.2, or Reactor Power Cutback, within 2 hours either:

   1. Restore the regulating CEA groups to within the limits, or

   2. Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the CEA group position using the COLR.

b. With the regulating CEA groups inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals greater than 4 hours per 24-hour interval, operation may proceed provided either:

   1. The Short Term Steady State Insertion Limits specified in the COLR are not exceeded, or

   2. Any subsequent increase in THERMAL POWER is restricted to less than or equal to 5% of RATED THERMAL POWER per hour.

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*Following a reactor power cutback in which (1) Regulating Groups 5 and/or 6 are dropped or (2) Regulating Groups 5 and/or 6 are dropped and the remaining Regulating Groups (Groups 1, 2, 3, and 4) are sequentially inserted, the Transient Insertion Limit specified in the COLR can be exceeded for up to 2 hours.

**CEAs are fully withdrawn in accordance with the Transient Insertion Limit specified in the COLR when withdrawn to at least 145 inches.

***See Special Test Exceptions 3.10.2 and 3.10.4.

#With K_{eff} greater than or equal to 1.0.

LIMITING CONDITION FOR OPERATION (Continued)

ACTION: (Continued)

c. With the regulating CEA groups inserted between the Long Term Steady State Insertion Limits and the Transient Insertion Limits for intervals greater than 5 EFPD per 30 EFPD interval or greater than 14 EFPD per calendar year, either:

1. Restore the regulating groups to within the Long Term Steady State Insertion Limits within two hours, or

2. Be in at least HOT STANDBY within 6 hours.

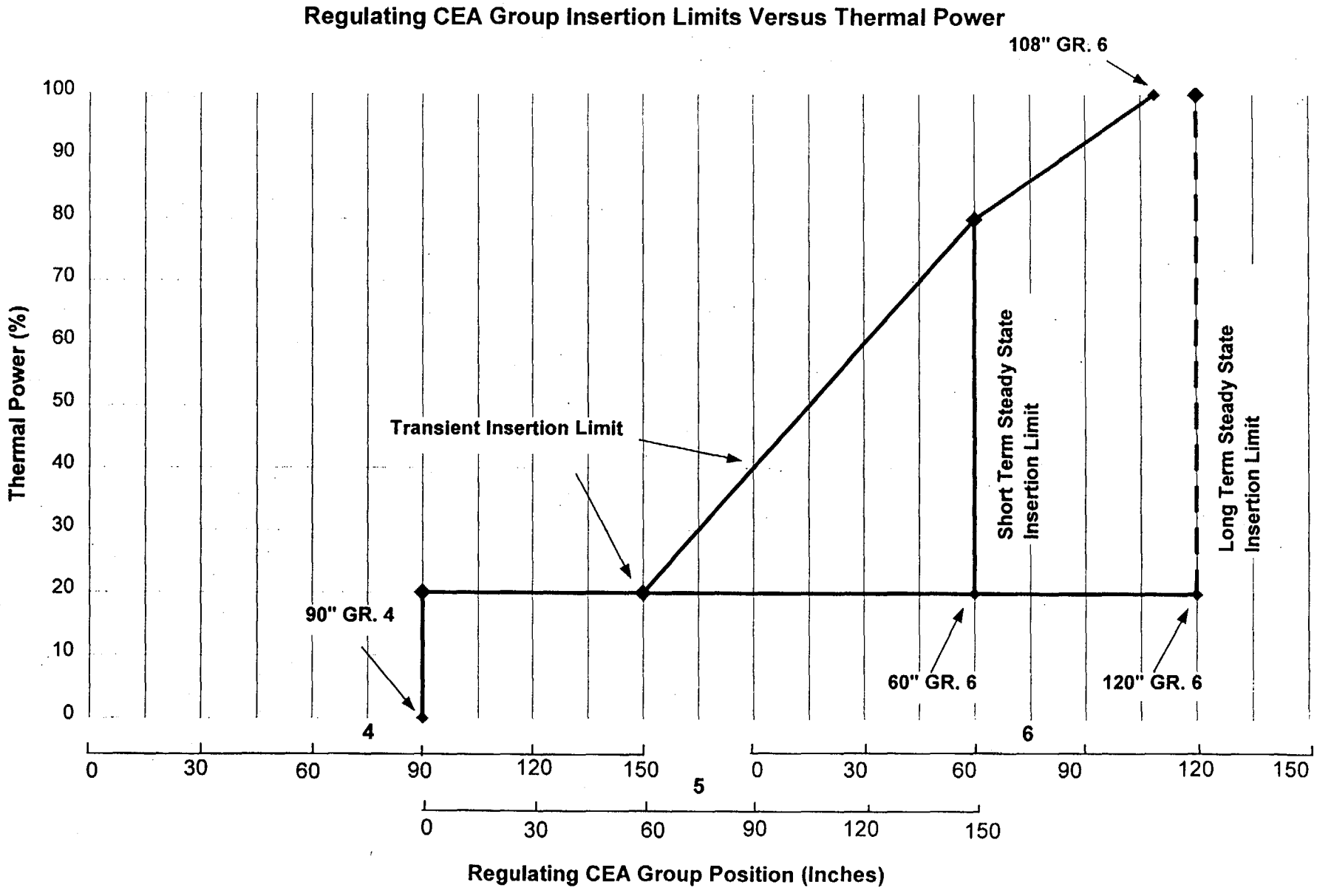
SURVEILLANCE REQUIREMENTS

4.1.3.6 The position of each regulating CEA group shall be determined to be within the Transient Insertion Limits at least once per 12 hours except during time intervals when the PDIL Auctioneer Alarm Circuit is inoperable, then verify the individual CEA positions at least once per 4 hours. The accumulated times during which the regulating CEA groups are inserted beyond the Long Term Steady State Insertion Limits but within the Transient Insertion Limits shall be determined at least once per 24 hours.

CORE OPERATING LIMITS REPORT

REGULATING CEA GROUP INSERTION LIMITS

3.1.3.6 The regulating CEA groups shall be limited to the withdrawal sequence and to the insertion limits shown on COLR Figure 4.



COLR Figure 4

PART LENGTH CEA INSERTION LIMITS

LIMITING CONDITION FOR OPERATION

3.1.3.7 The part length CEA groups shall be limited to the insertion limits specified in the COLR with PLCEA insertion between the Long Term Steady State Insertion Limit and the Transient Insertion Limit restricted to:

a. • 7 EFPD per 30 EFPD interval, and

b. • 14 EFPD per calender year.

APPLICABILITY: MODE 1 above 20% THERMAL POWER.*

ACTION:

a. With the part length CEA groups inserted beyond the Transient Insertion Limit, except for surveillance testing pursuant to Specification 4.1.3.1.2, within two hours, either:

   1. Restore the part length CEA group to within the limits, or

   2. Reduce THERMAL POWER to less than or equal to that fraction of RATED THERMAL POWER which is allowed by the PLCEA group position as specified in the COLR.

b. With the part length CEA groups inserted between the Long Term Steady State Insertion Limit and the Transient Insertion Limit for intervals > 7 EFPD per 30 EFPD interval or > 14 EFPD per calendar year, either:

   1. Restore the part length group within the Long Term Steady State Insertion Limits within two hours, or

   2. Be in at least HOT STANDBY within 6 hours.

SURVEILLANCE REQUIREMENTS

4.1.3.7 The position of the part length CEA group shall be determined to be within the Transient Insertion Limit at least once per 12 hours.

*See Special Test Exception 3.10.2.

CORE OPERATING LIMITS REPORT

PART LENGTH CEA GROUP INSERTION LIMITS

3.1.3.7 The part length CEA group shall be limited to the insertion limits shown on COLR Figure 5.

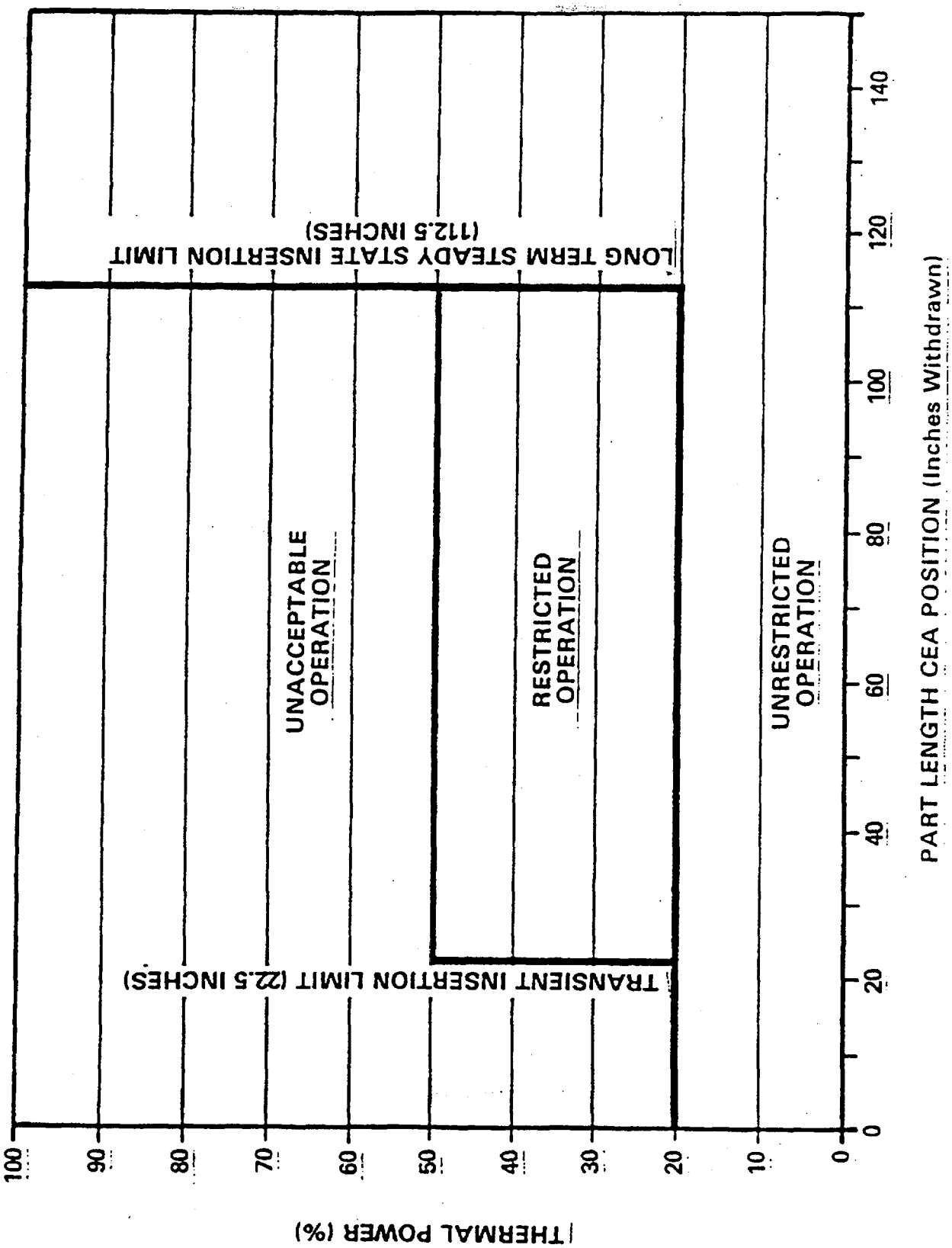
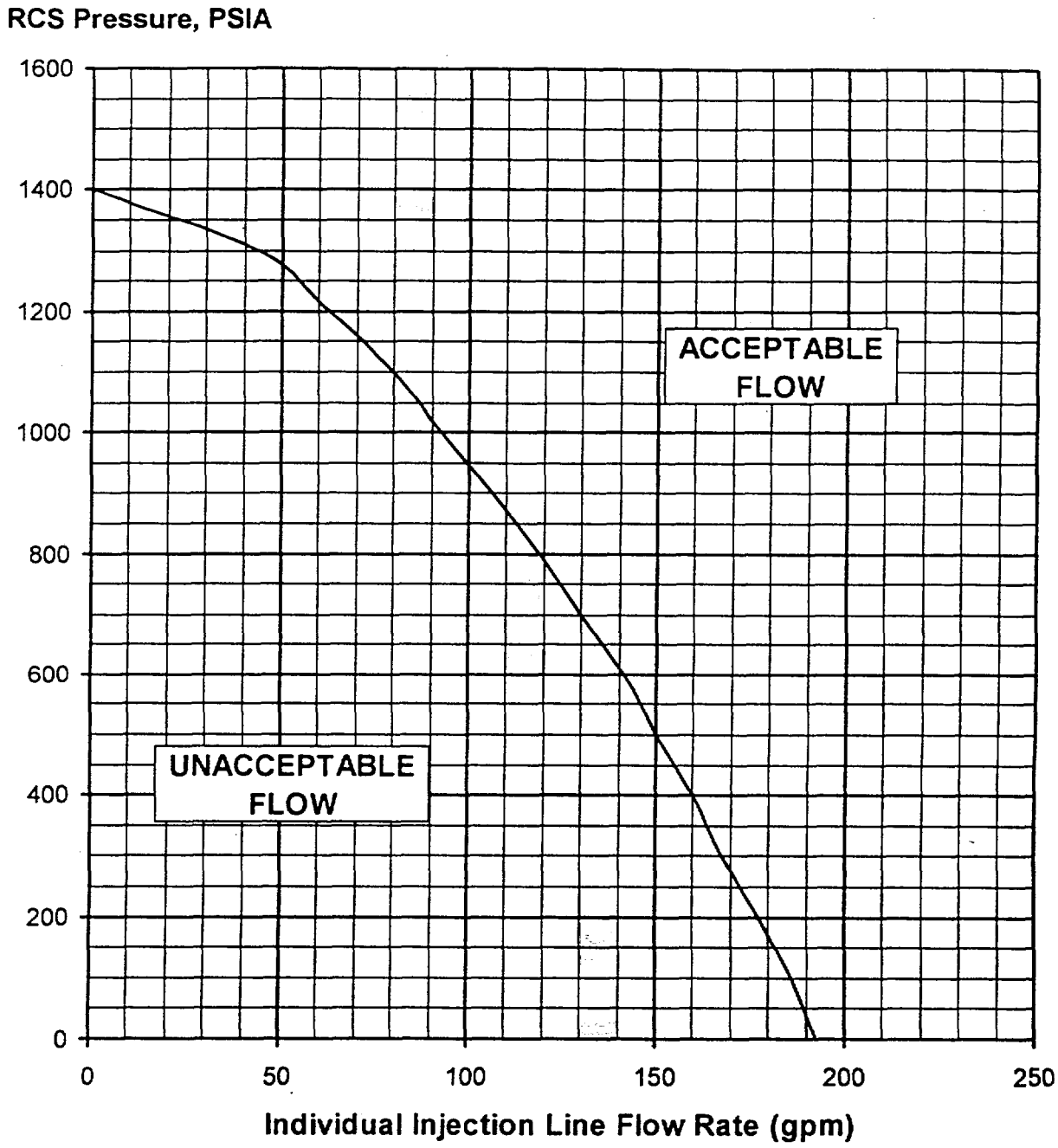


FIGURE 3.1-3 PART LENGTH CEA INSERTION LIMIT VS. THERMAL POWER

Figures

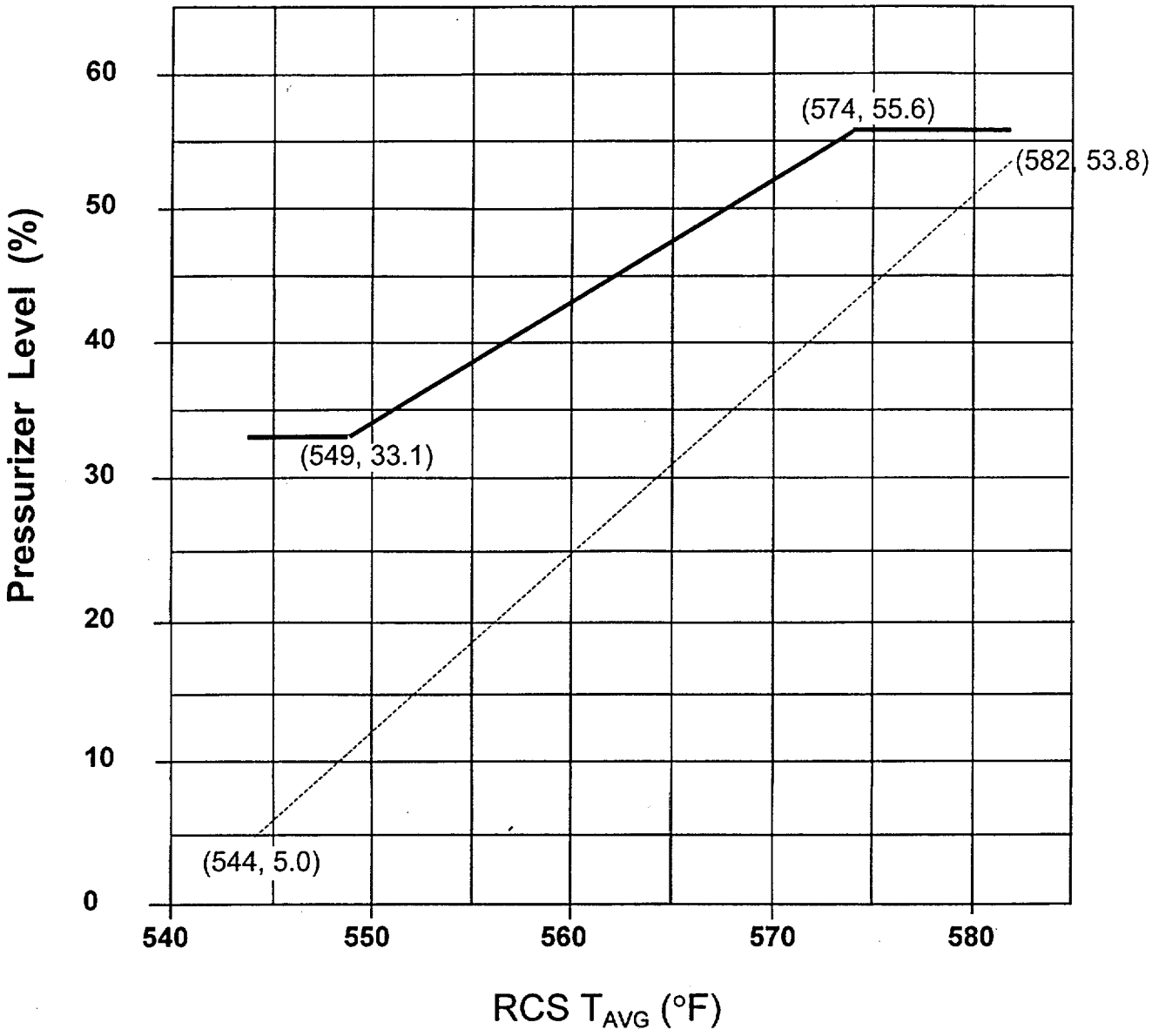
Question 23

Attachment 2-B: HPSI Flow Curve

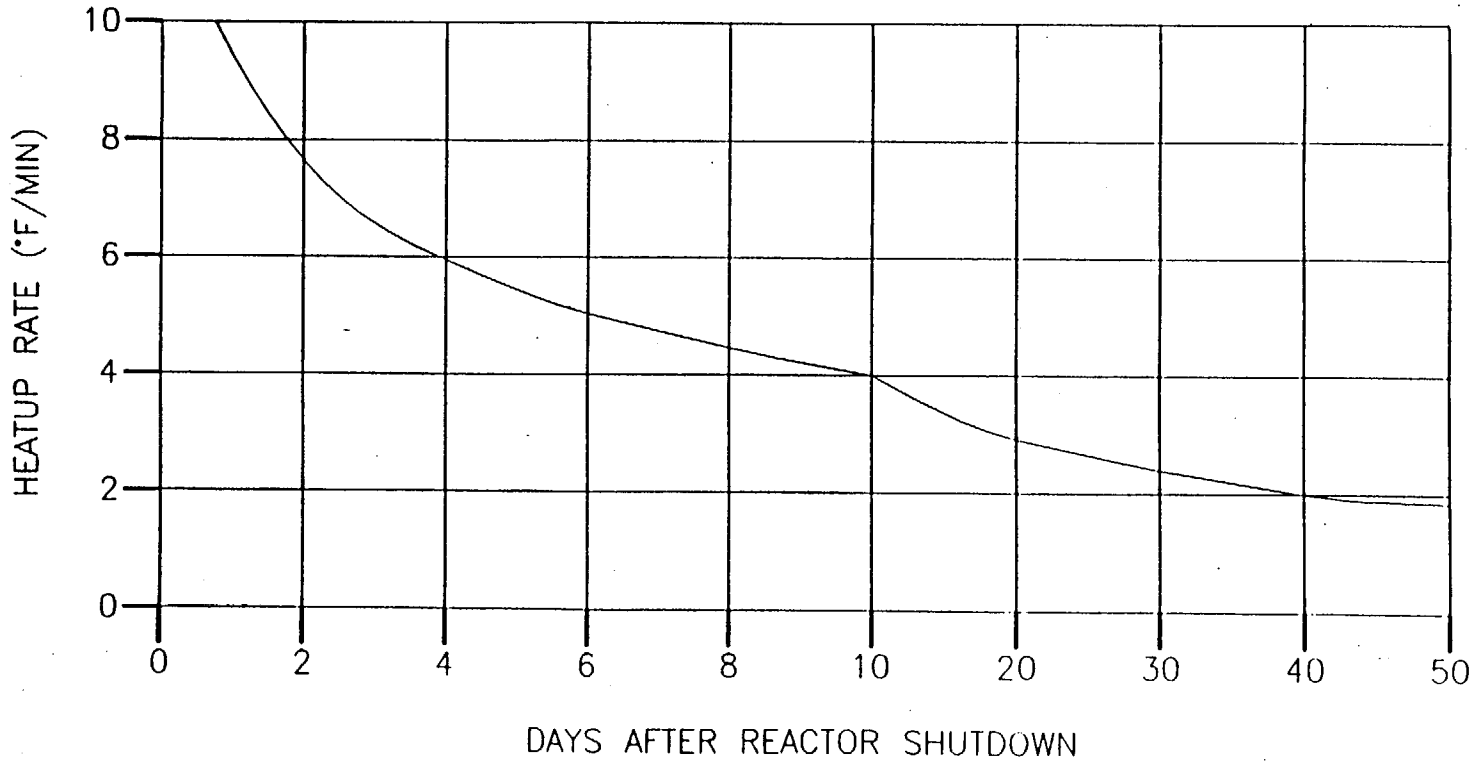


End of Attachment 2-B

Attachment 1: Pressurizer Level Versus Tave Curve

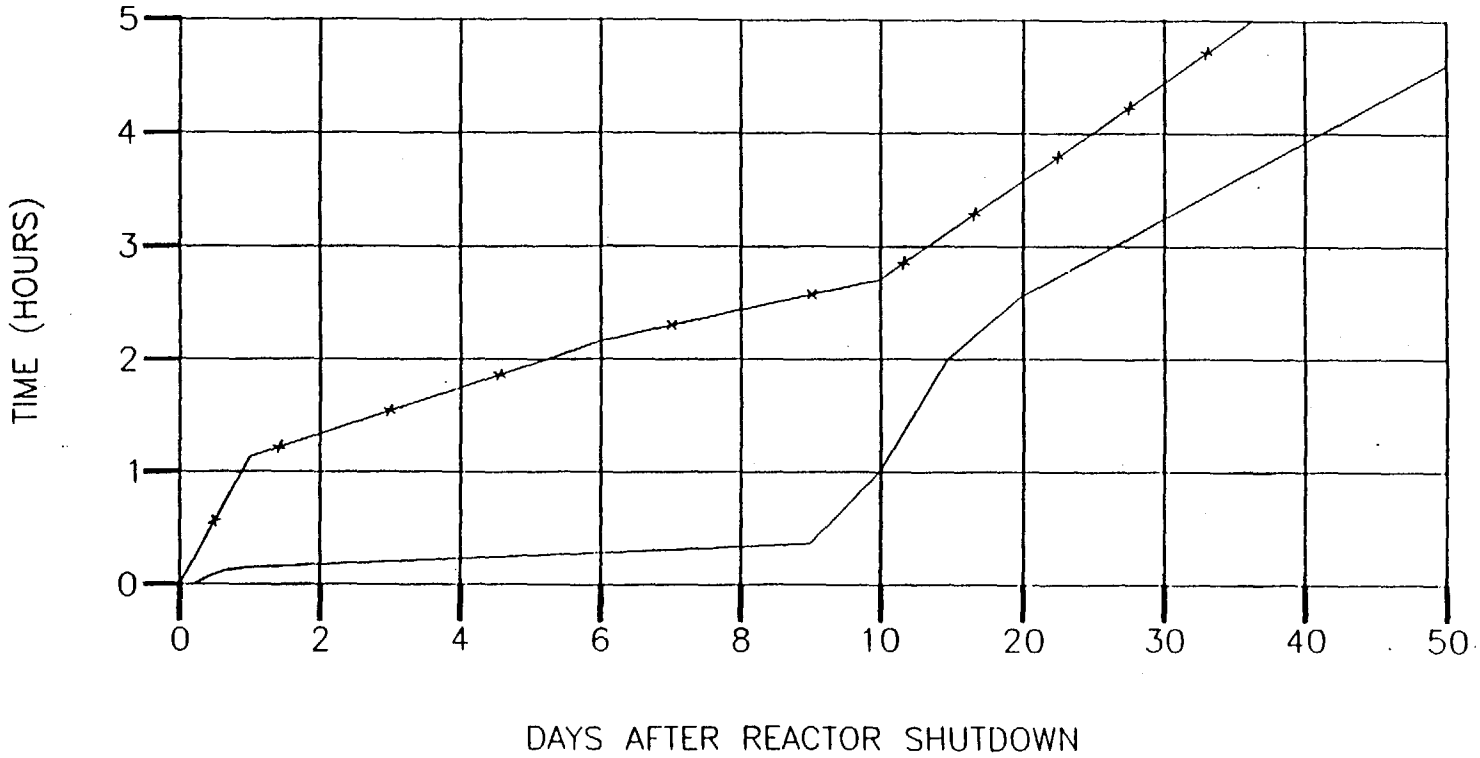


Attachment 2: Heatup Rate vs Time After Shutdown



Question 25

Attachment 3: Estimated Times for Uncovery during Reduced Inventory



Legend

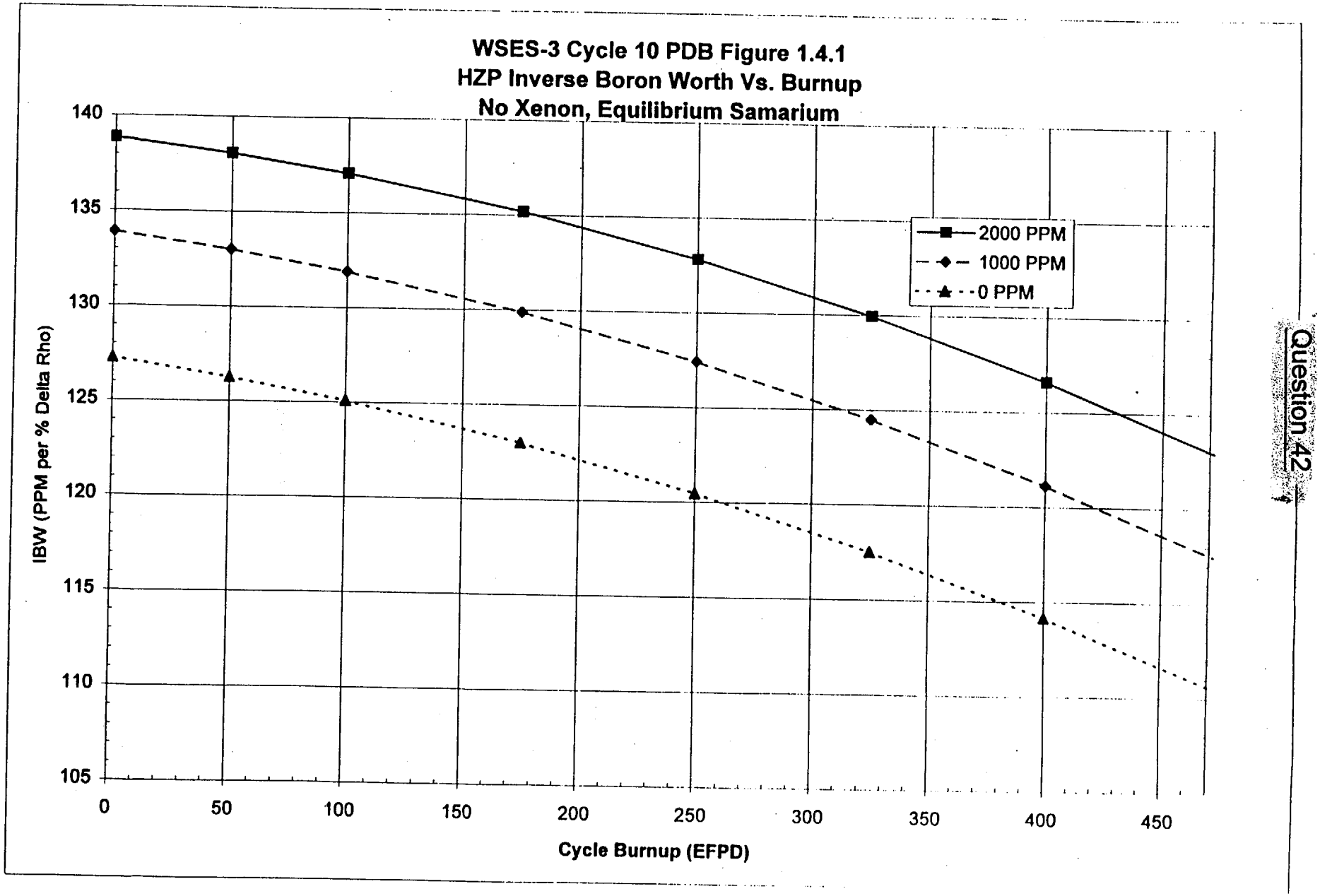
——— All Cold Leg Nozzle Dams installed (Pzr Manway removal is required)
1. Initial RCS level 13.38 feet MSL.
2. Core uncovery is due to Boiloff and RCS Hot Side pressurization.

—x—x— All other acceptable configurations (≥1 SG with >70% WR level is required)
1. Initial RCS level 13.38 feet MSL.
2. Core uncovery is due to Boiloff only.

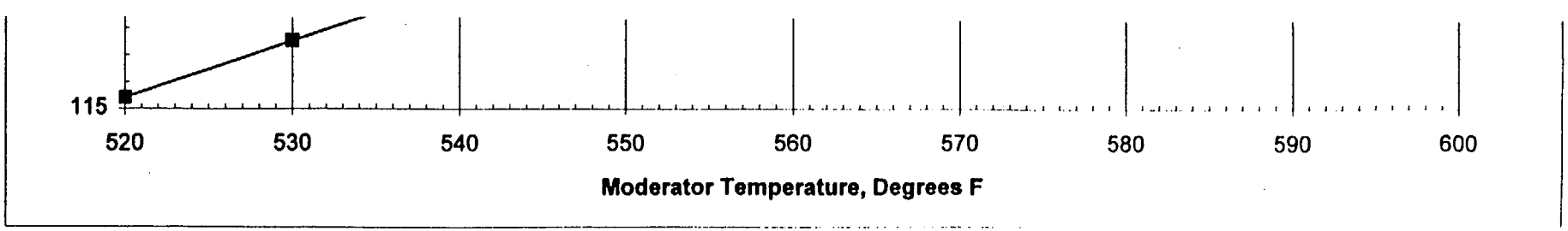
Question 32

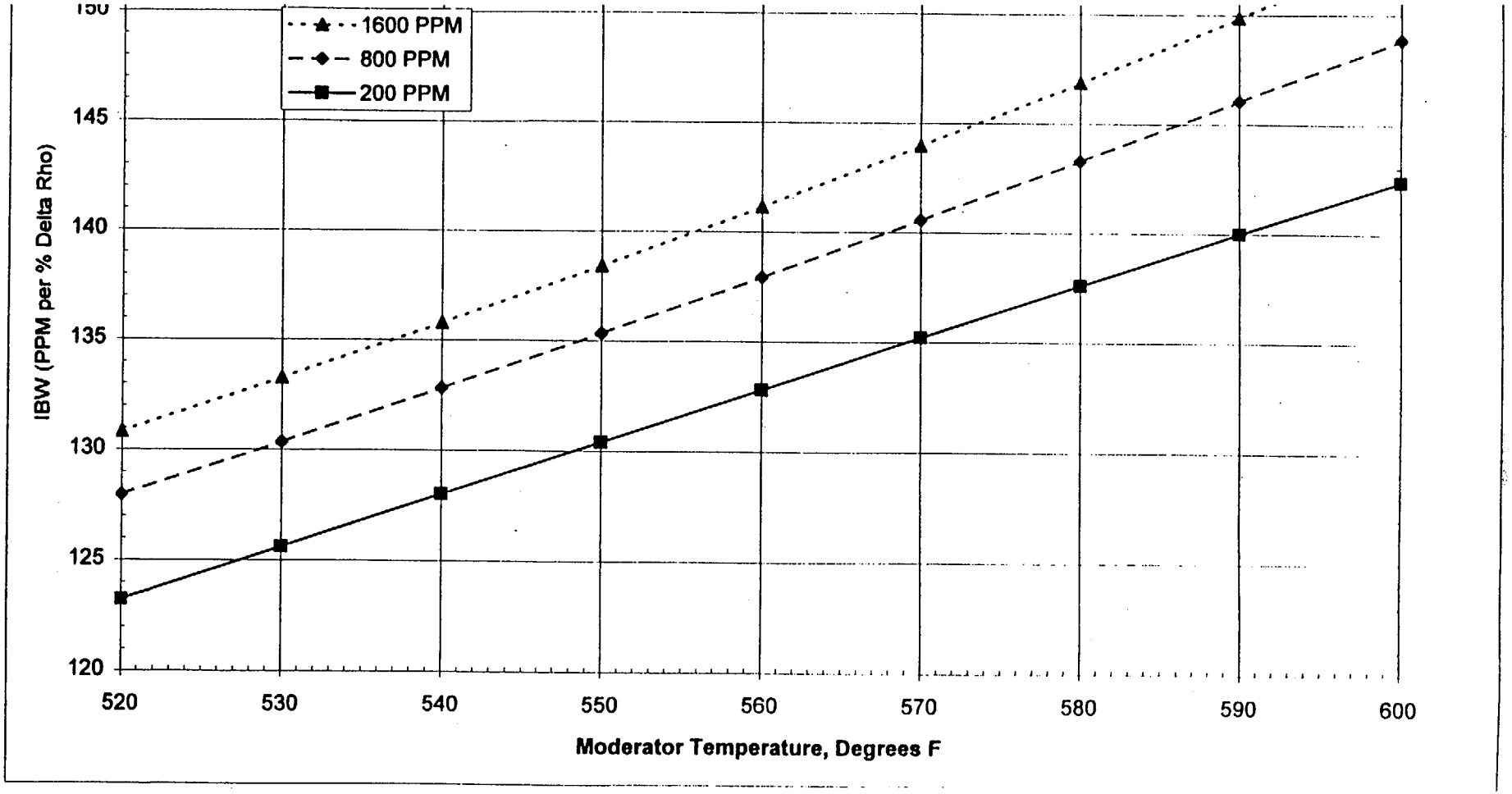
Safety Function Tracking Sheet

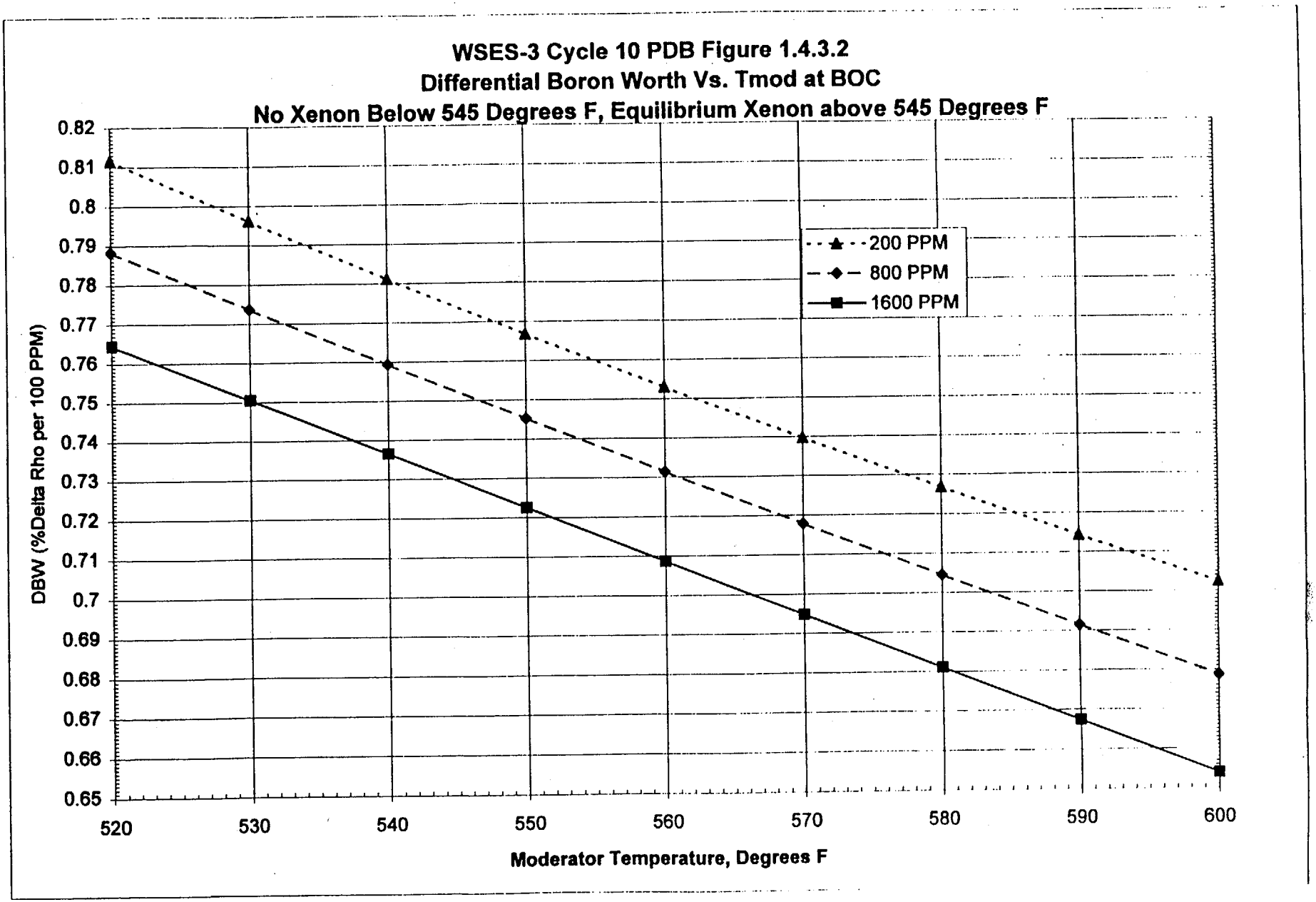
Safety Function	Success Path		Success Path in Use	SFSC Met	Priority
Reactivity Control	RC-1	CEA Insertion			
	RC-2	Boration using CVCS			
	RC-3	Boration using SI	✓		
Maintenance of Vital Auxiliaries (DC)	MVA-DC-1	Battery Chargers/ Station Batteries	✓	✓	
Maintenance of Vital Auxiliaries (AC)	MVA-AC-1	Startup Transformer			
	MVA-AC-2	Emer Diesel Gen	✓	✓	
RCS Inventory Control	IC-1	CVCS			
	IC-2	Safety Injection	✓		
RCS Pressure Control	PC-1	Subcooled	✓	✓	
	PC-2	Saturated			
RCS and Core Heat Removal	HR-1	SI NOT operating			
	HR-2	SI operating	✓		
Containment Isolation	CI-1	Automatic/Manual	✓		
Containment Temperature and Pressure Control	CTPC-1	CFCs			
	CPTC-2	Containment Spray	✓	✓	
Containment Combustible Gas Control	CCGC-1	Hydrogen Recombiners	✓	✓	

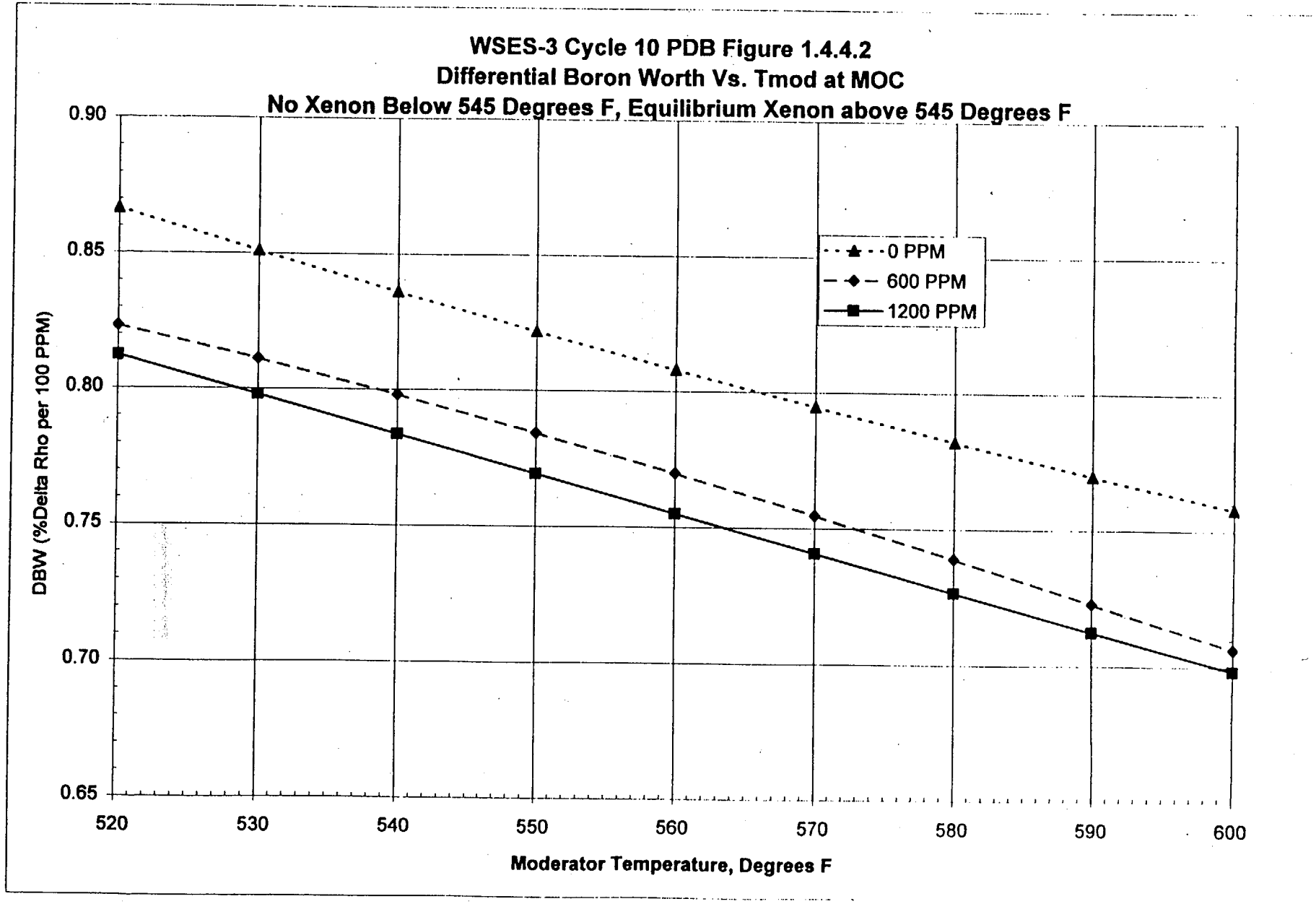

WSES-3 Cycle 10 PDB Figure 1.4.1
HZP Inverse Boron Worth Vs. Burnup
No Xenon, Equilibrium Samarium
IBW (PPM per % Delta Rho)
140
135
130
125
120
115
110
105
0
50
100
150
200
250
300
350
400
450
Cycle Burnup (EFPD)
2000 PPM
1000 PPM
0 PPM

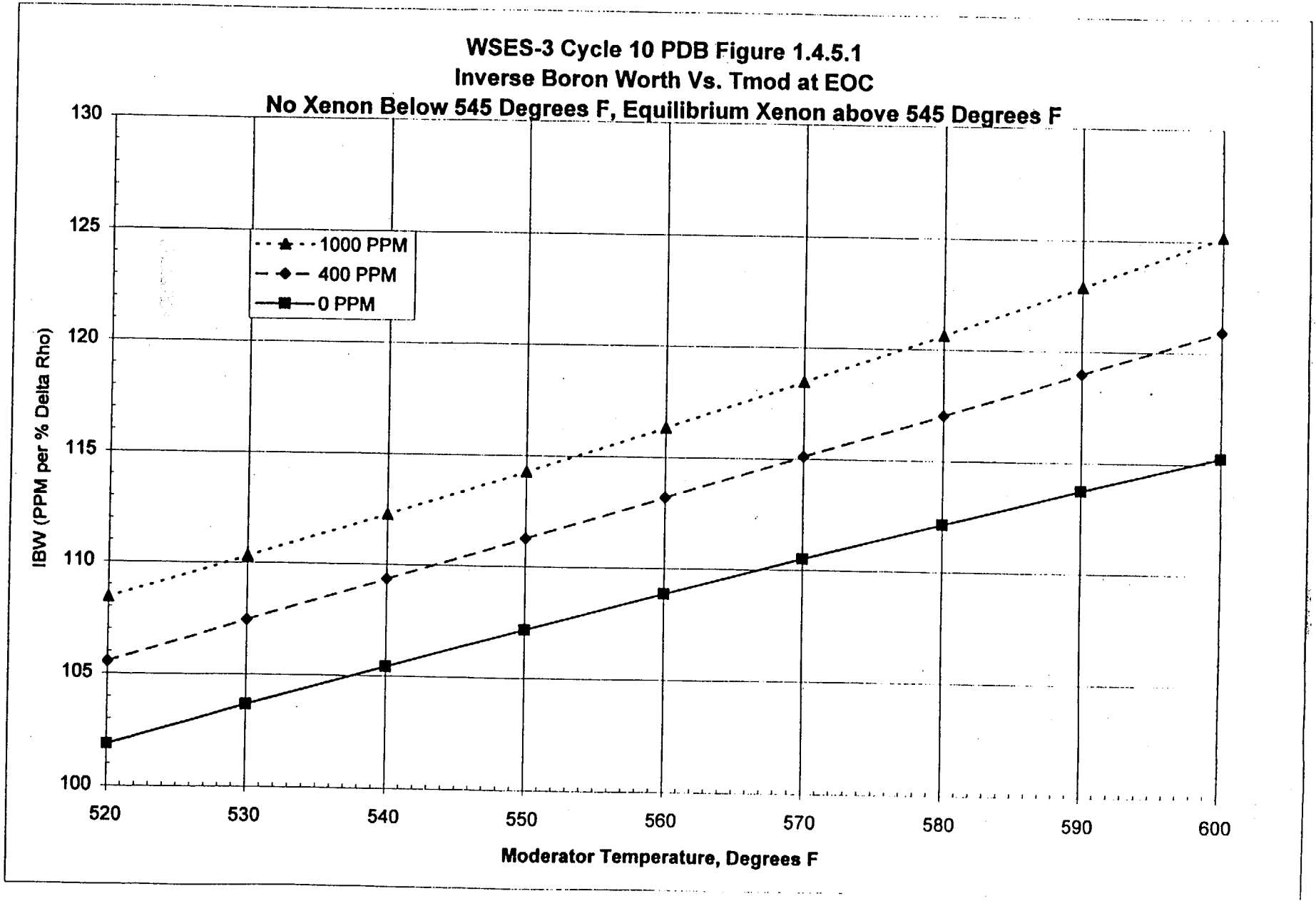
Question 42

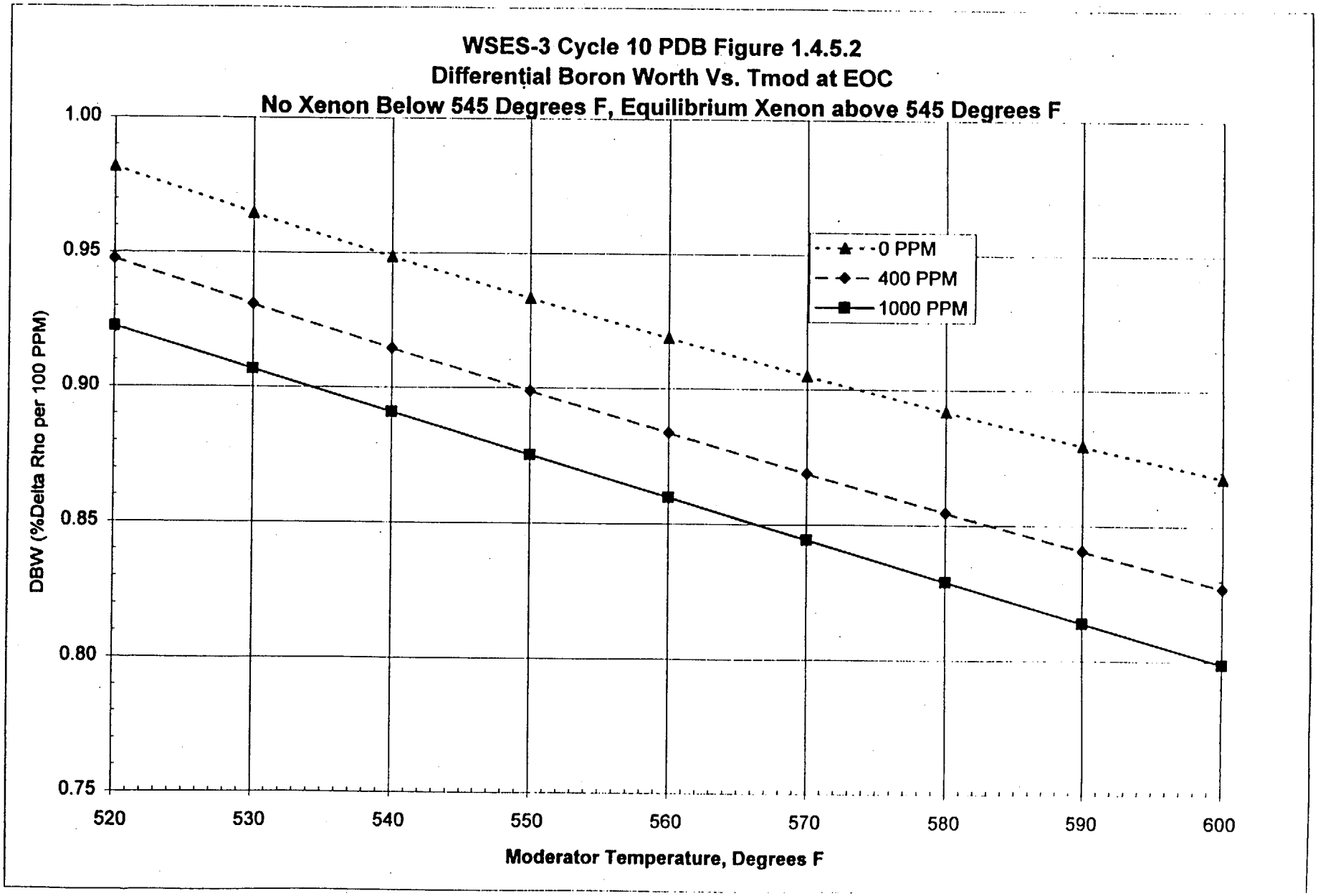

115
520
530
540
550
560
570
580
590
600
Moderator Temperature, Degrees F


1600 PPM
800 PPM
200 PPM
IBW (PPM per % Delta Rho)
145
140
135
130
125
120
520
530
540
550
560
570
580
590
600
Moderator Temperature, Degrees F

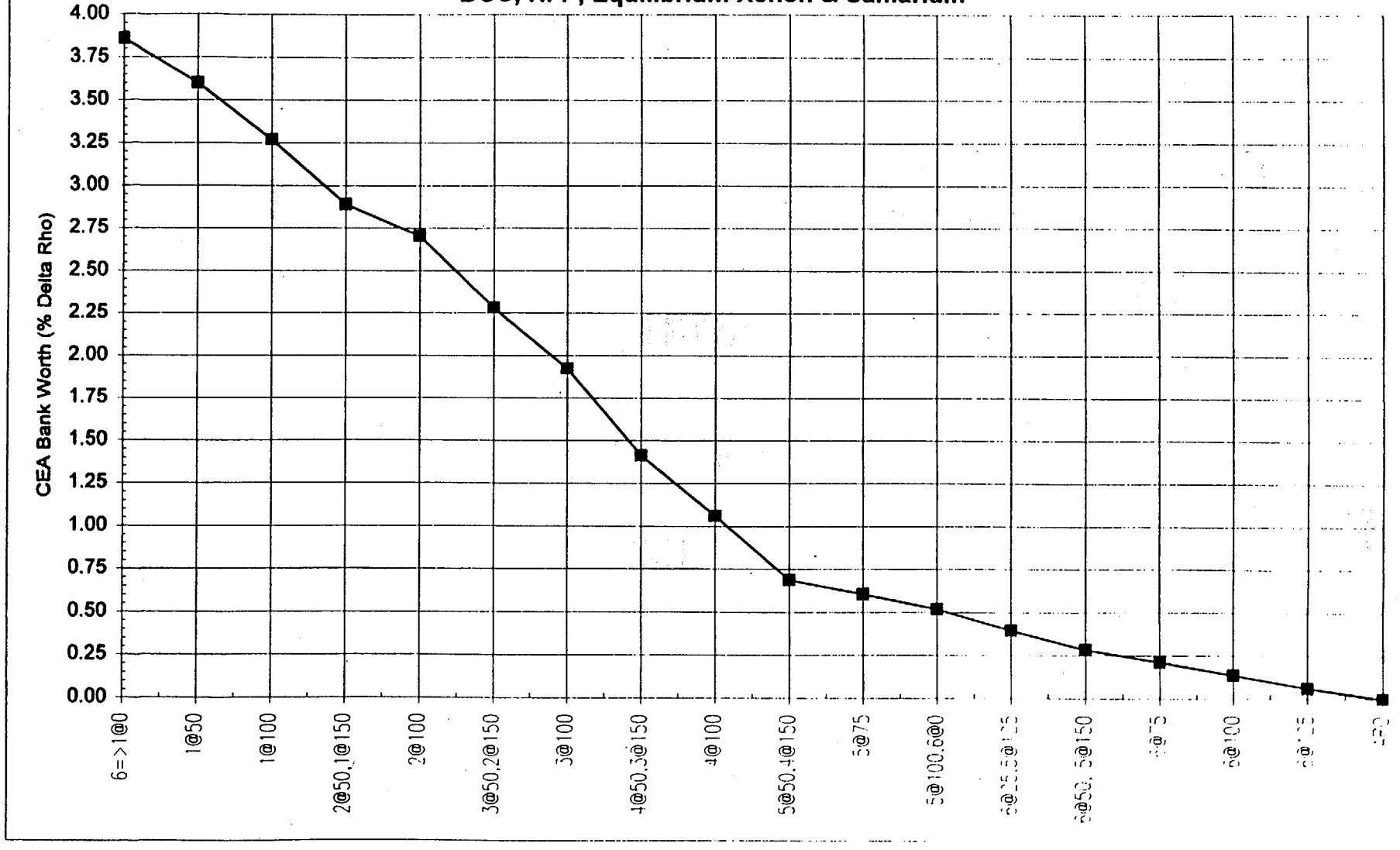

WSES-3 Cycle 10 PDB Figure 1.4.3.2
Differential Boron Worth Vs. Tmod at BOC
No Xenon Below 545 Degrees F, Equilibrium Xenon above 545 Degrees F
DBW (%Delta Rho per 100 PPM)
0.82
0.81
0.8
0.79
0.78
0.77
0.76
0.75
0.74
0.73
0.72
0.71
0.7
0.69
0.68
0.67
0.66
0.65
200 PPM
800 PPM
1600 PPM
520
530
540
550
560
570
580
590
600
Moderator Temperature, Degrees F


WSES-3 Cycle 10 PDB Figure 1.4.4.2
Differential Boron Worth Vs. Tmod at MOC
No Xenon Below 545 Degrees F, Equilibrium Xenon above 545 Degrees F
DBW (%Delta Rho per 100 PPM)
0.90
0.85
0.80
0.75
0.70
0.65
520
530
540
550
560
570
580
590
600
Moderator Temperature, Degrees F
0 PPM
600 PPM
1200 PPM

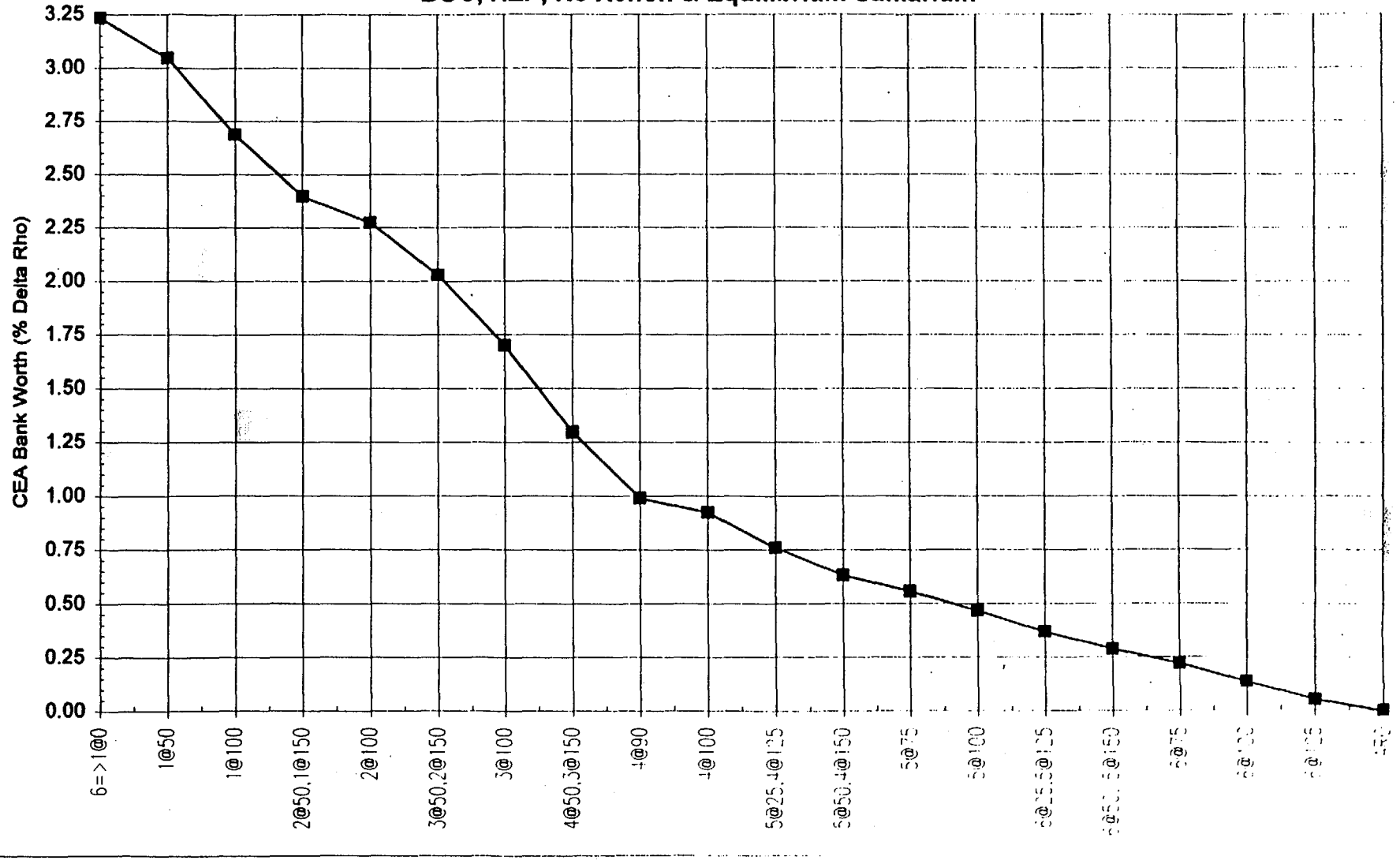

WSES-3 Cycle 10 PDB Figure 1.4.5.1
Inverse Boron Worth Vs. Tmod at EOC
No Xenon Below 545 Degrees F, Equilibrium Xenon above 545 Degrees F
1000 PPM
400 PPM
0 PPM
IBW (PPM per % Delta Rho)
130
125
120
115
110
105
100
520
530
540
550
560
570
580
590
600
Moderator Temperature, Degrees F


WSES-3 Cycle 10 PDB Figure 1.4.5.2
Differential Boron Worth Vs. Tmod at EOC
No Xenon Below 545 Degrees F, Equilibrium Xenon above 545 Degrees F
DBW (%Delta Rho per 100 PPM)
1.00
0.95
0.90
0.85
0.80
0.75
520
530
540
550
560
570
580
590
600
Moderator Temperature, Degrees F
0 PPM
400 PPM
1000 PPM

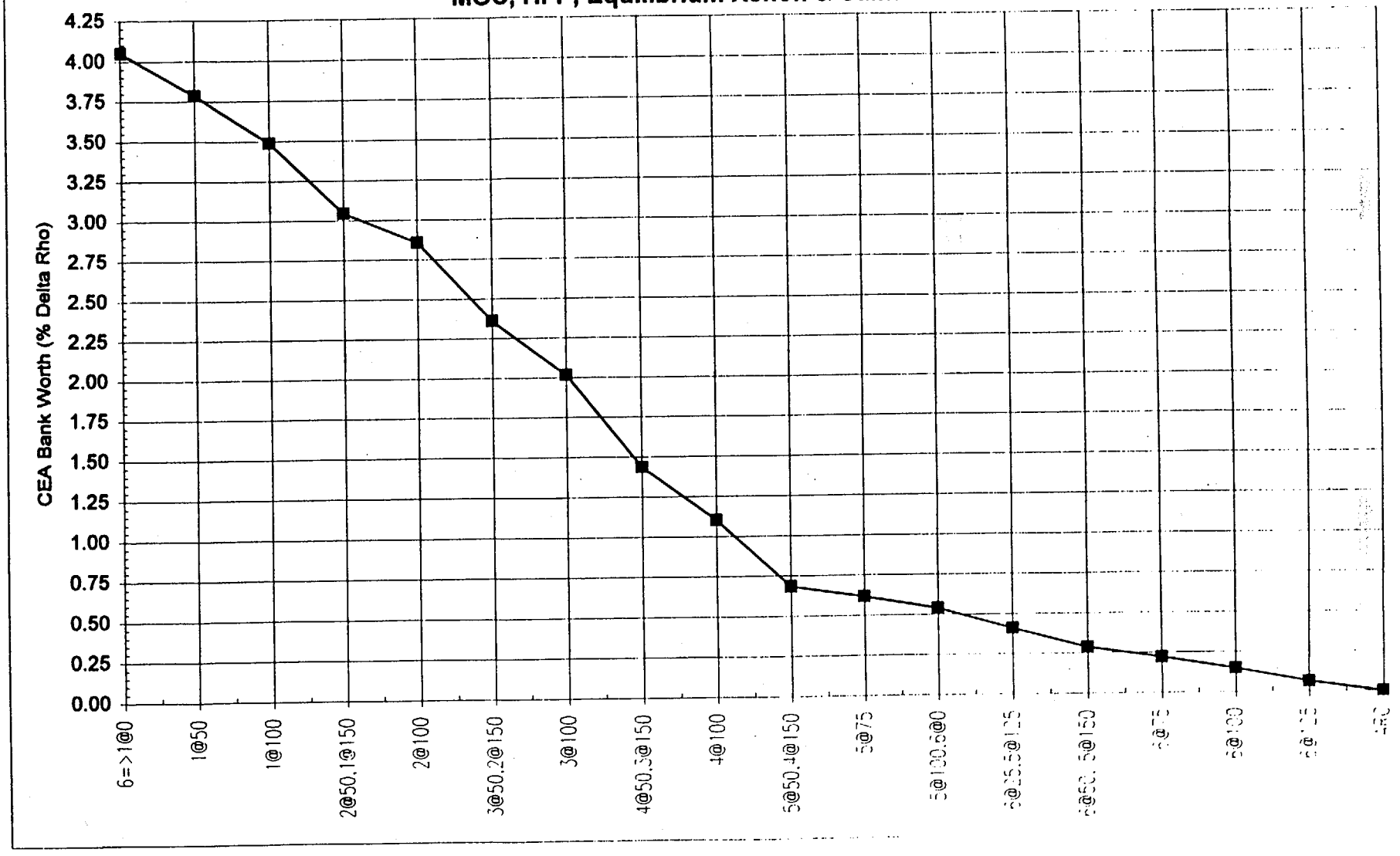
WSES-3 Cycle 10 PDB Figure 1.5.2.1
CEA Banks 1, 2, 3, 4, 5, 6 Worth Vs. Bank Position
BOC, HFP, Equilibrium Xenon & Samarium



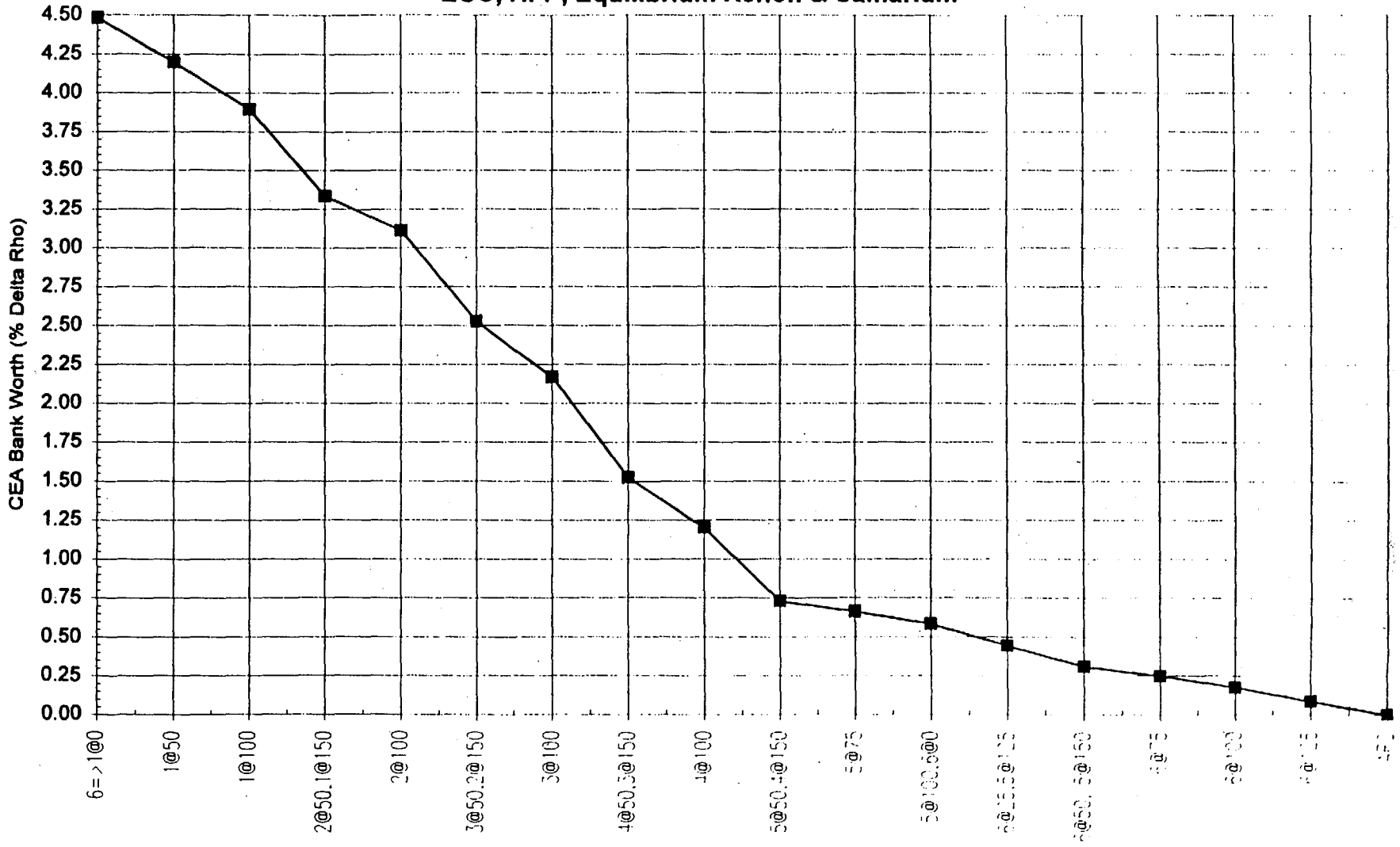
WSES-3 Cycle 10 PDB Figure 1.5.2.3
CEA Banks 1, 2, 3, 4, 5, 6 Worth Vs. Bank Position
BOC, HZP, No Xenon & Equilibrium Samarium



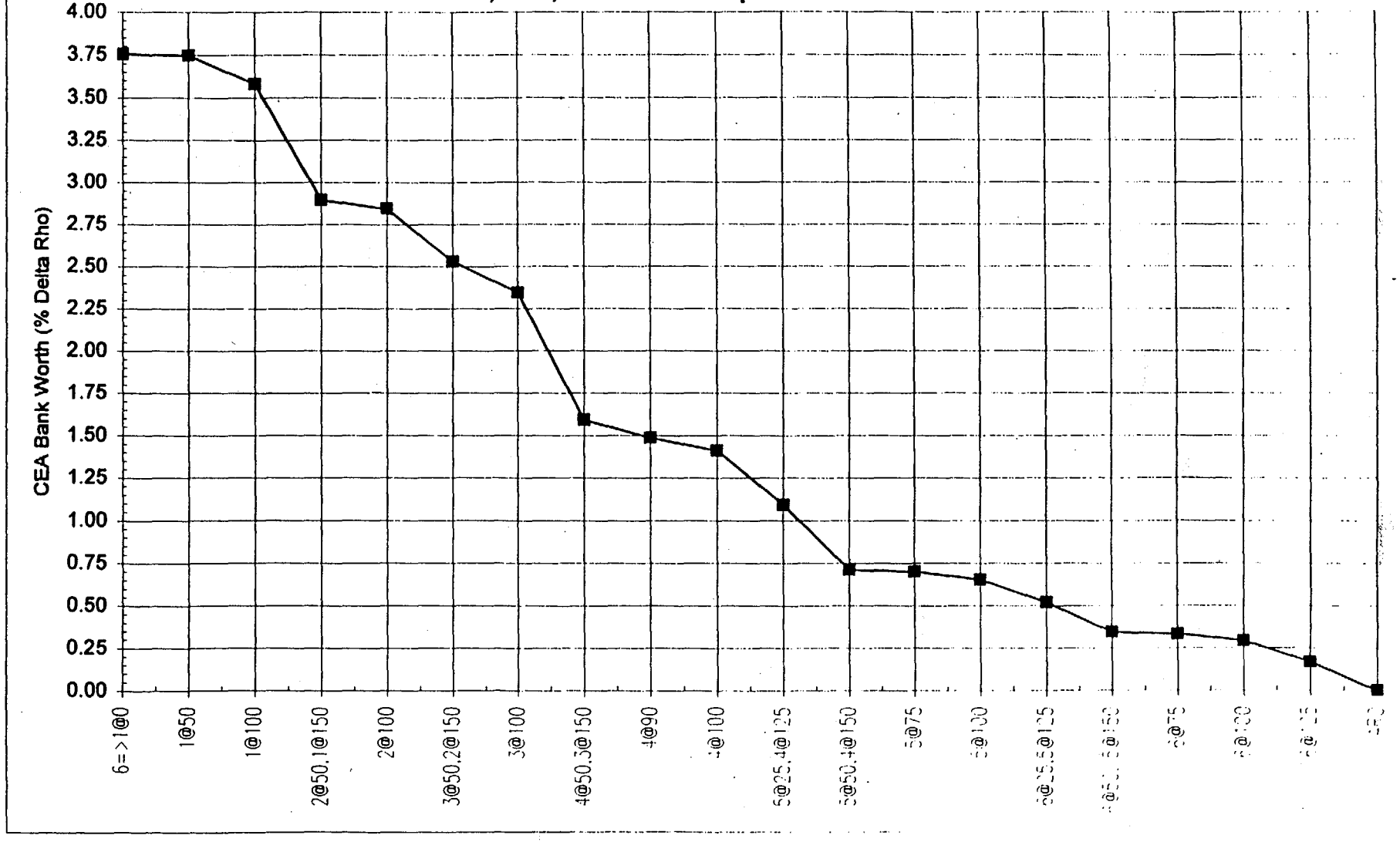
WSES-3 Cycle 10 PDB Figure 1.5.3.1
CEA Banks 1, 2, 3, 4, 5, 6 Worth Vs. Bank Position
MOC, HFP, Equilibrium Xenon & Samarium



WSES-3 Cycle 10 PDB Figure 1.5.4.1
CEA Banks 1, 2, 3, 4, 5, 6 Worth Vs. Bank Position
EOC, HFP, Equilibrium Xenon & Samarium



WSES-3 Cycle 10 PDB Figure 1.5.4.3
CEA Banks 1, 2, 3, 4, 5, 6 Worth Vs. Bank Position
EOC, HZP, No Xenon & Equilibrium Samarium



11.6 MAKEUP - BORATE MODE

1. Record the following data:

   BAMT Concentration (CBAMT) _____ PPM

   RCS Boron Concentration (CRCS) _____ PPM

   Final RCS Boron Conc. (CRCSF) _____ PPM

2. Select the appropriate RCS Volume (VRCS) below:

   _____ 0-15% VRCS = 60,532 GAL

   _____ 15-100% VRCS = 58,140 GAL

3. Calculate the volume of Boric Acid (VBA) required:

$$VBA = VRCS \times \frac{CRCSF - CRCS}{CBAMT} = _____ GAL \times \frac{(_____ PPM) - (_____ PPM)}{(_____ PPM)}$$

   VBA = _____ GAL

Performed by: _____ Verified by: _____

Signature & Date Signature & Date

3/4.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

Question 70

3/4.5.1 SAFETY INJECTION TANKS

LIMITING CONDITION FOR OPERATION

3.5.1 Each Reactor Coolant System safety injection tank shall be OPERABLE with:

a. The isolation valve open,

b. A contained borated water volume of between 926 (40%) and 1807 (83.8%) cubic feet,

c. Between 2050 and 2900 ppm of boron, and

d. A nitrogen cover-pressure of between 600 and 670 psig.

APPLICABILITY: MODES 1, 2, 3*, and 4*.

ACTION:

a. With one safety injection tank inoperable, except as a result of a closed isolation valve, restore the inoperable tank to OPERABLE status within 1 hour or be in at least HOT STANDBY within the next 6 hours and in HOT SHUTDOWN within the following 6 hours.

b. With one safety injection tank inoperable due to the isolation valve being closed, either immediately open the isolation valve or be in at least HOT STANDBY within 1 hour and be in HOT SHUTDOWN within the next 12 hours.

SURVEILLANCE REQUIREMENTS

4.5.1 Each safety injection tank shall be demonstrated OPERABLE:

a. At least once per 12 hours by:

1. Verifying the contained borated water volume and nitrogen cover-pressure in the tanks, and

2. Verifying that each safety injection tank isolation valve is open.

* With pressurizer pressure greater than or equal to 1750 psia. When pressurizer pressure is less than 1750 psia, at least three safety injection tanks must be OPERABLE, each with a minimum pressure of 235 psig and a maximum pressure of 670 psig, and a contained borated water volume of between 1332 (61%) and 1807 (83.8%) cubic feet. With all four safety injection tanks OPERABLE, each tank shall have a minimum pressure of 235 psig and a maximum pressure of 670 psig, a boron concentration of between 2050 and 2900 ppm boron, and a contained borated water volume of between 888 (39%) and 1807 (83.8%) cubic feet. In MODE 4 with pressurizer pressure less than 392 psia (700 psia for remote shutdown from LCP-43), the safety injection tanks may be isolated.

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 31 days and within 6 hours after each solution volume increase of greater than or equal to 1% of tank volume by verifying the boron concentration of the safety injection tank solution.

c. At least once per 31 days when the RCS pressure is above 1750 psia, by verifying that the isolation valve operator breakers are padlocked in the open position.

d. At least once per 18 months by verifying that each safety injection tank isolation valve opens automatically under each of the following conditions:

   1. When an actual or simulated RCS pressure signal exceeds 535 psia, and

   2. Upon receipt of a safety injection test signal.

Facility: Waterford 3		Date of Examination: October 4, 1999
Examination Level: RO		Operating Test Number: 1
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1 Conduct of Operations	Procedure Usage	List the conditions where referring to the Annunciator Response Procedure is not required when an annunciator is received.
		What are the requirements concerning procedure usage and step sequencing?
	Plant Parameter Verification	JPM (RO-PPA-SURV-1) on tech spec surveillance Applicant will be given page 1 of mode 1-4 tech spec logs to complete. Containment internal pressure will be < 0, requiring attachment 11.16, Containment Pressure Calculation to be completed.
A.2 Equipment Control	Clearance Review	JPM (RO-PPA-ADMIN-8) on performing the RO review of a clearance. Applicant must find 4 errors with the provided tagout.

A.3 Radiation Control	Radiation Work Permits	JPM (NAO-RAD-NORM-1) on RCA entry Applicant must review appropriate RWP and know the dose and dose rate limits loaded on his electronic dosimeter.
A.4 Emergency Plan	Emergency Plan Implementing Procedures	At what minimum emergency classification is activation of the Voice Notification System required? A RCS leak of 50 gpm has developed. The second Charging Pump is running and maintaining Pressurizer level. A downpower is in progress. The Emergency Coordinator has declared an Alert. There is currently no release in progress. What steps are required to activate the VNS?
		You have just been informed over the TIC radio that Union Carbide has had a vinyl chloride pipe fail at 09:50. They also reported that the leak had not yet been isolated. It is currently 09:56 and the wind direction is 135° with a wind speed of 4 mph. What are the required actions?

Administrative Topic A1

Question (closed book)

List the conditions where referring to the Annunciator Response Procedure is not required when an annunciator is received.

Answer

1. Expected alarms due to planned Operation and Maintenance evolutions (hanging clearances, surveillance testing, troubleshooting, etc.)
2. Repeated alarms that occur during the shift. The ARP must be referred to the first time the alarm annunciates except for expected alarms.
3. Annunciators that merely indicate local alarm panel trouble and that require no action other than contacting the NAO to investigate.

Reference

OP-100-001, Duties and Responsibilities of Operators on Duty

K/A	Importance
2.1.1	3.7
2.1.2	3.0
2.1.5	2.3

Administrative Topic A1

Question (closed book)

What are the requirements concerning procedure usage and step sequencing?

Answer

The steps in operating procedures shall be addressed in the sequence they are written.

- Procedure steps are normally written to be performed in sequence unless stated otherwise in a procedural note or in the limitations section of the procedure.
- Logs and valve/breaker lineups are specialized lists which are not required to be performed in sequence.
- Valve and breakers listed after bullets (•) following a step may be done in any order.
- Surveillance procedures which test multiple components in multiple systems are written such that steps act as independent subsections and may be performed in any order as plant conditions dictate. Supporting substeps shall be performed in sequence.

Reference

OP-100-001, Duties and Responsibilities of Operators on Duty

K/A	Importance
2.1.2	3.0
2.1.5	2.3

Waterford 3 Job Performance Measure Examination

TECH SPEC LOGS REQUIRING CONTAINMENT PRESSURE CALCULATION

JOB: RO **PLANT SYSTEM:** PPA **TASK MODE:** Surv **TASK NUMBER:** 1
DESCRIPTION: TECH SPEC LOGS REQUIRING CONTAINMENT PRESSURE CALCULATION
REVISION: 0 **REVISION DATE:** 8/2/99
TIME: 15
TIME CRITICAL TASK: **ALTERNATE PATH:**

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-903-001	22	3	7/26/99	Perform

NRC KA NUMBER:	RO	SRO
2-1-33	3.4	4
2-1-19	3	3

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

INITIAL CONDITIONS

- PLANT IS IN MODE 3
- CONTAINMENT PURGE WAS STARTED AT 0545

TASK STANDARD

COMPLETE OP-903-001, TECHNICAL SPECIFICATION SURVEILLANCE LOGS, PAGE 1 OF ATTACHMENT 11.1AND ATTACHMENT 11.16

TOOLS AND EQUIPMENT

NONE

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

YOU ARE THE DAYSHIFT PNPO AND ITS TIME FOR THE 12-20 TECH SPEC LOGS TO BE TAKEN

TERMINATING CUE

OP-903-001, TECHNICAL SPECIFICATION SURVEILLANCE LOGS, PAGE 1 OF ATTACHMENT 11.1 AND ATTACHMENT 11.16 ARE COMPLETE

CONSEQUENCES OF INADEQUATE PERFORMANCE

MISSED TECH SPEC SURVEILLANCE

HUMAN INTERFACES

NONE

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

- PLANT IS IN MODE 3
- CONTAINMENT PURGE WAS STARTED AT 0545

INITIATING CUE

YOU ARE THE DAYSHIFT PNPO AND ITS TIME FOR THE 12-20 TECH SPEC LOGS TO BE TAKEN

TASK ELEMENTS

Perform the task in accordance with OP-903-001, Technical Specification Surveillance Logs, attachment 11.1 (page 1) and attachment 11.16 Readings are to taken from the simulator control panels and PMC terminals.

---

1. (C) RECORD DATA SPECIFIED ON ATTACHMENT 11.1, MODE 1-4 TECHNICAL SPECIFICATION SURVEILLANCE LOG.

CUES

THIS WILL BE PERFORMED ON THE SIMULATOR; ALL VALUES ARE AS READ.

STANDARDS

1. THE OPERATOR COMPLETES PAGE 1 OF ATTACHMENT 11.1
2. THE OPERATOR REALIZES THE NEED TO PERFORM ATTACHMENT 11.16, CONTAINMENT PRESSURE CALCULATION
3. THE OPERATOR COMPLETES ATTACHMENT 11.16

---

2 END OF TASK

DESCRIPTION	NOTE	MODE	T. S.	COMP #	LIMIT	UNITS	04-12	12-20	20-04
ACCW Temperature:	36.0	1 - 4	4.7.4.a	PMC					
A Train				A46201	≤ 86.4	°F	83.5		
B Train				A46301	≤ 86.4	°F	83.6		
Wet Bulb Air Temp:	46.0	1 - 4		PMC					
Pri Twr 33' Air Temp				C48521	≥ 40	°F	85.1	AS READ	
Wet Tower A & B Fans 1-4				CP - 33	Auto or Off	Auto,Off,NA	AUTO	AS READ	
Wet Tower A & B Fans 5-8				CP - 33	Auto or Off	Auto,Off,NA	AUTO	AS READ	
CNTMT Air Temperature:		1 - 4	4.6.1.5	CP - 18					
A CFC Inlet Temp				CCS-5150AS	N/A	°F	110		
C CFC Inlet Temp				CCS-5155AS	N/A	°F	108		
B CFC Inlet Temp				CCS-5150BS	N/A	°F	112		
D CFC Inlet Temp				CCS-5155BS	N/A	°F	STBY		
Average CFC Inlet Temp	2.0				≥ 96 to ≤ 114	°F	110		
Annulus Negative Press		1 - 4	4.6.6.2.a	CP - 18					
Annulus to Ambient D/P				ANP-IDPI-5075	> 5	INWC	8.0	AS READ	
CNTMT Liquid Leak Rate	16.0	1 - 4	4.4.5.2.1.c	SP-IFR-6710	< 1 Increase	GPM	1.0	AS READ	
CNTMT Internal Press :		1 - 4	4.6.1.4	CP - 18					
CNTMT to Ambient D/P	26.0			CAP-IDPI-5171	0 ≤ D/P < 27	INWC	10.0	AS READ	
Calculated CNTMT Pres	26.1			Step 5	> 14.375	PSIA	N/A	FROM 11.16	
Loss of Power - Channel Functional Relay Test:	15.0	1 - 3	4.3.2.1 Tbl 4.3-2	CP - 1					
A TRN Prim 4KV/480V	15.1		(6.a,6.b)	27-3/A3,27-3	Operable	√	√		
			(6.a,6.b)	27-2/A3,27-2	Operable	√	√		
			(6.a,6.b)	27-1/A3,27-1	Operable	√	√		
A TRN Backup 4KV	15.2		(6.c)	27-3E/A3	Operable	√	√		
			(6.c)	27-2E/A3	Operable	√	√		
			(6.c)	27-1E/A3	Operable	√	√		

REMARKS:

11.16 CONTAINMENT PRESSURE CALCULATION

11.16.1 Barometric Pressure as measured by PMC (PID C48516). If local reading used, then record M&TE data on TS Logs Remarks and WA① BP = **30.00** INHG

11.16.2. Containment to Ambient Differential Pressure (PMC PID-A51000). C/A = **-3.4** INWC

11.16.3. Convert Barometric Pressure (BP) from INHG to PSIA by performing the following:

BP(PSIA) = [BP (INHG) X 0.4912 PSIA/INHG]

BP(PSIA) = [**30.00** INHG X 0.4912 PSIA/INHG]
BP(PSIA) = **14.74**

11.16.4. Convert Containment to Ambient Differential Pressure (C/A) from INWC to PSIA by performing the following:

C/A(PSIA) = [C/A (INWC) X 0.0361 PSIA/INWC]

C/A(PSIA) = [**-3.4** INWC X 0.0361 PSIA/INWC]
C/A(PSIA) = **-0.123**

11.16.5. Calculate Absolute Containment Internal Pressure (CP) by performing the following:

CP(PSIA) = BP(PSIA) + C/A(PSIA)

CP(PSIA) = **14.74** PSIA + **-0.123** PSIA
CP(PSIA) = **14.62** PSIA

11.16.6. Attach this Attachment to Attachment 11.1, Mode 1-4 Technical Specification Surveillance Log.

① - Add 0.05 INHG to local reading to obtain a value equivalent to Met Tower PMC point.

Waterford 3 Job Performance Measure Examination

PERFORM LICENSED OPERATOR REVIEW OF A CLEARANCE

JOB: RO **PLANT SYSTEM:** PPA **TASK MODE:** Admin **TASK NUMBER:** 8
DESCRIPTION: PERFORM LICENSED OPERATOR REVIEW OF A CLEARANCE
REVISION: 0 **REVISION DATE:** 8/2/99
TIME: 30
TIME CRITICAL TASK: **ALTERNATE PATH:** X

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
UNT-005-003	16	00	12/1/98	Perform

NRC KA NUMBER:	RO	SRO
2-2-13	3.6	3.8
2-1-24	2.8	3.1

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

INITIAL CONDITIONS

A CLEARANCE HAS BEEN WRITTEN ON HPSI PUMP AB FOR A COMPONENT OUTAGE THAT INCLUDES SUCTION GASKET REPLACEMENT AND SEAL COOLER CLEANING

TASK STANDARD

FIND AT LEAST 4 PROBLEMS WITH THE PROVIDED TAGOUT

TOOLS AND EQUIPMENT

NONE

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

THE CRS DIRECTS THE OPERATOR TO REVIEW THE PROVIDED CLEARANCE

TERMINATING CUE

THE OPERATOR FINDS 4 ERRORS WITH THE CLEARANCE

CONSEQUENCES OF INADEQUATE PERFORMANCE

1. PERSONNEL INJURY
2. EQUIPMENT DAMAGE

HUMAN INTERFACES

CRS

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

A CLEARANCE HAS BEEN WRITTEN ON HPSI PUMP AB FOR A COMPONENT OUTAGE THAT INCLUDES SUCTION GASKET REPLACEMENT AND SEAL COOLER CLEANING

INITIATING CUE

THE CRS DIRECTS THE OPERATOR TO REVIEW THE PROVIDED CLEARANCE

TASK ELEMENTS

Perform the task in accordance with UNT-005-003, Clearance Request, Approval and Release.

---

1. (C) USING SECTION 5.1, CLEARANCE PREPARATION, AS A GUIDELINE, VERIFY THE CLEARANCE HAS BEEN PREPARED TO ADEQUATELY PROVIDE PLANT AND PERSONNEL SAFETY FOR WORK ACTIVITIES LISTED.

CUES

NO CHANGES ARE TO BE MADE TO THE PROTECTIVE TAGGING COMPUTER PROGRAM. PROVIDE OPERATOR WITH THE CLEARANCE

Standards

OPERATOR MUST FIND 4 ERRORS ON THE PROVIDED CLEARANCE.

The provided clearance contains the following errors:

1. The breaker listed for tag 3 is the motor heater breaker instead of the motor breaker. Listed UNID is SI EBKR3AB-3A and should be SI EBKR3AB-3.
2. The sequence of valves operated lists tags 10-13 as sequence 19, meaning these 4 valves can be operated in any order among the 4 valves. Both discharge valves must be closed prior to closing the 2 suction valves to prevent possible damage to suction side components and piping.
3. SI vent UNID is listed as SI MVAAA2034 AB and should be SI MVAAA2031 AB.
4. Reference document CWD-3002 does not pertain to HPSI AB.
5. Work document 404399 is for work on Nitrogen Pump B. Workers for this job will not be protected by this tagout.

CLEARANCE INSTALLATIO AUTHORIZATION FORM 07/29/

COMPONENT TO BE TAGGED:
SI MPMP0002 AB PUMP
HIGH PRESSURE SAFETY INJECTION PUMP AB

CLEARANCE NUMBER: **WF-99-1024**

EOS NUMBER: N/A WORK DOCUMENT: 404399

PURPOSE OF CLEARANCE:
CLEAN AND INSPECT COOLER. CHANGE MOTOR AND PUMP LUBE. CHANGE SUCTION GASKET.

SPECIAL INSTRUCTIONS:
HPSI AB Outage
Coordinate with Rad Waste to stage drain rigs.

FOR TRAINING ONLY NOT TO BE USED FOR ACTUAL PLANT OPERATIONS

DRAW XREF: CWD-3002, G-160 ST3, B289 ST17

INFORMATION ONLY

CLEARANCE WF-99-1024 TAG INSTALLATION SECTION INFORMATION ONLY

TAG TYPE	TAG #	DEVICE AND COMPONENT NAME	LOCATION	TAGGED POSITION	TAGGED SEQ	RESTORED POSITION	REMOVAL SEQ	DEVICE STATUS
L	1	SI ECS0002 AB C/S HIGH PRESSURE SAFETY INJECTION PUMP AB C/S /		STOP / NEUTRAL	1			Not Hanging
T	2	SI EDISC3AB 3 KNIFSW HPSI PMP AB DC CONTROL POWER KNIFE SWITCH /		OPEN	2	CLOSED		Not Hanging
T	3	SI EBKR3AB 3A CKTBRK HPSI PUMP AB MOTOR HEATER	RAB+21 11A J	RACKED DOWN / REMOVED	3	ON		Not Hanging
T	4	CC MVAAA934 AB VALVE HPSI PUMP AB / CCW INLET ISOLATION	RAB-35 6A K	CLOSED	13	LOCKED OPEN		Not Hanging
T	5	CC MVAAA942 AB VALVE HPSI PUMP AB / CCW OUTLET ISOLATION	RAB-35 6A K	CLOSED	14	LOCKED OPEN		Not Hanging
T	6	CC MVAAA937 B VALVE HPSI PUMP B / CCW INLET DRAIN	RAB-35 7A K	OPEN / THROTTLED	15	CLOSED		Not Hanging
T	7	CC MVAAA938 AB VALVE HPSI PUMP AB / CCW OUTLET DRAIN	RAB-35 6A K	OPEN / THROTTLED	16	CLOSED		Not Hanging

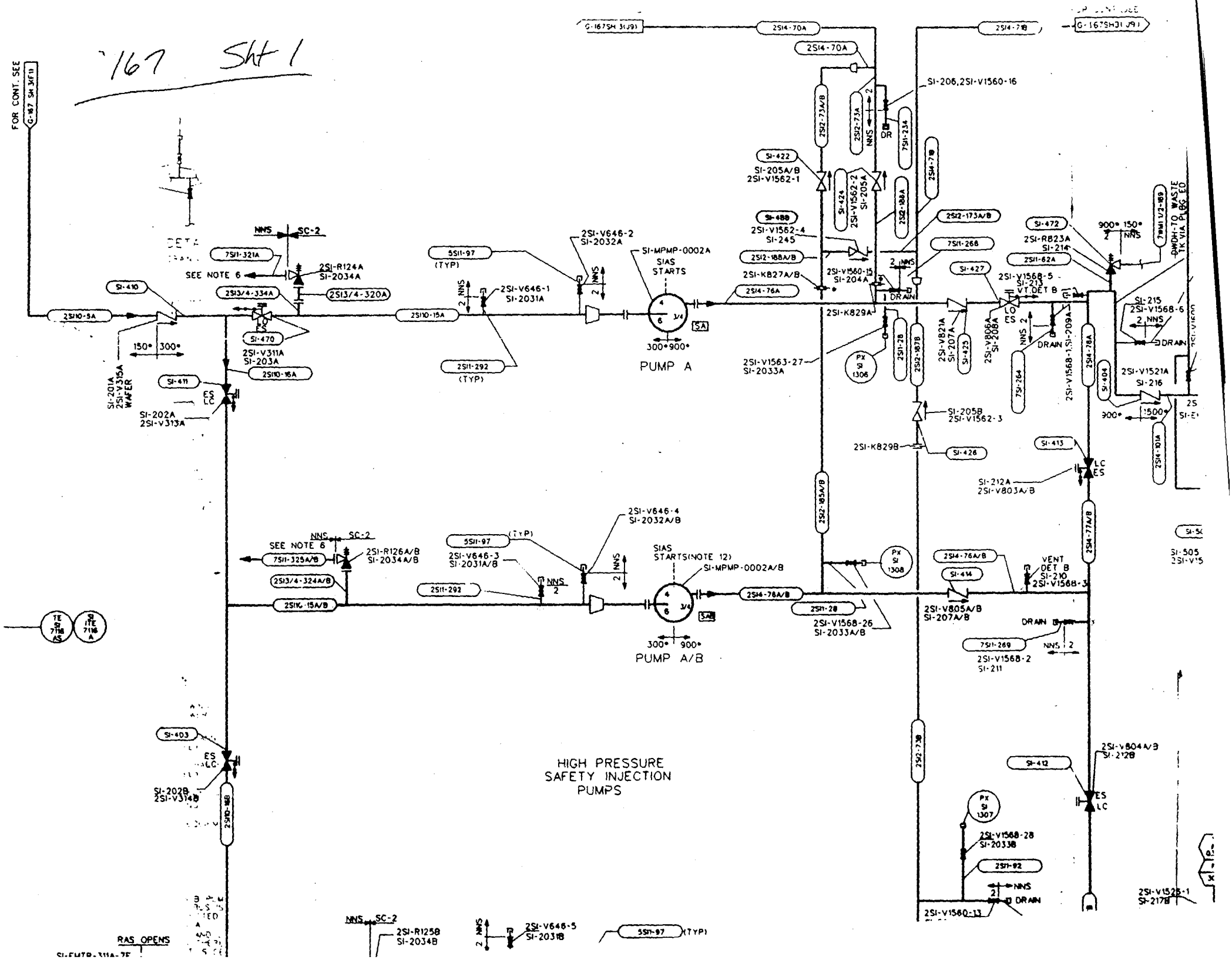
→ Special Attention Requested
* No Tag

CLEARANC /F-99-1024 TAG INSTALLAT SECTION INFORMATI ONLY

TAG TYPE	TAG #	DEVICE AND COMPONENT NAME	LOCATION	TAGGED POSITION	TAGGED SEQ	RESTORED POSITION	REMOVAL SEQ	DEVICE STATUS
T	8	SI MVAAA205 AB VALVE HPSI PUMP AB MIN FLOW TO / RECIRC LINE A STOP CHECK	RAB-35 6A K	CLOSED	17	LOCKED OPEN		Not Hanging
T	9	SI MVAAA245 VALVE HPSI PUMP AB MIN FLOW TO / RECIRC LINE B STOP CHECK	RAB-35 6A K	CLOSED	18	LOCKED CLOSED		Not Hanging
T	10	SI MVAAA212 A VALVE HPSI PUMP AB DISCHARGE / TO HPSI A ISOLATION	RAB-35 9A K	CLOSED	19	LOCKED CLOSED		Not Hanging
T	11	SI MVAAA212 B VALVE HPSI PUMP AB DISCHARGE / TO HPSI B ISOLATION	RAB-35 9A K	CLOSED	19	LOCKED CLOSED		Not Hanging
T	12	SI MVAAA208 A VALVE HPSI PUMP A / DISCHARGE ISOLATION	RAB-35 9A J	CLOSED	19	LOCKED OPEN		Not Hanging
T	13	SI MVAAA208 B VALVE HPSI PUMP B / DISCHARGE ISOLATION	RAB-35 8A L	CLOSED	19	LOCKED OPEN		Not Hanging
T	14	SI MVAAA2032 AB VALVE HPSI PUMP AB / SUCTION VENT	RAB-35 6A J	OPEN / THROTTLED	20	CLOSED		Not Hanging
T	15	SI MVAAA2034 AB VALVE HPSI PUMP AB / SUCTION RELIEF	RAB-35 8A K	OPEN / THROTTLED	21			Not Hanging
T	16	SI MVAAA2033 AB VALVE HPSI PUMP AB / DISCHARGE PX ROOT	RAB-35 6A J	OPEN / THROTTLED	22	CLOSED		Not Hanging

☐ CONTINUATION SHEET(S)

→ Special Attention Requested
* No Tag


'167 Sht 1
FOR CONT. SEE G-167 SH 3 (F11)
G-167 SH 3 (J9)
2SI4-70A
2SI4-71B
SI-206, 2SI-V1560-16
SI-422
SI-205A/B
2SI-V1562-1
SI-424
2SI-V1562-2
SI-205A
SI-488
2SI-V1562-4
SI-245
2SI2-188A/B
2SI-KB27A/B
2SI4-76A
2SI-K829A
2SI-V1563-27
SI-2033A
PUMP A
SI-MPMP-0002A
SIAS STARTS
2SI-V646-2
SI-2032A
2SI-V646-1
SI-2031A
5SI1-97 (TYP)
2SI1-292 (TYP)
2SI3/4-334A
2SI3/4-320A
2SI-R124A
SI-2034A
SEE NOTE 6
7SI1-321A
SC-2
NNS
2SI10-5A
2SI10-15A
2SI10-16A
SI-410
SI-470
2SI-V311A
SI-203A
SI-411
SI-202A
2SI-V313A
SI-201A
2SI-V315A
WAFER
150° 300°
ES
LC
2SI-V646-4
SI-2032A/B
2SI-V646-3
SI-2031A/B
2SI-R126A/B
SI-2034A/B
7SI1-325A/B
2SI3/4-324A/B
2SI10-15A/B
2SI1-292
SIAS STARTS (NOTE 12)
SI-MPMP-0002A/B
PUMP A/B
2SI4-76A/B
2SI1-28
2SI-V1568-26
SI-2033A/B
2SI-V805A/B
SI-207A/B
2SI-V1563-1
SI-2033
2SI-V1563-2
SI-2033
2SI-V1563-3
SI-2033
2SI-V1563-4
SI-2033
2SI-V1563-5
SI-2033
2SI-V1563-6
SI-2033
2SI-V1563-7
SI-2033
2SI-V1563-8
SI-2033
2SI-V1563-9
SI-2033
2SI-V1563-10
SI-2033
2SI-V1563-11
SI-2033
2SI-V1563-12
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2SI-V1563-13
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2SI-V1563-14
SI-2033
2SI-V1563-15
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2SI-V1563-16
SI-2033
2SI-V1563-17
SI-2033
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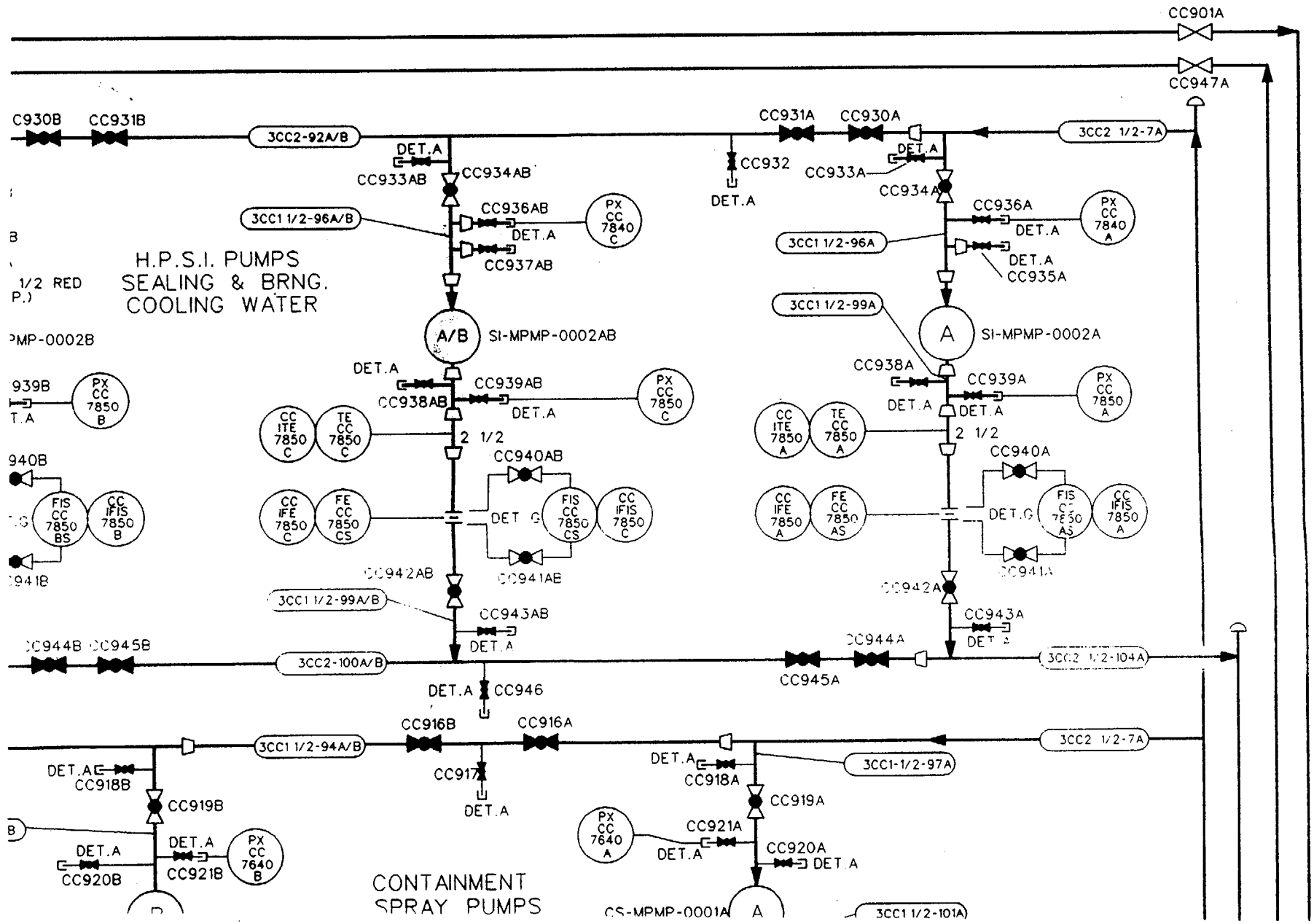
2SI-V1563-19
SI-2033
2SI-V1563-20
SI-2033

G 160 sht. 3


CC901A
CC947A
C930B
CC931B
3CC2-92A/B
DET.A
CC933AB
CC934AB
CC936AB
3CC1 1/2-96A/B
PX CC 7840 C
DET.A
CC937AB
H.P.S.I. PUMPS
SEALING & BRNG.
COOLING WATER
1/2 RED
P.)
PMP-0002B
A/B
SI-MPMP-0002AB
939B
PX CC 7850 B
T.A
940B
FIS CC 7850 BS
CC IFIS 7850 B
941B
DET.A
CC939AB
CC938AB
PX CC 7850 C
CC ITE 7850 C
TE CC 7850 C
2 1/2
CC940AB
CC IFE 7850 C
FE CC 7850 CS
DET.G
FIS CC 7850 CS
CC IFIS 7850 C
CC941AB
CC942AB
3CC1 1/2-99A/B
CC943AB
DET.A
CC944B CC945B
3CC2-100A/B
DET.A CC946
CC931A CC930A
3CC2 1/2-7A
DET.A
CC933A
CC934A
CC932
DET.A
CC936A
PX CC 7840 A
3CC1 1/2-96A
DET.A
DET.A
CC935A
3CC1 1/2-99A
A
SI-MPMP-0002A
CC938A
CC939A
PX CC 7850 A
DET.A
DET.A
CC IFE 7850 A
TE CC 7850 A
2 1/2
CC940A
CC IFE 7850 A
FE CC 7850 AS
DET.G
FIS CC 7850 AS
CC IFIS 7850 A
CC941A
CC942A
CC943A
DET.A
CC944A
CC945A
3CC2 1/2-104A
CC916B
CC916A
3CC1 1/2-94A/B
3CC2 1/2-7A
DET.A
CC918B
CC917
DET.A
DET.A
CC918A
3CC1-1/2-97A
CC919B
CC919A
B
DET.A
CC920B
DET.A
CC921B
PX CC 7640 B
PX CC 7640 A
CC921A
DET.A
CC920A
DET.A
CONTAINMENT
SPRAY PUMPS
CS-MPMP-0001A
A
3CC1 1/2-101A)

Waterford 3 Job Performance Measure Examination

Entry into RCA (CAA)

JOB: NAO **PLANT SYSTEM:** RAD **TASK MODE:** Norm **TASK NUMBER:** 1
DESCRIPTION: Entry into RCA (CAA)
REVISION: 0 **REVISION DATE:** 8/4/99
TIME: 5
TIME CRITICAL TASK: **ALTERNATE PATH:**

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
UNT-005-022	11	02	7/29/98	Perform

NRC KA NUMBER:	RO	SRO
2-3-1	2.6	3
2-3-5	2.3	2.5

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

INITIAL CONDITIONS

ANOTHER TASK IS TO PERFORMED IN THE RCA

TASK STANDARD

SUCCESSFUL ENTRY INTO THE RCA

TOOLS AND EQUIPMENT

ELECTRIC DOSIMETER

PERSONNEL SAFETY CONSIDERATIONS

1. EATING, SMOKING, AND CHEWING ARE PROHIBITED IN THE RCA. DRINKING IS ONLY ALLOWED BY SPECIFIC HEALTH PHYSICS PERMISSION.
2. RADIATION OVEREXPOSURE

INITIATING CUE

OPERATOR IS DIRECTED IN TO THE RCA TO PERFORM A SPECIFIC TASK

TERMINATING CUE

SUCESSFUL ENTRY INTO THE RCA

CONSEQUENCES OF INADEQUATE PERFORMANCE

1. POSSIBLE RADIATION OVEREXPOSURE
2. VIOLATION OF PLANT RADIOLOGICAL PROCEDURES

HUMAN INTERFACES

HEALTH PHYSICS TECHNICIAN

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

ANOTHER TASK IS TO PERFORMED IN THE RCA

INITIATING CUE

OPERATOR IS DIRECTED IN TO THE RCA TO PERFORM A SPECIFIC TASK

TASK ELEMENTS

Perform the task in accordance with UNT-005-022, Controlled Access Area Entry/Exit.

1. (C) REVIEW RADIATION WORK PERMIT OR STANDING RWP, IF APPROPRIATE.

CUES

COMPUTER WILL PROMPT IF STANDING RADIATION WORK PERMIT HAS CHANGED SINCE WORKER LAST ENTERED THE CAA.

Standards

1. ENSURE PROPER DOSIMETER FOR RWP.
2. ENSURE TLD AND ELECTRONIC DOSIMETER ARE PROPERLY WORN IN CLOSE PROXIMITY TO EACH OTHER, ON THE FRONT OF THE BODY BETWEEN THE WAIST AND SHOULDERS.
3. TLD BETA WINDOW SHOULD BE FACING OUT, AWAY FROM THE BODY.
4. ELECTRONIC DOSIMETER FRONT FACING OUT, AWAY FROM THE BODY.

2. (C) ENSURE THE PERSONNEL THEY ARE ESCORTING ARE FAMILIAR WITH AND ADHEREING TO PROCEDURE AND RWP REQUIREMENTS.

CUES

NONE

Standards

1. ENSURE THE PERSONNEL THEY ARE ESCORTING LOCATE APPROPRIATE RWP AND ELECTRONIC DOSIMETER.

3. (C) LOG INTO THE CAA USING THE ACCESS CONTROL COMPUTER OR MANUAL INDIVIDUAL DOSE TRACKING CARD, AS DIRECTED BY HEALTH PHYSICS

CUES

NONE

Standards

1. PROPERLY LOGGED INTO THE ACCESS CONTROL COMPUTER
2. COMPLETED ENTRY PORTION OF MANUAL INDIVIDUAL DOSE TRACKING CARD IF ACCESS CONTROL COMPUTER WAS NOT AVAILABLE.

Administrative Topic A4

Question

At what minimum emergency classification is activation of the Voice Notification System required?
A RCS leak of 50 gpm has developed. The second Charging Pump is running and maintaining Pressurizer level. A downpower is in progress. The Emergency Coordinator has declared an Alert. There is currently no release in progress. What steps are required to activate the VNS?

Answer

Required at an Alert.

To activate the VNS:

- Type the VNS hot key password, 3104, then press ENTER
- Use the arrow keys to highlight scenario 01 ALERT, then press ENTER
- Type Y to confirm, then press ENTER

Reference

EP-02-015, Emergency Responder Activation

K/A	Importance
2.4.39	3.3
2.4.41	2.3
2.4.43	2.8

5.0 PROCEDURE

5.1 VOICE NOTIFICATION SYSTEM (VNS) ACTIVATION

5.1.1 Activation from the VNS Terminal

NOTE
1. If the screen is blank when you look at the terminal, you should press the ENTER key to display the password screen.
2. Activating the VNS using the Hot Key password will start the scenario using the standard approach message. If routing instructions are required, contact the Duty Emergency Planner immediately for assistance in activating the VNS.

5.1.1.1 From the Password Screen, type the Control Room VNS Hot Key password, [3104], then press ENTER.

A. The example list below is a typical listing of scenarios that will be displayed:

01 Alert
02 Site Area Emergency
03 General Emergency
04 Unusual Event - TSC/OSC Only
05 Unusual Event - TSC, OSC & EOF
06 Toxic Chemical - No Response
07 Toxic Chemical - Luling, BU EOF
08 Toxic Chemical - Reserve, BU EOF
20 Pager Test

THE MATERIAL CONTAINED WITHIN THE SYMBOLS [ ] IS PROPRIETARY OR PRIVATE INFORMATION.

5.1.1.2 Use the ARROW keys to highlight the scenario you want to activate and then press ENTER to select the scenario.

5.1.1.3 After selecting the appropriate scenario, the VNS will request that you confirm your selection. Press (Y) for Yes, to start the scenario or (N) for No, to adjust your selection, then press ENTER.

5.1.1.4 After activating the scenario, the scenario status on the password screen will change from "building" to "processing" to "active".

5.1.1.5 If desired, you can verify the scenario is running by displaying the Status Screen as follows:

A. Display the Status Screen by holding down the CTRL key and pressing "2" on the numeric keypad.

B. Return to the Password Screen by holding down the CTRL key and pressing "1" on the numeric keypad.

At what minimum emergency classification is activation of the Voice Notification System required?

A RCS leak of 50 gpm has developed. The second Charging Pump is running and maintaining Pressurizer level. A downpower is in progress. The Emergency Coordinator has declared an Alert. There is currently no release in progress. What steps are required to activate the VNS?

Administrative Topic A4

Question

You have just been informed over the TIC radio that Union Carbide has had a vinyl chloride pipe fail at 09:50. They also reported that the leak had not yet been isolated. It is currently 09:56 and the wind direction is 135° with a wind speed of 4 mph. What are the required actions?

Answer

Waterford is < 5 miles from Union Carbide.
From attachment 7.3, vinyl Chloride is a large hazard.
A Protective Response Evaluation (attachment 7.4) is required since the release is not yet isolated. Waterford 3 is downwind of the release.
Using attachment 7.4, Waterford 3 is 1.25 miles from Union Carbide. The given wind speed is 4 mph.
The Plume Travel Time is 18.75 minutes.
Response time is < 30 minutes, therefore, declare an Alert and SHELTER per tab C.

Reference

EP-004-010, Toxic Chemical Contingency Procedure

K/A	Importance
2.4.39	3.3
2.4.44	2.1

5.2 INITIAL ASSESSMENT

CAUTION

THE NORMAL EMERGENCY ORGANIZATION WILL NOT BE USED FOR A TOXIC CHEMICAL EVENT. DO NOT ACTIVATE ANY ONSITE ORGANIZATION (TSC, OSC).

NOTE

It is the policy of Waterford 3 SES that the procedural steps outlined here be followed to the maximum practical extent. It is recognized that unforeseen factors may arise which make predetermined actions ineffective or impractical in certain circumstances. Operations personnel may use discretion in taking alternative courses of action based on available information and exercise prudent judgement in response to toxic chemical situations.

NOTE

If required, Monsanto has agreed to provide additional air to fill SCBA bottles. Refer to the Emergency Management Resources Book for phone numbers.

5.2.1 If notified of a toxic chemical release via the St. Charles Industrial Hotline, TICC radio or other credible source, then record as much information as available on Attachment 7.1.

5.2.1.1 Implement OP-901-520, if not already implemented.

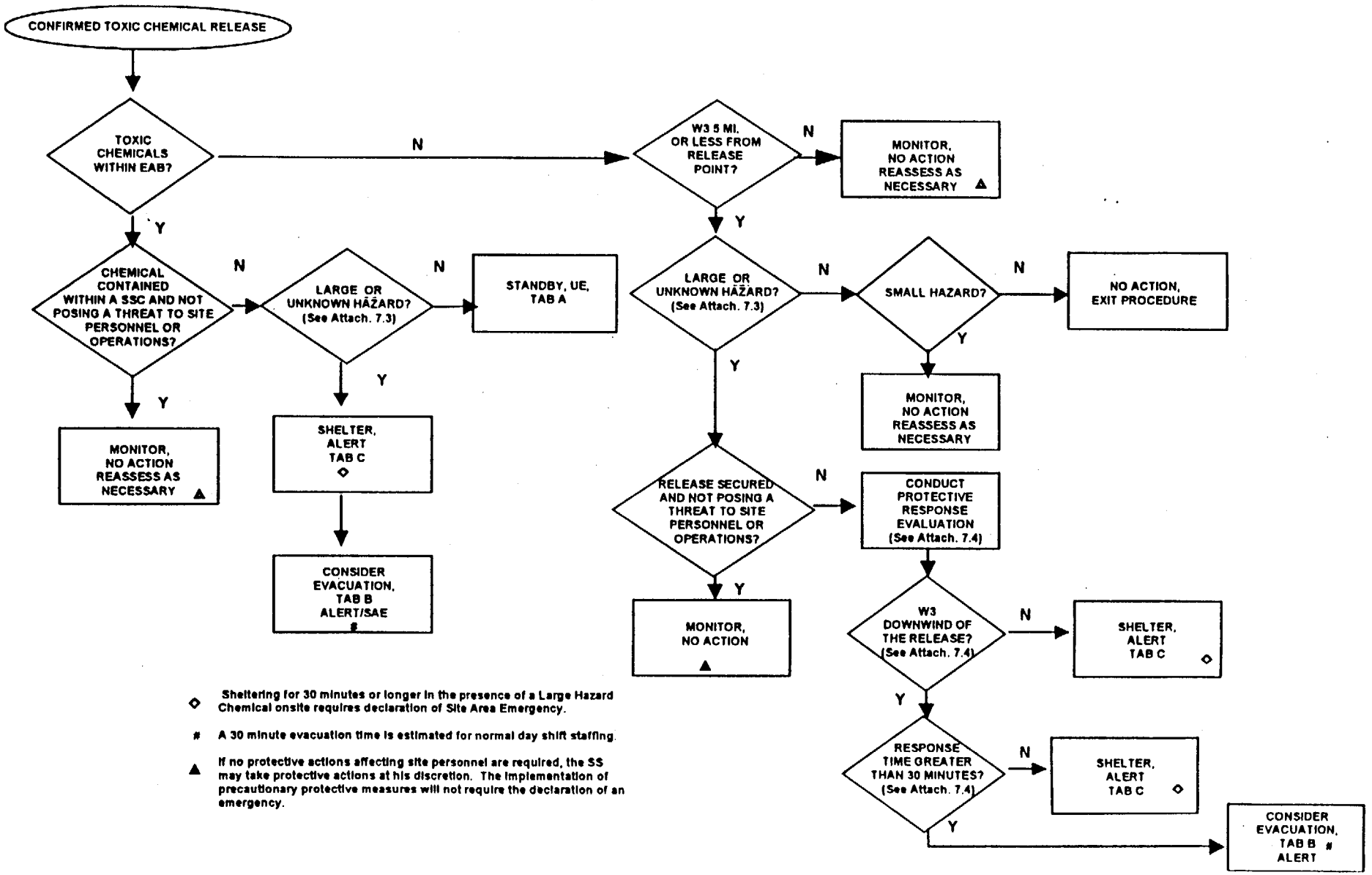
5.2.1.2 If toxic chemical release is initiated from Waterford 3, refer to UNT-007-033.

CAUTION

SHELTER SITE PERSONNEL AT THE DISCRETION OF THE SHIFT SUPERINTENDENT FOR LARGE HAZARD POTENTIAL CHEMICALS RELEASED WITHIN 5 MILES OF WATERFORD 3.

5.2.1.3 If a toxic chemical release is in progress, refer to Attachment 7.2.

TOXIC CHEMIC DIAGNOSTIC FLOWCHART



II. ANALYZED CHEMICALS (CONT'D)

Chemical	Source	Hazard Potential	I.D. # & (DOT Guide)
Triethylene Glycol	UCC, Trans Am	No Hazard	N/A
Triethylene Tetramine	UCC, Rail	No Hazard	N/A
Trimethyl Aluminum	UCC, Cypress	No Hazard	N/A
Trimethylamine	Rail	Large	1083 (118)
Trineophltin Oxide	Witco	No Hazard	N/A
Triosodium Phosphate	Witco, Air Liq.	No Hazard	N/A
Triphenylphosphine	Witco	No Hazard	N/A
Tripropylaluminum	Trans Am	No Hazard	N/A
Trisodium Phosphate	Air Liq.	No Hazard	N/A
Undecane	UCC	No Hazard	N/A
Vandium Pentoxide	UCC	No Hazard	2862 (151)
Varsol	Trans Am	No Hazard	(NL)
Vinyl Acetate	Rail	Large	1301 (129P)
Vinyl Chloride	UCC, Rail	Large	1086 (116P)

1.0 Determine if Waterford 3 is downwind from a release by:

NOTE

Waterford 3 is considered to be downwind if the wind direction is within ± 45 degrees of the WORST CASE WIND DIRECTION (See Section 1.1).

NOTE

Obtain meteorological data from the Plant Monitoring Computer, "GD METDATA". Use 15-Minute averaged meteorological data, when available. If 15-Minute averaged data is not available, use instantaneous values.

WIND DIRECTION (POINT C48530) = from 135 degrees (+45° 180 -45° 90)
WIND DIRECTION WORST CASE (Section 1.1) = from 120 degrees
IS WATERFORD 3 DOWNWIND? YES ✓ NO _____

1.1 CHEMICAL FACILITIES WITHIN 5 MILES OF WATERFORD 3

Acronym	Facility	Distance	Worst Case Wind Direction (wind coming from)
Air Liq.	Air Liquide	1.25 Miles	105 Degrees
N/A	Calciner	4.5 Miles	80 Degrees
CXY	CXY Chemical	0.8 Miles	145 Degrees
Cypress	Union Carbide Corp Cypress	4.0 Miles	75 Degrees
Dupont	Dupont Pontchartrain Works	4.7 Miles	325 Degrees
IMC	IMC Agrico	0.6 Miles	110 Degrees
Koch	Koch Nitrogen	0.8 Miles	145 Degrees

1.1 CHEMICAL FACILITIES WITHIN 5 MILES OF WATERFORD 3 (CONT'D)

Acronym	Facility	Distance	Worst Case Wind Direction (wind coming from)
L. Gypsy	Little Gypsy SES	0.6 Miles	25 Degrees
LA Resources	Louisiana Resources	2.8 Miles	105 Degrees
Oxy	Occidental Chemical	0.8 Miles	130 Degrees
N/A	Praxair	1.25 Miles	115 Degrees
N/A	Shell Norco	2.75 Miles	80 Degrees
Shell Ref.	Shell Refinery	3.5 Miles	85 Degrees
N/A	Shell Taft	1.5 Miles	135 Degrees
Trans Am	Trans America Refinery	3.9 Miles	90 Degrees
UCC	Union Carbide Corp.	1.25 Miles	120 Degrees
W1&2	Waterford 1 & 2 SES	0.36 Miles	295 Degrees
Witco	Witco Chemical	1.75 Miles	130 Degrees

2.0 Determine Response Time by:

A. PLUME TRAVEL TIME (MINUTES) = [RELEASE POINT DISTANCE (MILES)[1] ÷ WIND SPEED (C48526)][2]

18.75 mins = [1.25 miles ÷ 4 mph] x 60

NOTE: If Release Start Time is not known, use the time message was received.

B. PLUME ARRIVAL TIME (HH:MM) = PLUME TRAVEL TIME (MINUTES) + RELEASE START TIME (HH:MM)

10:09 AM = 18.75 mins + 9:50 AM

C. RESPONSE TIME (MINUTES) = PLUME ARRIVAL TIME (HH:MM) – CURRENT TIME (HH:MM)

13 mins. = 10:09 AM - 9:56 AM

Footnotes:

(1) Distance for fixed chemical facilities within 5 miles of Waterford 3 can be found in Section 1.1.

(2) The Back-up Meteorological Tower Point ID is C48614.

You have just been informed over the TIC radio that Union Carbide has had a vinyl chloride pipe fail at 09:50. They also reported that the leak had not yet been isolated. It is currently 09:56 and the wind direction is 135° with a wind speed of 4 mph. What are the required actions?

EMERGENCY COMMUNICATIONS CHECKLIST

NOTE: Information Received via the St. Charles Industrial Hotline, TICC Radio or Other Credible Source

1. ST. CHARLES PARISH TOXIC CHEMICAL EVENT CLASSIFICATION:

   UNUSUAL EVENT _____ ALERT _____

   SITE AREA EMERGENCY _____ GENERAL EMERGENCY _____

2. Name of the Release Source: Union Carbide

3. Name/Affiliation Communicator: _____

4. Incident Facts: FIRE _____, GAS RELEASE _____, EXPLOSION _____,
   SPILL _____, OTHER: pipe failure

   Substance Involved: vinyl chloride
   (Request that they spell it!)

   Quantity Involved: _____

   DOT ID & Guide # (if available): _____

   FLAMMABLE _____, TOXIC _____, OTHER: _____

5. Recommended Action: _____

6. Release Start Time: 09:50

7. ESTIMATED DURATION: still in progress
   ACTUAL DURATION: _____

8. Message Received By: _____
   (Signature)

   ____/____/____ ____:____
   (Date) (Time)

   Verification Call Back #: _____
   (if needed to establish credibility)

Facility: Waterford III	Date of Examination: 10/4/99
Exam Level (circle one): RO / SRO(I) / SRO(U)	Operating Test No.: 1

B.1 Control Room Systems

System / JPM Title	Type Code*	Safety Function
a. Makeup to the VCT Using the Auto Makeup Mode	D, S	1
b. Start a Reactor Coolant Pump (High Vibration Occurs on Startup)	M, S, A, L	4
c. Reset SIAS/CIAS	M, C, L	7
d. Establish Charging and Letdown (In-service Letdown Flow Control Valve Fails)	M, S, A	2
e. Align a LPSI Pump to Replace a CS Pump	N, C, L	5
f. Unload , Stop, and Return EDG A(B) to Standby (Oil Leak)	M, S, A,	6
g. Restore from Control Room Isolation	M, S	8

B.2 Facility Walk-Through

a. Operate the Atmospheric Dump Valves Locally	D, L	4
b. Aligning Essential Chiller A/B to Replace Essential Chiller A(B)	M, R	8
c. Startup A Safety Related Battery Charger (High Voltage Shutdown)	D, A	6

* Type Codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow-Power, (R)CA

Waterford 3 Job Performance Measure Examination

MAKEUP TO THE VCT USING THE AUTO MAKEUP MODE

JOB: RO **PLANT SYSTEM:** CVC **TASK MODE:** Norm **TASK NUMBER:** 9
DESCRIPTION: MAKEUP TO THE VCT USING THE AUTO MAKEUP MODE
REVISION: 4 **REVISION DATE:** 8/5/99
TIME: 15
TIME CRITICAL TASK: **ALTERNATE PATH:**

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-002-005	14	08	2/21/99	SIMULATOR

NRC KA NUMBER:	RO	SRO
3.2-004-A3.01	3.5	3.7
3.2-004-A4.07	3.9	3.7
3.2-004-A4.04	3.2	3.6

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

Waterford 3 Job Performance Measure Examination

MAKEUP TO THE VCT USING THE AUTO MAKEUP MODE

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. THE PLANT IS IN MODE 3
2. RCS BORON CONCENTRATION IS 1346 PPM
3. BAMT CONCENTRATION IS 5000 PPM

INITIATING CUE

YOU ARE DIRECTED BY THE CRS TO ALIGN THE CVC SYSTEM FOR AUTOMATIC MAKEUP TO THE VCT.

Waterford 3 Job Performance Measure Examination

MAKEUP TO THE VCT USING THE AUTO MAKEUP MODE

INITIAL CONDITIONS

1. THE PLANT IS IN MODE 3
2. RCS BORON CONCENTRATION IS 1346 PPM
3. BAMT CONCENTRATION IS 5000 PPM

TASK STANDARD

1. VCT MAKEUP HAS BEEN ALIGNED FOR AUTOMATIC MAKEUP MODE

TOOLS AND EQUIPMENT

NONE

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

YOU ARE DIRECTED BY THE CRS TO ALIGN THE CVC SYSTEM FOR AUTOMATIC MAKEUP TO THE VCT.

TERMINATING CUE

1. VCT MAKEUP HAS BEEN ALIGNED FOR AUTOMATIC

CONSEQUENCES OF INADEQUATE PERFORMANCE

1. ABNORMAL VCT LEVEL
2. INADVERTENT BORATION OR DILUTION OF RCS

HUMAN INTERFACES

1. SS/CRS

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

TASK ELEMENTS

Perform the task in accordance with OP-002-005, Section 8.7 and Attachment 11.5. All components operated during the performance of this JPM are located on CP-4.

---

1 INFORM SS/CRS PRIOR TO PERFORMING THIS SECTION.

CUES:

1. WHEN OPERATOR NOTIFIES SS/CRS, PERFORM PARAPHRASED REPEATBACK.

STANDARDS:

1.1 THE OPERATOR INFORMS THE SS OR CRS THAT HE IS COMMENCING ALIGNMENT FOR AUTOMATIC MAKEUP TO THE VCT.

---

2 (C) DETERMINE THE REQUIRED BLEND FLOW RATE FOR DESIRED RCS BORIC ACID CONCENTRATION BY ONE OF THE FOLLOWING:

- ATT. 11.5, VCT MAKEUP (MANUAL OR AUTOMATIC)

OR

- SS/CRS DISCRETION

2.1 IF ATT. 11.5 WAS PERFORMED, THEN RECORD BORIC ACID AND PMU TOTALIZER READINGS ON ATT. 11.5.

CUES:

1. CUE THE OPERATOR THAT THE CRS REQUESTS THE OPERATOR USE ATTACHMENT 11.5 TO DETERMINE BLEND FLOW RATE USING 50 GPM AS THE PMU FLOW RATE.
2. INITIAL CONDITIONS PROVIDE CUES FOR RCS AND BORIC ACID MAKEUP TANK BORON CONCENTRATIONS.

STANDARDS:

1. THE OPERATOR CORRECTLY CALCULATES THE REQUIRED BLEND FLOW RATES.
2. THE OPERATOR RECORDS PMU AND BORIC ACID TOTALIZER READINGS ON ATT. 11.5

---

3 (C) PLACE BORIC ACID FLOW CONTROLLER, BAM-IFIC-210Y, IN AUTO.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR DEPRESSES THE AUTO PUSHBUTTON ON CONTROLLER BAM-IFIC-210Y AND VERIFIES THAT RED AUTO LIGHT ILLUMINATES.

4 (C) SET BORIC ACID FLOW CONTROLLER, BAM-IFIC-210Y, SETPOINT POTENTIOMETER TO ACHIEVE > 3 GPM FLOW RATE.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR ROTATES THE SETPOINT POTENTIOMETER ON BAM-IFIC-210Y TO RAISE THE BORIC ACID FLOW SETPOINT TO THE VALUE CALCULATED IN ATT.11.5 OF OP-002-005.
2. THE OPERATOR ENSURES THAT SETPOINT IS > 3 GPM.

---

5 (C) PLACE PRIMARY MAKEUP FLOW CONTROLLER PMU-IFIC-210X IN AUTO.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR DEPRESSES THE AUTO PUSHBUTTON ON CONTROLLER PMU-IFIC-210X AND VERIFIES THAT RED AUTO LIGHT ILLUMINATES.

---

6 (C) SET PRIMARY MAKEUP FLOW CONTROLLER PMU-IFIC-210X SETPOINT POTENTIOMETER TO ACHIEVE > 10 GPM FLOW RATE.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR ROTATES THE SETPOINT POTENTIOMETER ON PMU-IFIC-210X TO RAISE THE PMU FLOW SETPOINT TO THE VALUE USED IN ATT.11.5 OF OP-002-005.
2. THE OPERATOR ENSURES THAT SETPOINT IS > 10 GPM.

---

7 (C) PLACE MAKEUP MODE SELECTOR SWITCH TO AUTO.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR ROTATES THE MAKEUP MODE SELECTOR SWITCH TO THE AUTO POSITION.

8 CHECK VCT LEVEL PERIODICALLY TO VERIFY MAKEUP SYSTEM IS MAINTAINING PROPER VCT LEVEL.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR VERIFIES THAT THE AUTO MAKEUP SYSTEM CONTROLS VCT LEVEL BETWEEN 37% AND 51%.
2. IF MAKEUP IS INITIATED THE OPERATOR VERIFIES THE SELECTED BAM PUMP STARTS, CVC-510 OPENS, AND CONTROLLERS ARE CONTROLLING FLOWS AT RESPECTIVE SETPOINTS OR TAKES MANUAL CONTROL AND ADJUSTS FLOW TO SETPOINT VALUE.

9 (C) WHEN THE AUTO MAKEUP MODE TO THE VCT IS NO LONGER DESIRED, THEN PERFORM THE FOLLOWING: PLACE MAKEUP MODE SELECTOR SWITCH IN MANUAL.

CUES:

1. AFTER LEVEL IN THE VCT HAS RISEN BY AT LEAST 2%, THEN CUE THE OPERATOR THAT AUTOMATIC MAKEUP IS NO LONGER DESIRED.
2. SIMULATOR PROVIDES CUES FOR POSITION OF MAKEUP MODE SELECTOR SWITCH.

STANDARDS:

1. THE OPERATOR ROTATES THE MAKEUP MODE SELECTOR SWITCH TO THE MANUAL POSITION.

10 (C) WHEN THE AUTO MAKEUP MODE TO THE VCT IS NO LONGER DESIRED, THEN PERFORM THE FOLLOWING: VERIFY CLOSED VCT MAKEUP VALVE, CVC-510.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR VERIFIES THAT THE GREEN LIGHT IS ILLUMINATED AND THAT THE RED LIGHT IS EXTINGUISHED ON THE C/S FOR CVC-510.
2. IF CONDITIONS OF STANDARD ONE ARE NOT SATISFIED, THE OPERATOR TAKES THE C/S FOR CVC-510 TO CLOSE AND VERIFIES THE CONDITIONS OF STANDARD ONE ARE MET.

11 WHEN THE AUTO MAKEUP MODE TO THE VCT IS NO LONGER DESIRED, THEN PERFORM THE FOLLOWING: VERIFY SELECTED BORIC ACID PUMP OFF.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR VERIFIES THE GREEN LIGHT IS ILLUMINATED AND THE RED LIGHT IS EXTINGUISHED ON THE C/S FORTHE SELECTED BAM PUMP.
2. IF THE CONDITIONS OF STANDARD ONE ARE NOT MET, THE OPERATOR PLACES THE C/S FOR THE SELECTED BAM PUMP TO OFF AND VERIFIES THE CONDITIONS OF STANDARD ONE ARE MET.

12 (C) WHEN THE AUTO MAKEUP MODE TO THE VCT IS NO LONGER DESIRED, THEN PERFORM THE FOLLOWING: PLACE PMU CONTROLLER, PMU-IFIC-0210X, IN MANUAL AND ADJUST OUTPUT AND SETPOINT POTENTIOMETER TO ZERO.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR DEPRESSES THE MANUAL PUSHBUTTON ON PMU-IFIC-0210X AND VERIFIES THE RED MANUAL PUSHBUTTON ILLUMINATES.
2. THE OPERATOR LOWERS THE OUTPUT OF THE CONTROLLER BY DEPRESSING THE DECREASE OUTPUT PUSHBUTTON ON PMU-IFIC-0210X UNTIL THE PROCESS OUTPUT METER READS ZERO.

13 WHEN THE AUTO MAKEUP MODE TO THE VCT IS NO LONGER DESIRED, THEN PERFORM THE FOLLOWING: VERIFY PMU FLOW CONTROL VALVE, PMU-144, IS CLOSED.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR VERIFIES THAT THE GREEN LIGHT IS ILLUMINATED AND THE RED LIGHT IS EXTINGUISHED ON THE VALVE POSITION INDICATOR FOR PMU-144.

14 (C) WHEN THE AUTO MAKEUP MODE TO THE VCT IS NO LONGER DESIRED, THEN PERFORM THE FOLLOWING: PLACE BORIC ACID CONTROLLER, BAM-IFIC-0210Y, IN MANUAL AND ADJUST OUTPUT AND SETPOINT POTENTIOMETER TO ZERO.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

3. THE OPERATOR DEPRESSES THE MANUAL PUSHBUTTON ON BAM-IFIC-0210Y AND VERIFIES THE RED MANUAL PUSHBUTTON ILLUMINATES.
4. THE OPERATOR LOWERS THE OUTPUT OF THE CONTROLLER BY DEPRESSING THE DECREASE OUTPUT PUSHBUTTON ON BAM-IFIC-0210Y UNTIL THE PROCESS OUTPUT METER READS ZERO.

---

15 WHEN THE AUTO MAKEUP MODE TO THE VCT IS NO LONGER DESIRED, THEN PERFORM THE FOLLOWING: VERIFY BAM HEADER FLOW CONTROL VALVE, BAM-141, IS CLOSED.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR VERIFIES THAT THE GREEN LIGHT IS ILLUMINATED AND THE RED LIGHT IS EXTINGUISHED ON THE VALVE POSITION INDICATOR FOR BAM-141.

---

16 IF INITIAL READINGS WERE RECORDED IN STEP 2.1 (STEP 2 OF THIS JPM), THEN RECORD BORIC ACID AND PMU TOTALIZER READINGS ON ATT. 11.5 WHEN THE DESIRED AMOUNT OF MAKEUP IS ACHIEVED.

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR READS INFORMATION FROM TOTALIZERS AND FILLS IN ATT. 11.5.

---

17 END OF TASK

11.5 VCT MAKEUP (MANUAL OR AUTOMATIC) KEY

1. Record the following data:

   BAMT Concentration (CBAMT) 5000 PPM

   RCS Boron Conc. or VCT Concentration (CRCS) 1346 PPM

2. Record the desired Primary Water flow rate (FPW):

   FPW = 50 GPM

3. Calculate the required Boric Acid flow rate (FBA):

   $$FBA = FPW \times \frac{CRCS}{CBAMT - CRCS} = 50 \text{ GPM} \times \frac{(1346 \text{ PPM})}{(5000 \text{ PPM}) - (1346 \text{ PPM})}$$

   * FBA = 18.4 GPM

   Performed by: _____ Signature & Date

   Verified by: _____ Signature & Date

   * This value can be cross checked with the Plant Data Book (RCS Boration Volumes, Section 2.2.9; RCS Dilution Volumes, Section 2.2.10, or Boron Makeup Ratio, Section 2.2.11) to ensure a reasonable value has been obtained.

4.

	Before	After
Boric Acid Totalizer:		
Primary Makeup Water Totalizer:		

Waterford 3 Job Performance Measure Examination

START A REACTOR COOLANT PUMP

JOB: RO **PLANT SYSTEM:** RCP **TASK MODE:** NORM **TASK NUMBER:** 1
DESCRIPTION: START A REACTOR COOLANT PUMP
REVISION: 4 **REVISION DATE:** 8/5/99
TIME: 20 MIN
TIME CRITICAL TASK: **ALTERNATE PATH:** X

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-001-002	11	00	6/2/98	SIMULATOR

NRC KA NUMBER:	RO	SRO
3.4-003-A4.02	2.9	2.9
2-1-32	3.4	3.8
2-1-30	3.9	3.4
2-1-23	3.9	4
2-1-20	4.3	4.2
2-1-19	3	3
3.4-003-A1.04	2.6	2.5
3.4-003-A4.05	3.1	3
3.4-003-A4.06	2.9*	2.9
3.4-003-A4.08	3.2	2.9
3.4-003-A4.03	2.8	2.5

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

Waterford 3 Job Performance Measure Examination

START A REACTOR COOLANT PUMP

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIATING CUE

YOU ARE DIRECTED BY THE CRS TO START REACTOR COOLANT PUMP
___2A____ IN ACCORDANCE WITH THE NORMAL OPERATING PROCEDURE.

INITIAL CONDITIONS

1 RCS PRESSURE IS _APPROXIMATELY 2250 PSIA_
2 RCS TEMPERATURE IS _APPROXIMATELY 545°F_
3 A NAO IS IN CONTAINMENT TO OBSERVE THE START OF THE RCP

Waterford 3 Job Performance Measure Examination

START A REACTOR COOLANT PUMP

INITIATING CUE

YOU ARE DIRECTED BY THE CRS TO START REACTOR COOLANT PUMP ___2A____ IN ACCORDANCE WITH THE NORMAL OPERATING PROCEDURE.

INITIAL CONDITIONS

4 RCS PRESSURE IS _APPROXIMATELY 2250 PSIA_
5 RCS TEMPERATURE IS _APPROXIMATELY 545°F_
6 A NUCLEAR AUXILIARY OPERATOR (NAO) IS IN CONTAINMENT TO OBSERVE THE START OF THE RCP

TASK STANDARD

1. DESIRED RCP RUNNING
2. (ALT) EXAMINEE SECURES AFFECTED RCP OR INFORMS SS/CRS OF ALARM AND FOLLOWS ANNUNCIATOR RESPONSE PROCEDURE GUIDANCE

TOOLS AND EQUIPMENT

NONE

PERSONNEL SAFETY CONSIDERATIONS

ROTATING EQUIPMENT

TERMINATING CUE

1. REACTOR COOLANT PUMP RUNNING
2. (ALT) SS/CRS IS INFORMED OF HIGH VIBRATION ALARM PROBLEM

TASK ELEMENTS

Perform the task in accordance with OP-001-002, section 6.1. All controls and indications used during this JPM are located on CP-2, CP-7, CP-18, or the PMC.

---

1 IF ONE OR MORE SEALS FAIL, THEN REFER TO OP-901-130, REACTOR COOLANT PUMP MALFUNCTION.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. OPERATOR MONITORS RCP SEALS DURING RCP STARTUP.
2. OPERATOR REFERS TO OP-901-130 IF ONE OR MORE SEALS FAIL.

---

2 IF A DILUTED POCKET OF RCS WATER IS SUSPECTED IN THE RCS, THEN VERIFY OP-901-104, INADVERTANT POSITIVE REACTIVITY ADDITION, HAS BEEN PERFORMED.

Cues:

1. WHEN OPERATOR ADDRESSES STEP, THEN CUE THE OPERATOR THAT NO DILUTED POCKET OF WATER IS SUSPECTED.

Standards:

1. OPERATOR VERIFIES THAT NO EVOLUTION WAS PERFORMED THAT COULD CAUSE A DILUTED POCKET OF WATER OR VERIFIES ACTIONS OF OP-901-104 WERE CARRIED OUT BEFORE PROCEEDING.

---

3 IF AT NORMAL RCS PRESSURE, THEN VERIFY CBO OF 1.2-1.8 GPM BY MONITORING APPROPRIATE RCP MIMIC OR APPROPRIATE PMC POINT IAW ATT. 11.2.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. OPERATOR VERIFIES RCS PRESSURE AT APPROXIMATELY 2250 PSIA.
2. OPERATOR VERIFIES CBO IS WITHIN ACCEPTABLE BAND BY METHODS LISTED ABOVE.
3. OPERATOR SKIPS THIS STEP IF NOT AT NORMAL RCS PRESSURE.

4 IF NOT AT NORMAL RCS PRESSURE, THEN VERIFY APPROXIMATE CBO FLOW IAW ATT. 11.4.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. OPERATOR VERIFIES RCS PRESSURE AND SKIPS THIS STEP IF RCS PRESSURE NORMAL.
2. IF RCS PRESSURE IS NOT NORMAL THEN THE OPERATOR USES CURRENT RCS PRESSURE TO DETERMINE EXPECTED CBO FLOW PER LISTED ATTACHMENT.

5 VERIFY PROPER UPPER OIL RESERVOIR OF 65-90% ON APPROPRIATE RCP MIMIC, APPROPRIATE PMC POINT OR LOCAL INDICATION.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. OPERATOR VERIFIES OIL LEVEL IAW AT LEAST ONE OF THE LISTED INDICATORS.

6 VERIFY PROPER LOWER OIL RESERVOIR OF 65-90% ON APPROPRIATE RCP MIMIC, APPROPRIATE PMC POINT OR LOCAL INDICATION.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. OPERATOR VERIFIES OIL LEVEL IAW AT LEAST ONE OF THE LISTED INDICATORS.

7 PRIOR TO STARTING THE 4TH RCP, VERIFY OP-903-107, PLANT PROTECTION SYSTEM CHANNEL _A_B_C_D FUNCTIONAL TEST, SECTION 7.23, REACTOR COOLANT LOW FLOW TRIP OPERATING BYPASS, HAS BEEN PERFORMED WITHIN THE LAST 92 DAYS.

Cues:

1. CUE THE OPERATOR THAT ALL CHANNELS HAVE BEEN COMPLETED WITIHIN THE REQUIRED INTERVAL.

Standards:

1. THE OPERATOR VERIFIES COMPLETION OF THE SURVEILLANCES THROUGH THE CRS OR USES WMS TO RETRIEVE THE INFORMATION.

8 VERIFY CCW FLOW AT CP-2 TO SEAL WATER COOLER FOR APPROPRIATE RCP BY CHECKING ASSOCIATED INLET AND OUTLET VALVES INDICATE OPEN:

- CC-6651A, RCP 1A SEAL COOLER CCW INLET ISOLATION
- CC-679A, RCP 1A SEAL COOLER CCW OUTLET ISOLATION
- CC-6651B, RCP 1B SEAL COOLER CCW INLET ISOLATION
- CC-679B, RCP 1B SEAL COOLER CCW OUTLET ISOLATION
- **CC-666A, RCP 2A SEAL COOLER CCW INLET ISOLATION**
- **CC-680A, RCP 2A SEAL COOLER CCW OUTLET ISOLATION**
- CC-666B, RCP 2B SEAL COOLER CCW INLET ISOLATION
- CC-680B, RCP 2B SEAL COOLER CCW OUTLET ISOLATION

AT SS/CRS DISCRETION, VERIFY CCW FLOW ON LOCAL INDICATORS

Cues:

1. VALVE POSITION CUES PROVIDED BY SIMULATOR
2. IF ASKED, CUE THE OPERATOR THAT CRS DOES NOT REQUIRE VERIFICATION OF LOCAL INDICATION.

Standards:

1. OPERATOR VERIFIES VALVE POSITION INDICATION ON CP-2.

---

9 TEST ALL ANNUNCIATORS ON CP-2 AND CP-18 AND VERIFY ALL RCP ALARMS ILLUMINATE.

Cues:

1. SIMULATOR PROVIDES CUES FOR CP-2 ANNUNCIATORS.
2. WHEN THE OPERATOR COMPLETES THE TEST OF CP-2 ANNUNCIATORS, CUE THE OPERATOR THAT ALLARMS HAVE BEEN TESTED SATISFACTORILY ON CP-18.

Standards:

1. THE OPERATOR DEPRESSES THE ANNUNCIATOR TEST BUTTON ON THE APPROPRIATE PANEL AND VERIFIES ALL RCP ALARMS FOR RCP TO BE STARTED FAST FLASH.
2. THE OPERATOR DEPRESSES THE ANNUNCIATOR ACKNOWLEGE BUTTON ON THE APPROPRIATE PANEL AND VERIFIES ALL RCP ALARMS FOR RCP TO BE STARTED SLOW FLASH.
3. THE OPERATOR DEPRESSES THE ANNUNCIATOR CLEAR BUTTON ON THE APPROPRIATE PANEL AND VERIFIES ALL ALARMS FOR RCP TO BE STARTED EXTINGUISH.

10 VERIFY APPROPRIATE RCP HIGH VIBRATION ALARM ON CP-2 IS CLEAR:

- REACTOR CLG PUMP 1A HI VIBRATION (A-4, PANEL H)
- REACTOR CLG PUMP 1B HI VIBRATION (A-6, PANEL H)
- **REACTOR CLG PUMP 2A HI VIBRATION (A-8, PANEL H)**
- REACTOR CLG PUMP 2B HI VIBRATION (A-10, PANEL H)

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES ALARM WINDOW FOR APPROPRIATE RCP IS EXTINGUISHED.

---

11 (C) START RCP OIL LIFT PUMP A OR B FOR RCP TO BE STARTED BY PLACING ASSOCIATED CONTROL SWITCH AT CP-2 TO ON.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR PLACES ONE RCP LIFT OIL PUMP FOR THE RCP TO BE STARTED TO THE ON POSITION.
2. THE OPERATOR VERIFIES THE LIFT OIL PUMP STARTS BY VERIFYING RED LIGHT ILLUMINATES ON C/S.

---

12 IF A SECOND RCP OIL LIFT PUMP IS REQUIRED TO CLEAR RCP BRG LIFT OIL PRESS LO ANNUNCIATORS ON CP-2, THEN THE OPS SUPERINTENDENT AND DUTY PLANT MANAGER SHALL BE NOTIFIED PRIOR TO STARTING THE RCP.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR PLACES THE IDLE RCP LIFT OIL PUMP FOR THE RCP TO BE STARTED TO THE ON POSITION.
2. THE OPERATOR VERIFIES THE LIFT OIL PUMP STARTS BY VERIFYING RED LIGHT ILLUMINATES ON C/S.
3. DUTY PLANT MANAGER AND OPS SUPERINTENDENT NOTIFIED IF SECOND PUMP IS REQUIRED TO CLEAR ANNUNCIATOR.

13 VERIFY PROPER H.P. OIL LIFT SYSTEM PRESSURE BY OBSERVING THAT FOLLOWING ANNUNCIATORS CLEAR:

- RCP 1A BRG LIFT OIL PRESS LO (D-3, PANEL H)
- RCP 1B BRG LIFT OIL PRESS LO (D-5, PANEL H)
- **RCP 2A BRG LIFT OIL PRESS LO (D-7, PANEL H)**
- RCP 2B BRG LIFT OIL PRESS LO (D-9, PANEL H)

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES THAT THE APPROPRIATE ANNUNCIATOR IS EXTINGUISHED.
2. THE OPERATOR DOES NOT CONTINUE WITH RCP START IF ANNUNCIATOR IS ILLUMINATED.

14 (C) VERIFY RCS PRESSURE AND TEMPERATURE ARE WITHIN LIMITS OF ATTACHMENT 11.1.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR OBTAINS CURRENT PRESSURE AND TEMPERATURE INFORMATION FROM THE CONTROL BOARDS OR THE PMC.
2. THE OPERATOR REFERS TO PRESSURE/TEMPERATURE LIMITS GRAPH TO VERIFY CURRENT TEMPERATURE AND PRESSURE ARE WITHIN THE CURVES FOR RCP OPERATION.
3. THE OPERATOR DOES NOT CONTINUE WITH THE RCP START IF PRESSURE AND TEMPERATURE ARE OUTSIDE LIMITS OF CURVES FOR RCP OPERATION.

15 PRIOR TO STARTING THE RCP MAKE A COPY OF THE PMC MIMIC FOR THE RCP TO BE STARTED.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR DISPLAYS THE APPROPRIATE RCP MIMIC ON CRT 1 OR 2 ON THE CRS DESK.
2. THE OPERATOR PRINTS THE PMC MIMIC TO THE PRINTER ON THE CRS DESK.

16 VERIFY A DIFFERENTIAL TEMPERATURE OF < 100°F BETWEEN RCS COLD LEG TEMPERATURE AND STEAM GENERATOR WATER TEMPERATURE PRIOR TO STARTING THE FIRST RCP ON EACH LOOP TO PROVIDE LOW TEMPERATURE OVERPRESSURE AND REACTIVITY PROTECTION.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES DIFFERENTIAL TEMPERATURE OF < 100°F BY COMPARING TEMPERATURE OF APPROPRIATE COLD LEG TO TEMPERATURE ON OUTLET OF APPROPRIATE STEAM GENERATOR ON THE PMC MIMIC MS1 OR STEAM TEMPERATURE RECORDER ON CP-1.
2. THE OPERATOR DETERMINES THIS STEP IS NOT APPLICABLE FOR THE SECOND RCP STARTED IN A LOOP.

17 REFER TO ATTACHMENT 11.3 WHILE PERFORMING STEPS 18-29.

Cues:

1. PROCEDURE PROVIDES CUE

Standards:

1. OPERATOR PERIODICALLY REFERS TO THE LISTED ATTACHMENT WHILE PERFORMING APPLICABLE STEPS

18 VERIFY THE ASSOCIATED RCP LIFT OIL PUMP OPERATING AT NORMAL PRESSURE FOR A MINIMUM OF 2 MINUTES PRIOR TO STARTING THE RCP.

Cues:

1. CUE THE OPERATOR THAT 2 MINUTES HAVE ELAPSED SINCE THE ASSOCIATED RCP BRG LIFT OIL PRESS LO ALRM CLEARED.

Standards:

1. THE OPERATOR WAITS AT LEAST TWO MINUTES BETWEEN CLEARING THE LIFT OIL LO PRESS ALARM AND STARTING THE RCP.

19 NOTIFY THE SS/CRS PRIOR TO STARTING RCP

Cues:

1. WHEN OPERATOR NOTIFIES CRS PERFORM EXPECTED PARAPHRASED REPEATBACK OF INFORMATION.

Standards:

1. THE OPERATOR USES CLOSED LOOP COMMUNICATION.
2. THE OPERATOR PERFORMS COMMIMICATION WITH SS/CRS PRIOR TO STARTING THE RCP.

---

20 (C) START DESIRED REACTOR COOLANT PUMP BY PLACING SELECTED CONTROL SWITCH AT CP-2 TO START.

Cues:

1. SIMULATOR PROVIDES CUES FOR RCP PUMP START AND HIGH VIBRATION ALARM.
2. **ALT**: AFTER HIGH VIBRATION ALARM ACTUATES CUE THE OPERATOR THAT THE NAO REPORTS A LOUD METAL-TO METAL IMPACT SOUND FROM THE ANTI-REVERSE ROTATION DEVICE AND THE RCP IS VISIBLY VIBRATING.

Standards:

1. THE OPERATOR HOLDS THE RCP SWITCH IN START UNTIL CCW FLOW INTERLOCK IS MET AND RCP STARTS.

---

21 (C) **ALT**: IF EXCESSIVELY HIGH VIBRATION, UNUSUAL NOISES, OR SHARP RATES OF BEARING TEMPERATURE RISE OCCUR, THEN SECURE THE RCP.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES A BEARING LIFT OIL PUMP IS RUNNING FOR THE ASSOCIATED RCP.
2. THE OPERATOR TAKES CONTROL SWITCH FOR THE ASSOCIATED RCP TO STOP.
3. THE OPERATOR VERIFIES ASSOCIATED RCP MOTOR BREAKER OPENS BY VERIFYING GREEN LIGHT ILLUMINATED ON ASSOCIATED CONTROL SWITCH ON CP-2.

---

22 END OF TASK

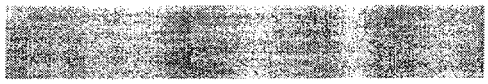
Waterford 3 Job Performance Measure Examination

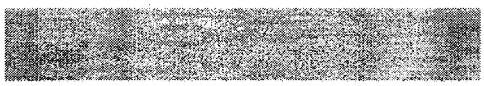
RESET AN INADVERTANT SIAS/CIAS

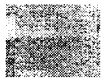
JOB: RO **PLANT SYSTEM:** PPS **TASK MODE:** Emerg **TASK NUMBER:** 38
DESCRIPTION: RESET AN INADVERTANT SIAS/CIAS
REVISION: 0 **REVISION DATE:** 8/9/99
TIME: 10
TIME CRITICAL TASK: **ALTERNATE PATH:**

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-901-504	01	00	11/8/95	Simulate
OP-902-001	08	00	9/8/98	

NRC KA NUMBER:	RO	SRO
3.2-013-A4.02	4.3	4.4
3.2-006-A4.08	4.2	4.3

Trainee Evaluator 

Observer  Date

Satisfactory Unsatisfactory 

Waterford 3 Job Performance Measure Examination

RESET AN INADVERTANT SIAS/CIAS

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. AN INADVERTANT SIAS/CIAS HAS OCCURRED.
2. THE REACTOR IS TRIPPED.
3. STANDARD POST TRIP ACTIONS ARE COMPLETE AND OP-902-001 IS BEING IMPLEMENTED.
4. RCS PRESSURE IS 2100 PSIA AND TRENDING TO 2250 PSIA.
5. LOW PZR PRESSURE TRIP SETPOINT IS AT 1684 PSIA ON ALL FOUR CHANNELS OF PPS.
6. CONTAINMENT PRESSURE IS 15.0 PSIA AND STABLE.

INITIATING CUE

THE CRS DIRECTS YOU TO RESET SIAS AND CIAS IN ACCORDANCE WITH OP-901-504 STEPS 9-16.

Waterford 3 Job Performance Measure Examination

RESET AN INADVERTANT SIAS/CIAS

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. AN INADVERTANT SIAS/CIAS HAS OCCURRED.
2. THE REACTOR IS TRIPPED.
3. STANDARD POST TRIP ACTIONS ARE COMPLETE AND OP-902-001 IS BEING IMPLEMENTED.
4. RCS PRESSURE IS 2100 PSIA AND TRENDING TO 2250 PSIA.
5. LOW PZR PRESSURE TRIP SETPOINT IS AT 1684 PSIA ON ALL FOUR CHANNELS OF PPS.
6. CONTAINMENT PRESSURE IS 15.0 PSIA AND STABLE.

TASK STANDARD

THE SIAS AND CIAS SIGNALS ARE RESET.

TOOLS AND EQUIPMENT

1. PPS RESET KEYS

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

THE CRS DIRECTS YOU TO RESET SIAS AND CIAS IN ACCORDANCE WITH OP-901-504 STEPS 9-16.

TERMINATING CUE

SIAS AND CIAS ARE RESET.

CONSEQUENCES OF INADEQUATE PERFORMANCE

1. NORMAL LETDOWN AND CHARGING CAN NOT BE RESTORED.
2. UNNECESSARY WEAR ON SAFETY RELATED COMPONENTS USED FOR ACCIDENT MITIGATION.

HUMAN INTERFACES

1. SS/CRS

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

TASK ELEMENTS

Perform the task in accordance with OP-901-504, Steps 9-16. All steps are performed from CP-10, CP-33, or CP-2.

---

1 IF PRESSURIZER PRESSURE IS GREATER THAN VARIABLE LOW PZR PRESSURE TRIP SETPOINT, THEN GO TO STEP 14.

Cues:

1. PER INITIAL CONDITIONS RCS PRESSURE IS 2100 PSIA, LOW PZR PRESSURE TRIP SETPOINT IS 1684 PSIA.

Standards:

1. THE OPERATOR GOES TO STEP 14.

(STEPS 2-4 WILL BE PERFORMED FOR EACH INDIVIDUAL PPS CHANNEL AND REPEATED UNTIL ALL FOUR CHANNELS ARE RESET) RESET SIAS AND CIAS ON ALL FOUR CHANNELS AS FOLLOWS:

---

2 (C) ON CP-10 PLACE RESET PERMISSIVE SWITCH TO UNLK POSITION.

Cues:

1. WHEN THE OPERATOR LOCATES KEY AND KEYSWITCH AND DEMONSTRATES OPERATION OF KEYSWITCH, CUE THE OPERATOR THE SWITCH IS IN THE UNLOCK POSITION.

Standards

1. THE OPERATOR LOCATES THE KEY FOR THE UNLOCK KEYSWITCH IN KEY CABINET ON SIDE OF NPO DESK.
2. THE OPERATOR LOCATES THE KEYSWITCH FOR THE APPLICABLE CHANNEL OF PPS ON CP-10.
3. THE OPERATOR POSITIONS THE KEYSWITCH TO THE UNLK POSITION.

3 (C) DEPRESS SIAS AND CIAS RESET PUSH BUTTONS.

Cues:

1. AFTER THE OPERATOR LOCATES AND DEMONSTRATES DEPRESSING THE SIAS PUSHBUTTON AND LOCATES LIGHT INDICATION, THEN CUE THE OPERATOR THAT LIGHT IS ILLUMINATED.
   - CHANNEL A – RED LIGHT
   - CHANNEL B - YELLOW LIGHT
   - CHANNEL C – GREEN LIGHT
   - CHANNEL D – BLUE LIGHT
2. AFTER THE OPERATOR LOCATES AND DEMONSTRATES DEPRESSING THE CIAS PUSHBUTTON AND LOCATES LIGHT INDICATION, THEN CUE THE OPERATOR THAT LIGHT IS ILLUMINATED.
   - CHANNEL A – RED LIGHT
   - CHANNEL B - YELLOW LIGHT
   - CHANNEL C – GREEN LIGHT
   - CHANNEL D – BLUE LIGHT

Standards

1. THE OPERATOR LOCATES THE SIAS AND CIAS RESET PUSHBUTTONS ON THE APPLICABLE CHANNEL OF PPS AT CP-10.
2. THE OPERATOR DEPRESSES THE SIAS PUSHBUTTON AND VERIFIES LIGHT INDICATION.
3. THE OPERATOR DEPRESSES THE CIAS PUSHBUTTON AND VERIFIES LIGHT INDICATION.

4 (C) PLACE RESET PERMISSIVE SWITCH TO LK POSITION.

Cues:

1. AFTER OPERATOR LOCATES AND DEMONSTRATES OPERATION OF KEYSWITCH, THEN CUE THE OPERATOR THAT THE SWITCH IS IN THE LOCKED POSITION. .

Standards

1. THE OPERATOR LOCATES THE KEYSWITCH ON APPLICABLE CHANNEL OF PPS AT CP-10.
2. THE OPERATOR PLACES THE SWITCH TO THE LK POSITION.

5 (C) RESET SIAS AND CIAS ACTUATION LOGIC ON BOTH TRAINS AS FOLLOWS: ON CP-33 DEPRESS THE SIAS AND CIAS RESET PUSH BUTTONS. VERIFY TRIP PATH INDICATORS LIT ON ENGINEERED SAFETY FEATURES SYSTEM MIMIC AT CP-10.

Cues:

1. AFTER THE OPERATOR DEMONSTRATES THE ABILITY TO LOCATE AND OPERATE THE SIAS PUSHBUTTONS AND THEN LOCATES AND VERIFIES THE LIGHT INDICATION, CUE THE OPERATOR THAT BOTH WHITE LIGHTS FOR SIAS ARE ILLUMINATED.
2. AFTER THE OPERATOR DEMONSTRATES THE ABILITY TO LOCATE AND OPERATE THE CIAS PUSHBUTTONS AND THEN LOCATES AND VERIFIES THE LIGHT INDICATION, CUE THE OPERATOR THAT BOTH WHITE LIGHTS FOR CIAS ARE ILLUMINATED.

Standards

1. THE OPERATOR LOCATES AND DEPRESSES BOTH PUSHBUTTONS FOR SIAS AT CP-33.
2. THE OPERATOR LOCATES AND DEPRESSES BOTH PUSHBUTTONS FOR CIAS AT CP-33.
3. THE OPERATOR VERIFIES BOTH WHITE LIGHTS ARE ILLUMINATED SIAS ON ESFAS MIMIC AT CP-10.
4. THE OPERATOR VERIFIES BOTH WHITE LIGHTS ARE ILLUMINATED CIAS ON ESFAS MIMIC AT CP-10.

Waterford 3 Job Performance Measure Examination

ESTABLISH CHARGING AND LETDOWN

JOB: RO **PLANT SYSTEM:** CVC **TASK MODE:** Norm **TASK NUMBER:** 63
DESCRIPTION: ESTABLISH CHARGING AND LETDOWN
REVISION: 4 **REVISION DATE:** 8/18/99
TIME: 30 min
TIME CRITICAL TASK: **ALTERNATE PATH:** X

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-002-005	14	08	2/21/99	SIMULATOR

NRC KA NUMBER:	RO	SRO
3.1-004-A4.01	3.8	3.9
3.1-004-A4.04	3.2	3.6
3.1-004-A4.02	3.2	3.9

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

Waterford 3 Job Performance Measure Examination

ESTABLISH CHARGING AND LETDOWN

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. PLANT IS IN MODE 3
2. RCS PRESSURE IS 2250 PSIA
3. SYSTEM HAS BEEN FILLED AND VENTED

INITIATING CUE

THE CRS DIRECTS YOU TO ESTABLISH CHARGING AND LETDOWN USING CHARGING PUMP A.

Waterford 3 Job Performance Measure Examination

ESTABLISH CHARGING AND LETDOWN

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. PLANT IS IN MODE 3
2. RCS PRESSURE IS 2250 PSIA
3. SYSTEM HAS BEEN FILLED AND VENTED

TASK STANDARD

1. CHARGING AND LETDOWN IS ESTABLISHED

TOOLS AND EQUIPMENT

NONE

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

THE CRS DIRECTS YOU TO ESTABLISH CHARGING AND LETDOWN USING CHARGING PUMP A.

TERMINATING CUE

1. CHARGING AND LETDOWN IS ESTABLISHED

CONSEQUENCES OF INADEQUATE PERFORMANCE

1. LIFTING OF LETDOWN RELIEF VALVES
2. EQUIPMENT DAMAGE

HUMAN INTERFACES

1. SS/CRS
2. NAO
3. CHEMISTRY
4. HEALTH PHYSICS

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

TASK ELEMENTS

Perform the task in accordance with OP-002-005, Section 6.1. All components operated and indicators used are located on CP-4, CP-2, CP-7, and CP-8.

---

1 IF CHARGING OR LETDOWN FLOW IS BEING REINITIATED WHILE IN MODES 1, 2, OR 3, THEN COMPLETE ATTACHMENT 11.13, CHARGING NOZZLE THERMAL CYCLING EVALUATION DATA, JUST PRIOR TO REINITIATION OF CHARGING OR LETDOWN FLOW, AND FORWARD TO SYSTEM ENGINEERING.

Cues:

1. WHEN THE OPERATOR STARTS STEP, SUPPLY COPY OF ATTACHMENT 11.13.
2. SIMULATOR PROVIDES CUES FOR PLANT PARAMETERS.

Standards:

1. THE OPERATOR LOCATES EACH REQUIRED PARAMETER ON BOARD METERS AND RECORDS READINGS ON ATTACHMENT.

---

2 (C) IF RCS PRESSURE IS > 1200 PSIA, THEN VERIFY EITHER LETDOWN FLOW CONTROL VALVE ALIGNED AS FOLLOWS:

- CVC-111A, LETDOWN FLOW CONTROL VALVE A INLET ISOLATION – OPEN
- CVC-114A, LETDOWN FLOW CONTROL VALVE A OUTLET ISOLATION – OPEN
- LETDOWN CONTROL VALVES FLOW SELECTOR SWITCH – NORM

OR

- CVC-111B, LETDOWN FLOW CONTROL VALVE B INLET ISOLATION – OPEN
- CVC-114B, LETDOWN FLOW CONTROL VALVE B OUTLET ISOLATION – OPEN
- LETDOWN CONTROL VALVES FLOW SELECTOR SWITCH – ALT

Cues:

1. SIMULATOR PROVIDES CUES FOR SWITCH POSITIONS.
2. WHEN OPERATOR REQUESTS NAO TO VERIFY VALVE POSITION IN PLANT, CUE THE OPERATOR AS FOLLOWS:
   - CVC-111A – OPEN
   - CVC-114A – OPEN
   - CVC-111B – CLOSED
   - CVC-114B - CLOSED

Standards:

1. THE OPERATOR VERIFIES THAT THE SELECTED VALVE IS ALIGNED.

3 (C) IF RCS PRESSURE IS > 1200 PSIA, THEN VERIFY EITHER LETDOWN BACK PRESSURE REGULATOR VALVE ALIGNED AS FOLLOWS:

- CVC-121A, LETDOWN BACK PRESSURE CONTROL VALVE A INLET ISOLATION - OPEN
- CVC-125A, LETDOWN BACK PRESSURE CONTROL VALVE A OUTLET ISOLATION - OPEN
- LETDOWN CONTROL VALVES BACK PRESSURE SELECTOR SWITCH - ALT

OR

- CVC-121B, LETDOWN BACK PRESSURE CONTROL VALVE B INLET ISOLATION - OPEN
- CVC-125B, LETDOWN BACK PRESSURE CONTROL VALVE B OUTLET ISOLATION - OPEN

LETDOWN CONTROL VALVES BACK PRESSURE SELECTOR SWITCH - NORM

Cues:

1. SIMULATOR PROVIDES CUES FOR SWITCH POSITIONS.
2. WHEN OPERATOR REQUESTS NAO TO VERIFY VALVE POSITION IN PLANT, CUE THE OPERATOR AS FOLLOWS:
   - CVC-121A – CLOSED
   - CVC-125A – CLOSED
   - CVC-121B – OPEN
   - CVC-125B OPEN

Standards:

1. THE OPERATOR VERIFIES THAT THE SELECTED VALVE IS ALIGNED.

---

4 NOTIFY CHEMISTRY AND HEALTH PHYSICS PRIOR TO ESTABLISHING CHARGING OR LETDOWN FLOW.

Cues:

1. WHEN OPERATOR ATTEMPTS TO NOTIFY CHEMISTRY AND HP, CUE THE OPERATOR THAT HP AND CHEMISTRY HAVE BEEN NOTIFIED.

Standards:

1. THE OPERATOR COMMUNICATES THE REQUIRED INFORMATION TO HP AND CHEMISTRY PERSONNEL.

5 VERIFY PRESSURIZER LEVEL CONTROLLER, RC-ILIC-0110, IN AUTO.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES THAT THE AUTO PUSH BUTTON IS BACKLIT ON RC-ILIC-0110 ON CP-2.

---

6 (C) VERIFY LETDOWN BACKPRESSURE REGULATOR CONTROLLER, CVC-IPIC-0201, IN MANUAL AND ADJUST TO 10% OUTPUT.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES THE MANUAL PUSHBUTTON ON CVC-IPIC-0201 IS LIT OR DEPRESSES THE PUSH BUTTON AND VERIFIES THE PUSH BUTTON IS LIT.
2. THE OPERATOR VERIFIES OR ADJUSTS OUTPUT OF CVC-IPIC-0201 TO 10% +/- 5% ON CP-4.

---

7 VERIFY VOLUME CONTROL TANK (VCT) LEVEL 35% TO 77%.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR LOCATES VCT LEVEL INDICATION ON CP-4 OR THE PMC AND VERIFIES LEVEL IS WITHIN THE REQUIRED BAND.

---

8 PLACE ION EXCHANGER BYPASS VALVE, CVC-140, IN BYPASS.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR PLACES THE ION EXCHANGER BYPASS VALVE C/S ON CP-4 TO BYPASS.
2. THE OPERATOR VERIFIES THAT THE RED BYPASS LIGHT ILLUMINATES ON C/S.

9 (C) PLACE LETDOWN CONTROL VALVES FLOW CONTROLLER, RC-IHIC-0110, IN MANUAL AND ADJUST OUTPUT TO ZERO.

- VERIFY CLOSED LETDOWN HEAT EXCHANGER INLET FLOW CONTROL VALVE(S), CVC-113A(B).

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES THE MANUAL PUSHBUTTON ON RC-IHIC-0110 IS LIT OR DEPRESSES THE PUSH BUTTON AND VERIFIES THE PUSH BUTTON IS LIT.
2. THE OPERATOR VERIFIES OR ADJUSTS CONTROLLER OUTPUT TO 0% (+/- 3%).
3. THE OPERATOR VERIFIES IN-SERVICE FLOW CONTROL VALVE IS CLOSED BY VERIFYING THE GREEN LIGHT IS ILLUMINATED AND THE RED LIGHT IS EXTINGUISHED ON C/S ON CP-4.

10 (C) OPEN FOLLOWING VALVES:

- CVC-101, LETDOWN STOP VALVE
- CVC-103, LETDOWN INSIDE CONTAINMENT ISOLATION
- CVC-109, LETDOWN OUTSIDE CONTAINMENT ISOLATION

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR LOCATES EACH C/S ON CP-4.
2. THE OPERATOR MOMENTARILY TAKES EACH C/S TO OPEN.
3. THE OPERATOR VERIFIES THE RED LIGHT IS ILLUMINATED AND THE GREEN LIGHT IS OFF ON EACH C/S.

11 VERIFY CCW IS AVAILABLE TO LETDOWN HEAT EXCHANGER.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES THAT AT LEAST ONE CCW AB LOOP ISOLATION VALVE IS OPEN ON CP-8.
2. THE OPERATOR VERIFIES THAT A CCW PUMP IS OPERATING IN LOOP SUPPLYING CCW AB LOOP ON CP-8.
3. IF LETDOWN HEAT EXCHANGER TEMPERATURE CONTROL VALVE INDICATES INTERMEDIATE, THE OPERATOR VERIFIES FLOW IS INDICATED ON CP-8.

12 VERIFY LETDOWN CONTROL VALVES TEMP CONTROLLER, CVC-ITIC-0223, IN AUTO AND SET POTENTIOMETER AT ≃ 33.5% (105°F) TO MAINTAIN ≤ 120°F.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES THE RED AUTO LIGHT IS LIT ON CVC-ITIC-0223 OR DEPRESSES THE AUTO PUSHBUTTON ON CVC-ITIC-0223 AND VERIFIES THE RED AUTO LIGHT ILLUMINATES.
2. THE OPERATOR VERIFIES THAT THE POTENTIOMETER ON CVC-ITIC-0223 IS SET AT 32.5 -34.5% OR ADJUSTS THE POTENTIOMETER TO THE REQUIRED VALUE.

13 (C) VERIFY VCT DISCH VALVE, CVC-183, OPEN.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES THE C/S FOR CVC-183 ON CP-4 IS IN THE OPEN POSITION OR PLACES THE C/S TO OPEN.
2. THE OPERATOR VERIFIES THE RED LIGHT IS LIT AND THE GREEN LIGHT IS OFF ON THE C/S FOR CVC-183.

14 DETERMINE INITIAL LETDOWN FLOW RATE AS FOLLOWS:

REGEN HX SHELL OUTLET TEMP. (CVC ITI-0229) VS. INITIAL LETDOWN FLOW RATE (CVC-IFI-0202)

< 200°F - 10 GPM
200-250°F - 16 GPM
251-300°F - 24 GPM
301-350°F - 30 GPM
351-400°F - 36 GPM
> 400°F - 40 GPM

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR DETERMINES INITIAL FLOW RATE USING CVC-ITI-0229 ON CP-4.

15 VERIFY THE FOLLOWING VALVES OPEN:

- CVC-218A, CHARGING LINE 1A SHUTOFF VALVE
- CVC-218B, CHARGING LINE 2A SHUTOFF VALVE.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES THE C/S FOR EACH VALVE ON CP-4 IS IN THE OPEN POSITION OR PLACES THE C/S IN OPEN.
2. THE OPERATOR VERIFIES THE RED LIGHT IS ILLUMINATED AND THE GREEN LIGHT IS OFF ON EACH C/S.

16 (C) VERIFY STANDBY CHARGING PUMP SELECTOR SWITCH IS ALIGNED IN THE APPROPRIATE POSITION FOR CHARGING PUMP TO BE STARTED BY PERFORMING ONE OF THE FOLLOWING:

PUMP IN LEAD	POSITION
A	B-AB
B	AB-A
AB	A-B

OR

IF THERE IS AN INOPERABLE CHARGING PUMP, THEN AT SS/CRS DISCRETION, THE STANDBY CHARGING PUMP SELECTOR SWITCH MAY BE ALIGNED SO THAT THE OPERABLE BACKUP CHARGING PUMP WILL BE THE FIRST ONE SELECTED FOR AUTO STARTING CAPABILITY.

Cues:

1. SIMULATOR AND INITIATING CUE PROVIDE CUES FOR REQUIRED C/S POSITION
2. IF THE OPERATOR ASKS WHICH PUMP WILL BE STARTED AS THE NORMALLY RUNNING (LEAD) PUMP, CUE THE OPERATOR THAT THE CRS REQUESTS CHARGING PUMP A BE STARTED AS THE NORMALLY RUNNING PUMP.

Standards:

1. THE OPERATOR LOCATES THE STANDBY CHARGING PUMP SELECTOR SWITCH ON CP-4
2. THE OPERATOR SELECTS THE C/S TO THE B-AB POSITION.

17 (C) START DESIRED CHARGING PUMP BY PLACING CONTROL SWITCH TO "ON"

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR LOCATES THE C/S FOR CHARGING PUMP A ON CP-4.
2. THE OPERATOR TAKES THE C/S TO THE ON POSITION.
3. THE OPERATOR VERIFIES CHARGING HEADER FLOW INCREASES TO ~ 44 GPM ON CP-4.
4. THE OPERATOR VERIFIES CHARGING HEADER PRESSURE ON CP-4 RISES TO ~ 50-250 PSI ABOVE EXISTING RCS PRESSURE.

18 (C) PERFORM THE FOLLOWING STEPS CONCURRENTLY:

- ADJUST LETDOWN CONTROL VALVES FLOW CONTROLLER, RC-IHIC-0110, TO OPEN LETDOWN HX INLET FLOW CONTROL VALVE A(B), CVC-113A(B), TO DESIRED INITIAL FLOW RATE DETERMINED IN STEP 15.
- WHILE RAISING LETDOWN FLOW, CONTROL LETDOWN BACKPRESSURE AT < 460 PSIG USING LETDOWN CONTROL VALVES BACKPRESSURE CONTROLLER, CVC-IPIC-0201.

Cues:

1. SIMULATOR PROVIDES CUES FOR MALFUNCTION OF THE FLOW CONTROL VALVE.
2. **ALT**: WHEN THE OPERATOR REPORTS THE MALFUNCTION, CUE THE OPERATOR TO ALIGN THE ALTERNATE FLOW CONTROL VALVE IN ACCORDANCE WITH SECTION 8.15.

Standards:

1. THE OPERATOR NOTES THE FLOW CONTROL VALVE MALFUNCTION.
2. THE OPERATOR REPORTS THE MALFUNCTION TO THE CRS.

19 (*) **ALT**: IF IT IS DESIRED TO PLACE LETDOWN HEAT EXCHANGER INLET FLOW CONTROL VALVE B, CVC-113B, IN SERVICE, THEN PERFORM THE FOLLOWING:

1 - PLACE LETDOWN CONTROL VALVES FLOW SELECTOR SWITCH TO BOTH.

2 - OPEN LETDOWN FLOW CONTROL VALVE B OUTLET ISOLATION, CVC-114B.

3 - SLOWLY OPEN LETDOWN FLOW CONTROL VALVE B INLET ISOLATION, CVC-111B.

4 - SLOWLY CLOSE LETDOWN FLOW CONTROL VALVE A INLET ISOLATION, CVC-111A.

5 - CLOSE LETDOWN FLOW CONTROL VALVE A OUTLET ISOLATION, CVC-114A.

6 - PLACE LETDOWN CONTROL VALVES FLOW SELECTOR SWITCH TO ALT.

Cues:

1. SIMULATOR PROVIDES CUES FOR C/S POSITION.
2. WHEN THE OPERATOR GIVES DIRECTION TO THE NAO TO POSITION THE MANUAL INLET AND OUTLET ISOLATION VALVES, CUE THE OPERATOR THE VALVE IS IN THE DESIRED CONDITION.

Standards:

(*)SUBSTEPS 2, 3, AND 6 ARE CRITICAL.

1. THE OPERATOR LOCATES THE LETDOWN CONTROL VALVES FLOW SELECTOR SWITCH ON CP-4 AND POSITIONS THE C/S AS REQUIRED BY THE SUBSTEPS.
2. THE OPERATOR DIRECTS THE NAO TO PERFORM THE DESIRED VALVE MANIPULATIONS IN THE PLANT IN THE SEQUENCE SPECIFIED.

20 (C) PERFORM THE FOLLOWING STEPS CONCURRENTLY:

- ADJUST LETDOWN CONTROL VALVES FLOW CONTROLLER, RC-IHIC-0110, TO OPEN LETDOWN HX INLET FLOW CONTROL VALVE A(B), CVC-113A(B), TO DESIRED INITIAL FLOW RATE DETERMINED IN STEP 15.
- WHILE RAISING LETDOWN FLOW, CONTROL LETDOWN BACKPRESSURE AT < 460 PSIG USING LETDOWN CONTROL VALVES BACKPRESSURE CONTROLLER, CVC-IPIC-0201.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR THE OPERATOR ADJUSTS FLOW TO THE VALUE DETERMINED PREVIOUSLY USING REGEN HX SHELL SIDE TEMPERATURE.
2. THE OPERATOR LIMITS LETDOWN PRESSURE TO LESS THAN 520 PSIG USING THE CVC-IPIC-0223 IN MANUAL.

---

21 (C) PERFORM THE FOLLOWING STEPS CONCURRENTLY:

- USING LETDOWN CONTROL VALVES FLOW CONTROLLER, RC-IHIC-0110, SLOWLY OPEN LETDOWN HX INLET FLOW CONTROL VALVE A(B), CVC-113A(B), AT A RATE NOT TO EXCEED 10 GPM TO GRADUALLY RAISE LETDOWN BACKPRESSURE AS INDICATED ON CVC-IPIC-0201.
- WHILE RAISING LETDOWN FLOW, CONTROL LETDOWN BACKPRESSURE AT ≤ 460 PSIG USING LETDOWN CONTROL VALVES BACKPRESSURE CONTROLLER, CVC-IPIC-0201.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR CONTROLS LETDOWN BACKPRESSURE USING CVC-IPIC-0201 WHILE RAISING LETDOWN FLOW USING RC-IHIC-0110 NOT TO EXCEED 520 PSIG

22 (C) CONTINUE TO ADJUST PRESSURIZER LEVEL TO PROGRAMMED LEVEL USING LETDOWN CONTROL VALVES FLOW CONTROLLER, RC-IHIC-0110.

Cues:

1. SIMULATOR PROVIDES CUES.

Standards:

1. IF PZR LEVEL IS < PROGRAMMED SETPOINT, THE OPERATOR ADJUSTS COMBINED LETDOWN AND CONTROLLED BLEEDOFF FLOWS TO BE < CHARGING HEADER FLOW.
2. IF PZR LEVEL IS > PROGRAMMED SETPOINT, THE OPERATOR ADJUSTS COMBINED LETDOWN AND CONTROLLED BLEEDOFF FLOWS TO BE > CHARGING HEADER FLOW.

23 WHEN PRESSURIZER LEVEL IS WITHIN 3% OF PROGRAMMED LEVEL, THEN BALANCE LETDOWN FLOW WITH CHARGING FLOW BY USING LETDOWN CONTROL VALVES FLOW CONTROLLER, RC-IHIC-0110.

- SUBTRACT TOTAL REACTOR COOLANT PUMP CONTROLLED BLEEDOFF FLOW FROM CHARGING FLOW TO DETERMINE REQUIRED LETDOWN FLOW.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR USES THE PMC TO DETERMINE TOTAL CONTROLLED BLEEDOFF FLOW AND SUBTRACTS THE RESULT FROM CHARGING HEADER FLOW ON CP-4 OR PMC TO OBTAIN DESIRED LETDOWN FLOW.
2. WHEN PZR LEVEL IS WITHIN +/-3% OF PROGRAMMED LEVEL SETPOINT THE OPERATOR ADJUSTS LETDOWN FLOW PLUS CONTROLLED BLEEDOFF FLOW TO EQUAL CHARGING FLOW +/- 4 GPM.

24 PRIOR TO PLACING LETDOWN CONTROL VALVES FLOW CONTROLLER, RC-IHIC-0110, IN AUTO, VERIFY CONTROLLER OUTPUT IS WITHIN 3% OF PROCESS INDICATION ON THE CONTROLLER TO MINIMIZE FLOW AND PRESSURE PERTURBATIONS.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR COMPARES RC-IHIC-0110 OUTPUT TO PROCESS INPUT INDICATION ON CP-4 AND ENSURES DIFFERENCE IS $\leq$ 3% (+/- 2%) BEFORE GOING TO AUTO ON CONTROLLER.

25 (C) PLACE LETDOWN CONTROL VALVES FLOW CONTROLLER, RC-IHIC-0110 IN AUTO.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR MOMENTARILY DEPRESSES THE AUTO PUSH BUTTON ON RC-IHIC-0110 AND VERIFIES THE PUSH BUTTON ILLUMINATES.

26 (C) PLACE LETDOWN CONTROL VALVES BACKPRESSURE CONTROLLER, CVC-IPIC-0201, IN AUTO BY PERFORMING THE FOLLOWING:

1 - ADJUST SETPOINT TO $\leq$ 460 PSIG.

2 - VERIFY PROCESS IS WITHIN 3% OF SETPOINT TO MINIMIZE PRESSURE PERTURBATIONS.

3 - PLACE CONTROLLER IN AUTO.

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR ADJUSTS SETPOINT TO ~460 PSIG (+/- 20 PSIG) BY DEPRESSING THE SETPOINT INCREASE OR DECREASE PUSHBUTTON ON CVC-IPIC-0201 ON CP-4.
2. THE OPERATOR ADJUSTS LETDOWN BACKPRESSURE PROCESS INDICATION TO +/- 20 PSI OF SETPOINT BY DEPRESSING OUTPUT INCREASE PUSHBUTTON TO LOWER PRESSURE OR OUTPUT DECREASE PUSHBUTTON TO RAISE PRESSURE.
3. WHEN PROCESS PRESSURE IS +/- 20 PSI OF SETPOINT THE OPERATOR PLACES CVC-IPIC-0201 IN AUTO BY MOMENTARILY DEPRESSING THE AUTO PUSHBUTTON AND VERIFYING THE PUSHBUTTON ILLUMINATES.

27 IF RCS PRESSURE > VCT PRESSURE, THEN VERIFY THE FOLLOWING VALVES OPEN:

- RC-606, RCP CONTROL BLEEDOFF CONTAINMENT INSIDE ISOLATION
- CVC-401, RCP CONTROL BLEEDOFF OUTSIDE CONTAINMENT ISOLATION

Cues:

1. SIMULATOR PROVIDES CUES

Standards:

1. THE OPERATOR VERIFIES RCS PRESSURE ON CP-2, CP-7, OR THE PMC AND COMPARES IT TO VCT PRESSURE ON CP-4 OR THE PMC.
2. THE OPERATOR VERIFIES EACH VALVE OPEN BY VERIFYING THE RED LIGHT IS ILLUMINATED AND THE GREEN LIGHT IS OFF ON APPLICABLE VALVE C/S ON CP-4.

28 PLACE PUMP AB ASSIGNMENT SWITCH TO APPROPRIATE POSITION FOR CHARGING PUMP SELECTED TO TRIP ON SIAS.

AB REPLACING	SELECTOR SWITCH TO
B	B
A	A
AB AS A BACKUP PUMP	NORMAL

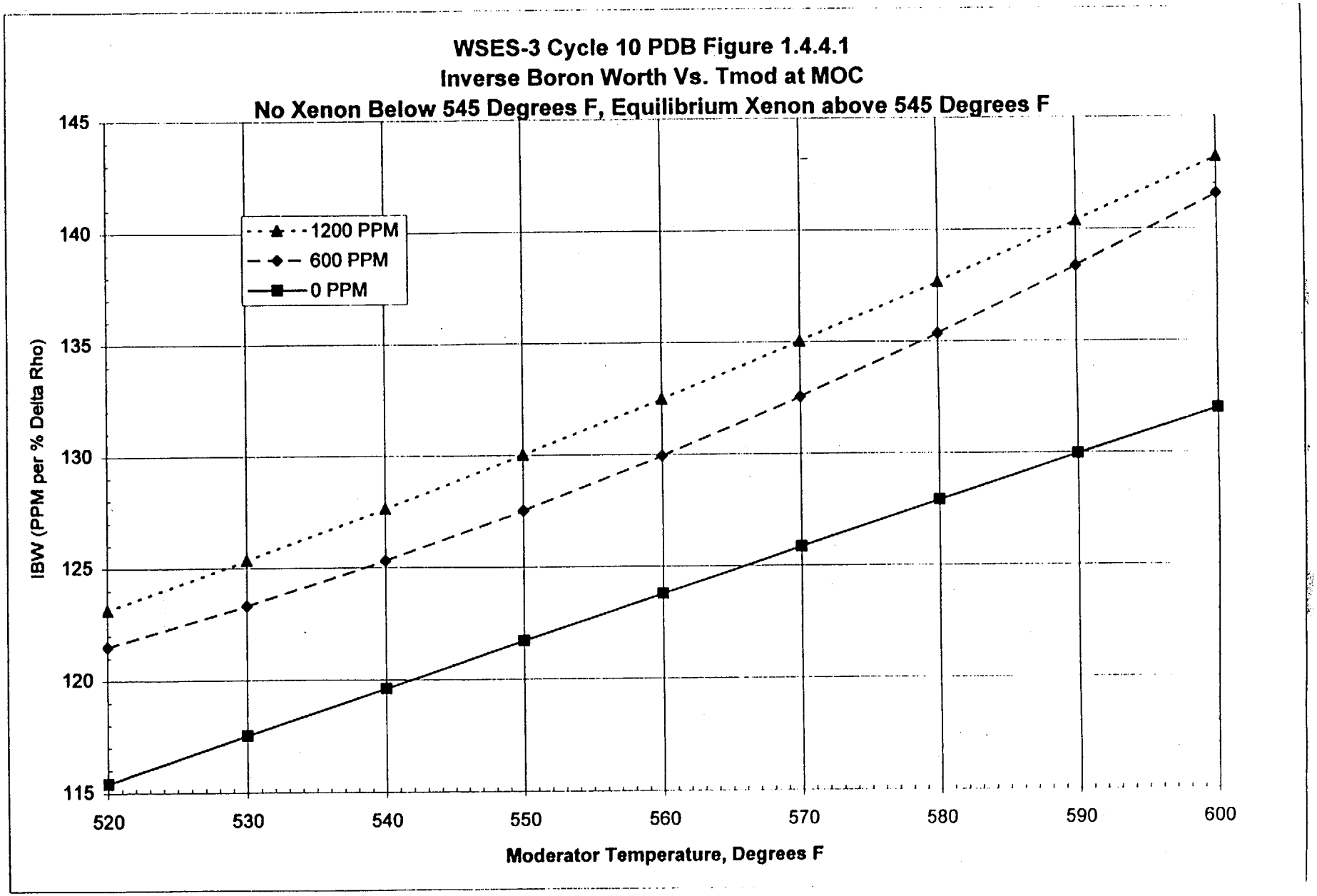
Cues:

CUE THE OPERATOR THAT THE CRS DIRECTS HIM TO SET UP CHARGING PUMP AB TO TRIP ON SIAS.

Standards:

THE OPERATOR POSITIONS PUMP AB ASSIGNMENT SWITCH TO THE NORMAL (MIDDLE) POSITION.

29 END OF TASK


WSES-3 Cycle 10 PDB Figure 1.4.4.1
Inverse Boron Worth Vs. Tmod at MOC
No Xenon Below 545 Degrees F, Equilibrium Xenon above 545 Degrees F
1200 PPM
600 PPM
0 PPM
IBW (PPM per % Delta Rho)
145
140
135
130
125
120
115
520
530
540
550
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580
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Moderator Temperature, Degrees F

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rford 3 Job Performance Measure Examination

ALIGN A LPSI PUMP TO REPLACE A CS PUMP

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THE SELECTED

' SYSTEM: SI **TASK MODE:** Emerg **TASK NUMBER:** 1
[A LPSI PUMP TO REPLACE A CS PUMP
SION DATE: 8/10/99

		ALTERNATE PATH:	
)N:	**CHANGE:**	**DATE:**	**EVALUATION METHOD:**
	00	9/9/98	Simulate
	00	9/9/98	Simulator

) **SRO**
: 4

[redacted] Evaluator [redacted]

[redacted] Date [redacted]

Unsatisfactory [redacted]

Waterford 3 Job Performance Measure Examination

ALIGN A LPSI PUMP TO REPLACE A CS PUMP

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. AN ESD AND A SGTR HAVE OCCURRED ON SG 1.
2. CONTAINMENT PRESSURE IS 40 PSIA AND RISING RAPIDLY.
3. BOTH CS PUMPS ARE NOT AVAILABLE.
4. ALL ESFAS ACTUATIONS HAVE OCCURRED AS REQUIRED. ASSUME ALL COMPONENTS ACTUATED PER DESIGN UNLESS OTHERWISE STATED.
5. OP-902-008, SAFETY FUNCTION RECOVERY PROCEDURE HAS BEEN IMPLEMENTED.
6. THE CRS HAS IMPLEMENTED CONTAINMENT TEMPERATURE AND PRESSURE CONTROL CONTINUING ACTIONS AND HAS DECIDED TO ALIGN LPSI PUMP A TO REPLACE CS PUMP A.
7. THE TSC CONCURS WITH THE DECISION.

INITIATING CUE

THE CRS DIRECTS YOU TO ALIGN LPSI PUMP A TO REPLACE CS PUMP A IN ACCORDANCE WITH EOP STANDARD APPENDIX 29.

Waterford 3 Job Performance Measure Examination

ALIGN A LPSI PUMP TO REPLACE A CS PUMP

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. AN ESD AND A SGTR HAVE OCCURRED ON SG 1.
2. CONTAINMENT PRESSURE IS 40 PSIA AND RISING RAPIDLY.
3. BOTH CS PUMPS ARE OUT OF SERVICE.
4. ALL ESFAS ACTUATIONS HAVE OCCURRED AS REQUIRED. ASSUME ALL COMPONENTS ACTUATED PER DESIGN UNLESS OTHERWISE STATED.
5. OP-902-008, SAFETY FUNCTION RECOVERY PROCEDURE HAS BEEN IMPLEMENTED.
6. THE CRS HAS IMPLEMENTED CONTAINMENT TEMPERATURE AND PRESSURE CONTROL CONTINUING ACTIONS AND HAS DECIDED TO ALIGN LPSI PUMP A TO REPLACE CS PUMP A.
7. THE TSC CONCURS WITH THE DECISION.

TASK STANDARD

ONE LPSI PUMP IS ALIGNED TO CS WITH ACCEPTABLE FLOW TO CONTAINMENT.

TOOLS AND EQUIPMENT

1. LOCKED VALVE KEYS

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

THE CRS DIRECTS YOU TO ALIGN LPSI PUMP A TO REPLACE CS PUMP A IN ACCORDANCE WITH EOP STANDARD APPENDIX 29.

TERMINATING CUE

SPRAY FLOW IS ESTABLISHED TO CONTAINMENT USING THE SELECTED LPSI PUMP.

CONSEQUENCES OF INADEQUATE PERFORMANCE

1. LOSS OF CONTAINMENT INTEGRITY
2. POSSIBLE OFFSITE DOSE
3. DAMAGE TO EQUIPMENT

HUMAN INTERFACES

CRS

TASK SPECIFIC SKILLS / KNOWLEDGE

EOP STANDARD APPENDIX 29

TASK ELEMENTS

Perform the task in accordance with referenced procedure, OP-902-009, Appendix 29.
All components operated are located on CP-8.

---

1 VERIFY LPSI PUMP A CONTROL SWITCH IN OFF.

Cues:

1. WHEN THE OPERATOR LOCATES THE C/S FOR LPSI PUMP A AND DEMONSTRATES THE INTENDED ACTION, CUE THE OPERATOR THAT THE SWITCH IS IN OFF.

Standards:

1. THE OPERATOR LOCATES THE LPSI PUMP A C/S ON CP-8.
2. THE OPERATOR ENSURES THAT THE C/S IS IN THE OFF POSITION.

---

2 VERIFY CONTAINMENT SPRAY PUMP A CONTROL SWITCH IN OFF.

Cues:

1. WHEN THE OPERATOR LOCATES THE C/S FOR CS PUMP A AND DEMONSTRATES THE INTENDED ACTION, CUE THE OPERATOR THAT THE C/S IS IN OFF.

Standards:

1. THE OPERATOR LOCATES CS PUMP A C/S ON CP-8.
2. THE OPERATOR ENSURES THAT THE C/S IS IN THE OFF POSITION.

---

3 (C) PLACE SI-129A, LPSI FLOW CONTROL VALVE TO AUTO. [KEY 137]

Cues:

1. WHEN THE OPERATOR LOCATES THE C/S FOR SI 129A AND DEMONSTRATES THE INTENDED ACTION, CUE THE OPERATOR THAT THE C/S WAS PLACED IN THE AUTO POSITION AND SPRING RETURNED TO THE MID POSITION.

Standards:

1. THE OPERATOR OBTAINS KEY FOR SI-129A FROM KEY LOCKER ON SIDE OF NPO DESK.
2. THE OPERATOR LOCATES THE C/S FOR SI-129A ON CP-8.
3. THE OPERATOR INSERTS THE KEY, MOMENTARILY PLACES THE C/S IN THE AUTO POSITION, THEN RELEASES THE C/S TO THE MID POSITION.

4 (C) PLACE SI-IFIC-0307 LPSI FLOW CONTROLLER HEADER 2A/2B IN MANUAL.

Cues:

1. WHEN THE OPERATOR LOCATES THE FLOW CONTROLLER ON CP-8 AND DEMONSTRATES PROCESS FOR PLACING THE CONTROLLER IN MANUAL, CUE THE OPERATOR THAT THE CONTROLLER IS IN MANUAL AND PROCESS OUTPUT METER READS 100%.

Standards:

1. THE OPERATOR LOCATES SI-IFIC-0307 ON CP-8.
2. THE OPERATOR DEPRESSES THE MANUAL PUSHBUTTON ON THE CONTROLLER AND VERIFIES THE RED LIGHT ILLUMINATES.

5 (C) ADJUST SI-IFIC-0307 LPSI FLOW CONTROLLER HEADER 2A/2B TO 0% OUTPUT.

Cues:

1. WHEN THE OPERATOR LOCATES THE MANUAL OUTPUT DECREASE PUSHBUTTON ON THE CONTROLLER AND DEMONSTRATES ACTION TO LOWER OUTPUT, CUE THE OPERATOR THAT PROCESS OUTPUT METER READS 0%.

Standards:

1. THE OPERATOR LOCATES SI-IFIC-0307 ON CP-8.
2. THE OPERATOR DEPRESSES THE MANUAL OUTPUT DECREASE PUSHBUTTON ON THE CONTROLLER UNTIL OUTPUT READS 0%.

6 (C) VERIFY THE FOLLOWING VALVES CLOSED:

- SI-415A, SHUTDOWN TEMP CONTROL VALVE [KEY 138]
- SI-138A, COLD LEG 2B
- SI-139A, COLD LEG 2A

Cues:

1. WHEN THE OPERATOR LOCATES EACH VALVE C/S ON CP-8 AND DEMONSTRATES THE ACTION TO PLACE EACH VALVE IN THE REQUIRED POSITION, CUE THE OPERATOR THAT THE VALVE IS CLOSED. (AT THE EXAMINER'S DISCRETION HE MAY CUE THE OPERATOR THAT SI-138A OR SI-139A IS NOT MOVING IF THE OPERATOR DOES NOT DEMONSTRATE OVERRIDING THE SIAS SIGNAL TO THE VALVE)

Standards:

1. THE OPERATOR LOCATES THE C/S FOR SI-415A ON CP-8 AND VERIFIES THE C/S IS LOCKED IN THE LESS POSITION AND VERIFIES THE ANALOG VALVE POSITION INDICATOR READS 0% OR THAT THE GREEN LIGHT IS LIT AND RED LIGHT IS EXTINGUISHED ABOVE THE C/S.
2. THE OPERATOR LOCATES THE C/S FOR SI-138A ON CP-8 AND PLACES THE C/S TO THE MORE POSITION TO OVERRIDE THE SIAS SIGNAL AND THEN BACK TO LESS UNTIL THE DIGITAL INDICATOR ABOVE THE C/S READS 0% OR THE GREEN LIGHT IS LIT AND RED LIGHT IS EXTINGUISHED ON THE C/S.
3. THE OPERATOR LOCATES THE C/S FOR SI-139A ON CP-8 AND PLACES THE C/S TO THE MORE POSITION TO OVERRIDE THE SIAS SIGNAL AND THEN BACK TO LESS UNTIL THE DIGITAL INDICATOR ABOVE THE C/S READS 0% OR THE GREEN LIGHT IS LIT AND RED LIGHT IS EXTINGUISHED ON THE C/S.

7 (C) OPEN SI-125A/SI-412A, SHDN HX A ISOL VALVES. [KEY 136]

Cues:

1. WHEN THE OPERATOR LOCATES THE SWITCH FOR SI-125A/SI-412A ON CP-8 AND DEMONSTRATES ACTION TO OPEN THE VALVES, CUE THE OPERATOR THAT SI-125A AND SI-412A ARE OPEN.

Standards:

1. THE OPERATOR OBTAINS THE KEY FOR SI-125A/SI-412A FROM THE KEY LOCKER ON THE SIDE OF THE NPO DESK.
2. THE OPERATOR LOCATES THE SWITCH FOR SI-125A/SI-412A ON CP-8, INSERTS THE KEY, MOMENTARILY PLACES THE C/S TO OPEN, AND RELEASES THE SWITCH.
3. THE OPERATOR VERIFIES THE VALVES OPEN BY OBSERVING BOTH RED LIGHTS ARE LIT AND BOTH GREEN LIGHTS ARE EXTINGUISHED ABOVE C/S.

8 VERIFY CS-125A, CNTMT SPRAY HEADER A VALVE OPEN.

Cues:

1. WHEN THE OPERATOR LOCATES THE C/S FOR CS-125A ON CP-8 AND DEMONSTRATES METHOD FOR VERIFYING VALVE POSITION, CUE THE OPERATOR THAT CS-125A IS OPEN.

Standards:

1. THE OPERATOR LOCATES THE C/S FOR CS-125A ON CP-8.
2. THE OPERATOR VERIFIES THAT THE RED LIGHT IS LIT AND THE GREEN LIGHT IS EXTINGUISHED ON THE C/S.

9 (C) START LPSI PUMP A.

Cues:

1. WHEN THE OPERATOR LOCATES LPSI PUMP A C/S ON CP-8 AND DEMONSTRATES ACTION TO START THE PUMP, CUE THE OPERATOR THAT THE PUMP IS RUNNING.

Standards:

1. THE OPERATOR LOCATES LPSI PUMP A C/S ON CP-8, MOMENTARILY PLACES THE C/S TO THE START POSITION, AND VERIFIES THE RED LIGHT IS LIT AND THE GREEN LIGHT IS EXTINGUISHED ON THE C/S.
2. THE OPERATOR VERIFIES DISCHAGE PRESSURE INDICATOR ON CP-8 INCREASES.
3. THE OPERATOR VERIFIES CURRENT INDICATION ON CP-8 IS STEADY AND NOT PEGGED AFTER STARTING CURRENT DROPS OFF.

10 VERIFY CONTAINMENT SPRAY HEADER A FLOW.

Cues:

1. WHEN THE OPERATOR LOCATES CONTAINMENT SPRAY HEADER A FLOW INDICATOR ON CP-8, CUE THE OPERATOR THAT FLOW IS 2000 GPM.

Standards:

1. THE OPERATOR LOCATES CONTAINMENT SPRAY HEADER A FLOW INDICATOR ON CP-8 AND VERIFIES FLOW INDICATION MEETS ACCEPTANCE CRITERIA FOR SAFETY FUNCTION.

11 (C) END OF TASK

Waterford 3 Job Performance Measure Examination

UNLOAD, STOP, AND RETURN EDG A(B) TO STANDBY

JOB: RO **PLANT SYSTEM:** EDG **TASK MODE:** Norm **TASK NUMBER:** 5
DESCRIPTION: UNLOAD, STOP, AND RETURN EDG A(B) TO STANDBY
REVISION: 3 **REVISION DATE:** 4/18/95
TIME: 10
TIME CRITICAL TASK: **ALTERNATE PATH:** X

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-009-002	17	04	7/8/99	SIMULATOR

NRC KA NUMBER:	RO	SRO
3.6-064-A2.10	2.4	2.9
3.6-064-A4 01	4	4.3

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

Waterford 3 Job Performance Measure Examination

UNLOAD, STOP, AND RETURN EDG A(B) TO STANDBY

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. NO CRITICAL LOADS ARE BEING CARRIED BY THE DIESEL.
2. THE EDG IS PARALLELED WITH OFF-SITE POWER.
3. THE DIESEL HAS BEEN LOADED > 4.2 MW FOR LAST 4 HRS.

INITIATING CUE

YOU ARE DIRECTED BY THE CRS TO UNLOAD, STOP, AND RETURN EMERGENCY DIESEL GENERATOR A TO STANDBY.

Waterford 3 Job Performance Measure Examination

UNLOAD, STOP, AND RETURN EDG A(B) TO STANDBY

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. NO CRITICAL LOADS ARE BEING CARRIED BY THE DIESEL.
2. EDG A IS PARALLELED WITH OFF-SITE POWER.
3. THE DIESEL HAS BEEN LOADED > 4.2 MW FOR LAST 4 HRS.

TASK STANDARD

1. EMERGENCY DIESEL GENERATOR IN STANDBY TEST MODE
2. ALT – EDG IS TRIPPED OR SHUTDOWN IN ACCORDANCE WITH OP-009-002, SECTION 8.7.

TOOLS AND EQUIPMENT

1. STOPWATCH

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

YOU ARE DIRECTED BY THE CRS TO UNLOAD, STOP, AND RETURN EMERGENCY DIESEL GENERATOR A TO STANDBY

TERMINATING CUE

1. DIESEL GENERATOR SECURED AND PLACED IN STANDBY
2. ALT – DIESEL IS TRIPPED OR SHUTDOWN.

CONSEQUENCES OF INADEQUATE PERFORMANCE

1 TECH SPEC VIOLATION
2 EQUIPMENT DAMAGE

HUMAN INTERFACES

1 SS/CRS
2 NAO

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

UNLOAD, STOP, AND RETURN EDG A(B) TO STANDBY

TASK ELEMENTS

Perform the task in accordance with OP-009-002, Section 6.5 and 8.7. All components operated are located on CP-1.

1: (C) REDUCE LOAD ON EDG A TO APPROXIMATELY 0.1 MW, 0.1 MVAR'S

CUES:

1. SIMULATOR PROVIDES CUES FOR EDG LOAD.
2. WHEN OPERATOR STOPS BETWEEN 0.5 AND 1MW, THEN CUE THE OPERATOR THAT THE DIESEL HAS OPERATED AT THIS LOAD FOR 15 MINUTES.

STANDARDS:

1. CP-1, SPEED ADJUST CONTROL SWITCH TO LOWER
2. REDUCE TO APPROXIMATELY 0.1 MW (<0.2 MW)
3. CP-1, VOLT ADJUST CONTROL SWITCH TO LOWER
4. REDUCE TO APPROXIMATELY 0.1 MVARS (+/- .2 MVARS)

2: (C) OPEN EDG A OUTPUT BREAKER.

CUES:

1. SIMULATOR PROVIDES CUES.

STANDARDS:

1. THE OPERATOR POSITIONS EDG A OUTPUT BREAKER C/S ON CP-1 TO THE TRIP POSITION.
2. THE OPERATOR VERIFIES BREAKER OPENS BY VERIFYING THE GREEN LIGHT IS ILLUMINATED ON THE C/S.

3: LOG ALL LOCAL ANNUNCIATORS WHICH ENERGIZE DURING THE COOLDOWN CYCLE IN THE REMARKS SECTION OF ATTACHMENT 11.9, DIESEL GENERATOR RUNNING LOG.

CUES:

1. THE NAO AT THE DIESEL GENERATOR IS STANDING BY TO LOG ALL ALARMS DURING THE COOLDOWN.

STANDARDS:

1. THE OPERATOR SHOULD COMMUNICATE THIS INFORMATION TO THE NAO AT EDG A.

Waterford 3 Job Performance Measure Examination

RESTORE FROM CONTROL ROOM ISOLATION

JOB: RO **PLANT SYSTEM:** HVC **TASK MODE:** Norm **TASK NUMBER:** 28
DESCRIPTION: RESTORE FROM CONTROL ROOM ISOLATION
REVISION: 2 **REVISION DATE:** 8/10/99
TIME: 5 MIN
TIME CRITICAL TASK: **ALTERNATE PATH:**

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-003-014	06	03	7/14/99	SIMULATOR

NRC KA NUMBER:	RO	SRO
3.2-013-A3.02	4.1	4.2

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

Waterford 3 Job Performance Measure Examination

RESTORE FROM CONTROL ROOM ISOLATION

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. THE CONTROL ROOM ENVELOPE HAS BEEN MANUALLY ISOLATED AS A PRECAUTION DUE TO A CHEMICAL SPILL.
2. THE SPILL HAS BEEN CONTAINED AND CHEMISTRY REPORTS THAT OUTSIDE AIR QUALITY IS NORMAL.

INITIATING CUE

THE SS/CRS DIRECTS YOU TO RESTORE FROM CONTROL ROOM ISOLATION

Waterford 3 Job Performance Measure Examination

RESTORE FROM CONTROL ROOM ISOLATION

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. THE CONTROL ROOM ENVELOPE HAS BEEN MANUALLY ISOLATED AS A PRECAUTION DUE TO A CHEMICAL SPILL.
2. THE SPILL HAS BEEN CONTAINED AND CHEMISTRY REPORTS THAT OUTSIDE AIR QUALITY IS NORMAL.

TASK STANDARD

1. NORMAL CONTROL ROOM VENTILATION IS RESTORED

TOOLS AND EQUIPMENT

NONE

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

THE SS/CRS DIRECTS YOU TO RESTORE FROM CONTROL ROOM ISOLATION

TERMINATING CUE

1. THE CONTROL ROOM ISOLATION HAS BEEN RESTORED

CONSEQUENCES OF INADEQUATE PERFORMANCE

NONE

HUMAN INTERFACES

NONE

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

TASK ELEMENTS

Perform the task in accordance with OP-003-014, Section 8.7. All components are operated on CP-18 and CP-53.

1: (C) LOCALLY AT CP-53, PLACE BOTH CONTROL ROOM VENTILATION MANUAL ISOLATION SWITCHES TO RESET.

CUES:

1. WHEN OPERATOR GOES BEHIND CP-8, LOCATES SWITCHES ON CP-53 MOCKUP, AND DEMONSTRATES ACTION TO PLACE SWITCHES IN RESET, CUE THE OPERATOR THAT THE SWITCHES HAVE BEEN PLACED IN RESET.

STANDARDS:

1. THE OPERATOR LOCATES SWITCHES ON CP-53 AND TAKES SWITCHES TO THE RESET POSITION.

2: VERIFY FOLLOWING VALVES ARE OPEN:

- HVC-101, CR NORM OAI DNSTRM ISOL
- HVC-102, CR NORM OAI UPSTRM ISOL

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR LOCATES HVC-101 AND HVC-102 INDICATION ON CP-18 AND VERIFIES ONLY RED LIGHT IS ILLUMINATED.

3: (C) START TOILET EXHAUST FAN A(B), HVC-MFAN-0011A(B), THEN VERIFY THE FOLLOWING:

- HVC-304A, CR TOILET EXH FAN BYPASS DAMPER – CLOSED
- HVC-304B, CR TOILET EXH FAN BYPASS DAMPER – CLOSED
- HVC-306, CR TOILET EXH FAN UPSTRM ISOL – OPEN
- HVC-307, CR TOILET EXH FAN DNSTRM ISOL – OPEN

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR SELECTS A TOILET EXH FAN AND PLACES C/S IN THE START POSITION. (CP-18)
2. THE OPERATOR VERIFIES THAT THE RED LIGHT ON THE ASSOCIATED TOILET EXH FAN C/S ILLUMINATES AND THE GREEN LIGHT EXTINGUISHES.
3. THE OPERATOR VERIFIES VALVE POSITIONS OF THE LISTED VALVES ON THE PMC.

4: (C) START THE CONTROL ROOM KITCHEN/CONFERENCE EXHAUST FAN, HVC-MFAN-0012, THEN VERIFY FOLLOWING:

- HVC-312A, KITCHEN/CONFERENCE ROOM EXH FAN BYPASS DAMPER CLOSED
- HVC-312B, KITCHEN/CONFERENCE ROOM EXH FAN BYPASS DAMPER CLOSED
- HVC-313, KITCHEN/CONFERENCE ROOM EXH FAN UPSTREAM ISOL OPEN
- HVC-314, KITCHEN/CONFERENCE ROOM EXH FAN DNSTRM ISOL OPEN

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR PLACES CR KITCHEN/CONFERENCE EXH FAN C/S IN THE START POSITION. (CP-18)
2. THE OPERATOR VERIFIES THAT THE RED LIGHT ON THE ASSOCIATED CR KITCHEN/CONFERENCE EXH FAN C/S ILLUMINATES AND THE GREEN LIGHT EXTINGUISHES.
3. THE OPERATOR VERIFIES VALVE POSITIONS OF THE LISTED VALVES ON THE PMC.

5: (C) RESET THE FOLLOWING VALVES BY TAKING C/S THROUGH CLOSE POSITION:

- HVC-201A, CR EMERG FLTR UNIT N OAI UPSTRM ISOL
- HVC-201B, CR EMERG FLTR UNIT N OAI UPSTRM ISOL
- HVC-203A, CR EMERG FLTR UNIT S OAI UPSTRM ISOL
- HVC-203B, CR EMERG FLTR UNIT S OAI UPSTRM ISOL
- HVC-202A, CR EMERG FLTR UNIT N OAI DNSTRM ISOL
- HVC-202B, CR EMERG FLTR UNIT N OAI DNSTRM ISOL
- HVC-204A, CR EMERG FLTR UNIT S OAI DNSTRM ISOL
- HVC-204B, CR EMERG FLTR UNIT S OAI DNSTRM ISOL

CUES:

1. SIMULATOR PROVIDES CUES

STANDARDS:

1. THE OPERATOR ROTATES THE FOUR CONTROL SWITCHES FOR THE EMERG OAI VALVES ON CP-18 TO THE CLOSE POSITION FOR ALL 8 VALVES.

Waterford 3 Job Performance Measure Examination

OPERATE THE ATMOSPHERIC DUMP VALVES LOCALLY

JOB: NAO **PLANT SYSTEM:** MS **TASK MODE:** OffNorm **TASK NUMBER:** 8
DESCRIPTION: OPERATE THE ATMOSPHERIC DUMP VALVES LOCALLY
REVISION: 5 **REVISION DATE:** 7/27/99
TIME: 10
TIME CRITICAL TASK: **ALTERNATE PATH:**

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-901-502	05	01	7/8/99	SIMULATE

NRC KA NUMBER:	RO	SRO
3.4-039-A4.07	2.8*	2.9
2-1-1	3.7	3.8
2-4-35	3.3	3.5
2-4-11	3.4	3.6
2-4-5	2.9	3.6
2-1-30	3.9	3.4
2-1-23	3.9	4.0
2-1-2	3.0	4.0
2-1-20	4.3	4.2
4.2-A68-AK3.06	3.9	4.3
4.2-A68-AA1.0	4.3	4.5

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. A FIRE HAS OCCURRED IN CP-2.
2. CONTROL ROOM EVACUATION HAS OCCURRED AND CONTROLS HAVE BEEN TRANSFERRED TO LCP-43.

INITIATING CUE

YOU HAVE BEEN DIRECTED BY THE PNPO TO TAKE LOCAL CONTROL OF ATMOSPHERIC DUMP VALVE MS-116A AND OPEN TO 50%.

Waterford 3 Job Performance Measure Examination

ALIGNING ESSENTIAL CHILLER AB TO REPLACE
ESSENTIAL CHILLER A(B)

JOB: NAO **PLANT SYSTEM:** CHW **TASK MODE:** Norm **TASK NUMBER:** 11
DESCRIPTION: ALIGNING ESSENTIAL CHILLER AB TO REPLACE ESSENTIAL CHILLER A(B)
REVISION: 4 **REVISION DATE:** 7/27/99
TIME: 20
TIME CRITICAL TASK: **ALTERNATE PATH:**

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-002-004	11	01	4/14/99	Simulate
TS 3.7.12				

NRC KA NUMBER:	RO	SRO
191-001-K1.08	3.4	3.4
2-1-30	3.9	3.4
2-1-29	3.4	3.3
2-1-23	3.9	4
2-1-20	4.3	4.2

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

Waterford 3 Job Performance Measure Examination

ALIGNING ESSENTIAL CHILLER AB TO REPLACE
ESSENTIAL CHILLER A(B)

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. OP-002-004 PREREQUISITES ARE MET
2. ESSENTIAL CHILLER _A_ IS TO BE REMOVED FROM SERVICE
3. ESSENTIAL CHILLER UNITS _A_ AND AB AND THEIR ASSOCIATED CHILLED WATER PUMPS ARE SECURED
4. ESSENTIAL CHILLER AB OIL LEVELS ARE SATISFACTORY
5. THE AB BUSSES ARE ALIGNED TO THE A TRAIN

INITIATING CUE

YOU HAVE BEEN DIRECTED BY THE CRS TO ALIGN ESSENTIAL CHILLER AB TO REPLACE ESSENTIAL CHILLER __A___ AND START CHILLER AB LOCALLY.

Waterford 3 Job Performance Measure Examination

ALIGNING ESSENTIAL CHILLER AB TO REPLACE
ESSENTIAL CHILLER A(B)

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. OP-002-004 PREREQUISITES ARE MET
2. ESSENTIAL CHILLER _A_ IS TO BE REMOVED FROM SERVICE
3. ESSENTIAL CHILLER UNITS _A_ AND AB AND THEIR ASSOCIATED CHILLED WATER PUMPS ARE SECURED
4. ESSENTIAL CHILLER AB OIL LEVELS ARE SATISFACTORY
5. THE AB BUSSES ARE ALIGNED TO THE A TRAIN

TASK STANDARD

CHILLER AB IS ALIGNED TO REPLACE SELECTED ESSENTIAL CHILLER

TOOLS AND EQUIPMENT

ATTACHMENT 11.4 OR ATTACHMENT 11.5, LOCK VALVE KEYS

PERSONNEL SAFETY CONSIDERATIONS

NONE

INITIATING CUE

YOU HAVE BEEN DIRECTED BY THE CRS TO ALIGN ESSENTIAL CHILLER AB TO REPLACE ESSENTIAL CHILLER __A___ AND START CHILLER AB LOCALLY.

TERMINATING CUE

ESSENTIAL CHILLER AB IS ALIGNED TO REPLACE SELECTED CHILLER.

CONSEQUENCES OF INADEQUATE PERFORMANCE

1. EQUIPMENT DAMAGE
2. TECH SPEC ACTION TS 3.7.12 AND CASCADING TECH SPECS

HUMAN INTERFACES

1. NPO
2. CRS
3. NAO

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

TASK ELEMENTS

Perform the task in accordance with OP-002-004, Section 6.2 and Attachment 11.4. All components operated locally are located in the +46' HVAC Equipment Room.

---

1 VERIFY BOTH OF THE FOLLOWING:

- ESSENTIAL CHILLER UNIT A AND ITS CHILLED WATER PUMP IS SECURED.
- ESSENTIAL CHILLER UNIT AB AND ITS CHILLED WATER PUMP IS SECURED.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE COMPONENT IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHILLER A AND ITS ASSOCIATED CHILL WATER PUMP AND VERIFIES THAT THE COMPONENTS ARE NOT RUNNING.
2. THE OPERATOR LOCATES CHILLER A AND ITS ASSOCIATED CHILL WATER PUMP AND VERIFIES THAT THE COMPONENTS ARE NOT RUNNING.

---

2 VERIFY LOCKED CLOSED ESSENTIAL CHILLER AB TO CHW HEADER B SUPPLY ISOLATION, CHW-132B.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-132B IN THE OVERHEAD, SOUTH OF CHILLER A ~ 9' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

---

3 VERIFY LOCKED CLOSED ESSENTIAL CHILLER AB RETURN HEADER B ISOLATION, CHW-786B.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-786B IN OVERHEAD SOUTH OF CHILLER A ~10' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

4 VERIFY LOCKED CLOSED CCW HEADER B RETURN FROM ESSENTIAL CHILLER AB, CC-318B.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CC-318B AT NORTH END OF WEST WALL ~ 4' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

5 VERIFY LOCKED CLOSED CCW HEADER B SUPPLY TO ESSENTIAL CHILLER AB, CC-304B.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CC-304B ON WEST WALL OUTBOARD OF CHILLER AB.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

6 (C) UNLOCK, THEN OPEN AND LOCK CCW HEADER A SUPPLY TO ESSENTIAL CHILLER AB, CC-304A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CC-304A ON WEST WALL OUTBORD OF CHILLER AB.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

7 VERIFY LOCKED OPEN CCW HEADER A RETURN FROM ESSENTIAL CHILLER AB, CC-318A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CC-318A AT NORTH END OF WEST WALL ~ 4' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

8 (C) UNLOCK, THEN OPEN AND LOCK ESSENTIAL CHILLER AB RETURN HEADER A ISOLATION, CHW-786A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-786A SOUTH OF CHW-786B.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

9 VERIFY LOCKED OPEN ESSENTIAL CHILLER AB TO CHW HEADER A SUPPLY ISOLATION, CHW-132A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-132A SOUTH OF CHW-786B.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

10 (C) UNLOCK, THEN CLOSE AND LOCK CHW EXPANSION TANK A HEADER ISOLATION, CHW-110A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-110A AT CHILL WATER PUMP A, SOUTH OF CHILLER A, ~ 4' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

11 (C) UNLOCK, THEN CLOSE AND LOCK CHILL WATER PUMP A SUCTION LINE ISOLATION, CHW-788A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-788A WEST OF CHILLER A ~ 6' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

12 (C) UNLOCK, THEN CLOSE AND LOCK ESSENTIAL CHILLER A CCW INLET ISOLATION, CC-305A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CC-305A ~ 2' ABOVE CC-304A.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

13 (C) UNLOCK AND OPEN CHILLER AB EXPANSION TANK MAKEUP ISOLATION, CMU-528A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CMU-528A SOUTH OF CC-305A AND WEST OF CHILLER AB ~ 9' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

14 (C) UNLOCK AND CLOSE CONDENSATE MAKEUP TO CHW EXP TK A ISOLATION, CMU-529A.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CMU-529A SOUTH OF CMU-528A AND WEST OF CHILLER AB ~ 7' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

15 (C) UNLOCK, THEN OPEN AND LOCK CHW EXPANSION TANK AB HEADER ISOLATION, CHW-110AB.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-110AB AT CHILL WATER PUMP AB SOUTH OF CHILLER AB ~ 4' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

16 VERIFY LOCKED OPEN ESSENTIAL CHILLER AB OUTLET ISOLATION, CHW-121AB.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-121AB SOUTH OF CHILLER AB ~6' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

17 VERIFY LOCKED OPEN CHILL WATER PUMP AB SUCTION LINE ISOLATION, CHW-788AB.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-788AB SOUTH OF CHILLER AB ~ 7' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

18 VERIFY LOCKED OPEN CHILL WATER PUMP AB DISCHARGE ISOLATION, CHW-115AB.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE VALVE IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES CHW-115AB WEST OF CHW-788AB ~ 6' OFF FLOOR.
2. THE OPERATOR POSITIONS THE VALVE IN ACCORDANCE WITH ATTACHMENT 4.

19 (C) VERIFY CHILLER AB ASSIGNMENT SWITCH TO A.

CUES:

1. WHEN EXAMINEE ASKS THE CONTROL ROOM TO PLACE THE CHILLER AB ASSIGNMENT SWITCH TO A, CUE THE OPERATOR THAT THE SWITCH IS IN THAT CONDITION.
2. CUE THE OPERATOR THAT ALL VERIFICATIONS HAVE BEEN PERFORMED ON ATTACHMENT 4.

STANDARDS:

1. THE OPERATOR COMMUNICATES WITH THE CONTROL ROOM THE REQUIREMENT TO POSITION THE CHILLER AB ASSIGNMENT SWITCH TO A.
2. THE OPERATOR ENSURES ACKNOWLEDGEMENT THAT THE SWITCH IS IN THE DESIRED POSITION.

20 (C) VERIFY ON/STOP PUSH BUTTON IS ILLUMINATED ON ESSENTIAL CHILLER AB LOCAL CONTROL PANEL

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE SWITCH IS IN THAT CONDITION.

STANDARDS:

1. THE OPERATOR LOCATES THE ON/STOP PUSH BUTTON ON THE LOCAL CONTROL PANEL.
2. THE OPERATOR VERIFIES THAT THE SWITCH IS BACKLIT.

21 (C) LOCALLY START THE AB CHILL WATER PUMP BY MOMENTARILY PLACING THE LOCAL CONTROL SWITCH IN START.

CUES:

1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE AB CHILL WATER PUMP IS RUNNING.

STANDARDS:

1. THE OPERATOR LOCATES THE LOCAL CONTROL SWITCH AND PLACES THE CONTROL SWITCH IN THE START POSITION.
2. THE OPERATOR VERIFIES DISCHARGE PRESSURE INCREASES LOCAL FLOW RISES TO > 500 GPM.

22	(C)	LOCALLY START THE AB CHILLER BY MOMENTARILY DEPRESSING THE LOCAL START PUSH BUTTON. **CUES:** 1. WHEN EXAMINEE DESCRIBES ACTIONS TO BE TAKEN, CUE THE OPERATOR THE AB CHILLER IS RUNNING. **STANDARDS:** 1. THE OPERATOR LOCATES AND DEPRESSES THE LOCAL START PUSH BUTTON. 2. THE OPERATOR VERIFIES THE OIL PUMP STARTS AFTER A SHORT TIME DELAY FOLLOWED APPROXIMATELY 30 SECONDS LATER BY A CHILLER START.
23		END OF TASK

Waterford 3 Job Performance Measure Examination

RETURNING BATTERY CHARGER TO SERVICE

JOB: NAO **PLANT SYSTEM:** DC **TASK MODE:** Norm **TASK NUMBER:** 7
DESCRIPTION: RETURNING BATTERY CHARGER TO SERVICE
REVISION: 5 **REVISION DATE:** 7/29/99
TIME: 15
TIME CRITICAL TASK: **ALTERNATE PATH:** X

REFERENCE:	REVISION:	CHANGE:	DATE:	EVALUATION METHOD:
OP-006-003	09	00	10/16/98	SIMULATE

NRC KA NUMBER:	RO	SRO
3.6-063-A4.02	2.8*	2.9
2-1-20	4.3	4.2
3.6-063-K1.03	2.9	3.5

Trainee [redacted] Evaluator [redacted]

Observer [redacted] Date [redacted]

Satisfactory [redacted] Unsatisfactory [redacted]

Waterford 3 Job Performance Measure Examination

RETURNING BATTERY CHARGER TO SERVICE

Directions To Examinee:

I will explain the initial conditions, which step(s) to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

INITIAL CONDITIONS

1. MAINTENANCE HAS BEEN COMPLETED ON BATTERY CHARGER DC-EBC-___1A_____
2. THE REMOTE POWER SUPPLY BREAKERS FOR BATTERY CHARGER DC-EBC-___1A_____ WERE LEFT OPEN AFTER MAINTENANCE.

INITIATING CUE

THE NPO DIRECTS YOU TO PLACE BATTERY CHARGER DC-EBC-___1A___ IN SERVICE.

Waterford 3 Job Performance Measure Examination

RETURNING BATTERY CHARGER TO SERVICE

INITIAL CONDITIONS

1. MAINTENANCE HAS BEEN COMPLETED ON BATTERY CHARGER DC-EBC-___1A_____
2. THE REMOTE POWER SUPPLY BREAKERS FOR BATTERY CHARGER DC-EBC-___1A_____ WERE LEFT OPEN AFTER MAINTENANCE.

TASK STANDARD

1. BATTERY CHARGER DC-EBC-___1A___ HAS BEEN RETURNED TO SERVICE.
2. FAULTED: THE OPERATOR RE-OPENS THE AC AND DC ISOLATION BREAKERS AND INFORMS THE SS/CRS.

TOOLS AND EQUIPMENT

NONE

PERSONNEL SAFETY CONSIDERATIONS

1. ENERGIZED ELECTRICAL EQUIPMENT

INITIATING CUE

THE NPO DIRECTS YOU TO PLACE BATTERY CHARGER DC-EBC-___1A____ IN SERVICE.

TERMINATING CUE

1. THE BATTERY CHARGER IS IN SERVICE AND OPERATING NORMALLY.
2. FAULTED: THE BATTERY CHARGER IS DEENERGIZED AND THE SS/CRS IS INFORMED.

CONSEQUENCES OF INADEQUATE PERFORMANCE

1. EQUIPMENT DAMAGE
2. PERSONNEL INJURY
3. LOSS OF VITAL INSTRUMENTATION

HUMAN INTERFACES

1. NPO
2. SS/CRS

TASK SPECIFIC SKILLS / KNOWLEDGE

NONE

Waterford 3 Job Performance Measure Examination

RETURNING BATTERY CHARGER TO SERVICE

TASK ELEMENTS

Perform the task in accordance with referenced procedure OP-006-003, section 8.1. All components are located in the RAB + 21' MSL, A Switchgear Room along the North wall. This JPM requires opening battery charger doors. Permission is required from the On-shift Shift Superintendent to open these doors (Ext. 3104).

1: VERIFY BATTERY CHARGER AC ISOLATION **AND** BATTERY CHARGER DC ISOLATION BREAKERS FOR APPLICABLE BATTERY CHARGER OPEN.

CUES:

1. WHEN THE OPERATOR LOCATES THE APPLICABLE BREAKER AT THE SELECTED BATTERY CHARGER CUE THE OPERATOR THAT THE BREAKER IS OPEN. (BREAKERS ARE LOCATED INSIDE FRONT PANEL OF THE SELECTED BATTERY CHARGER)

STANDARDS:

1. THE OPERATOR LOCATES THE SELECTED BATTERY CHARGER.
2. THE OPERATOR CHECKS THAT THE AC ISOLATION BREAKER OF THE SELECTED BATTERY CHARGER IS OPEN. (DC-EBKR-1161-A1)
3. THE OPERATOR CHECKS THAT THE DC ISOLATION BREAKER OF THE SELECTED BATTERY CHARGER IS OPEN (DC-EBKR-1A2)

2: (C) VERIFY REMOTE POWER SUPPLY BREAKERS FOR APPLICABLE BATTERY CHARGER ARE CLOSED.

CUES:

1. WHEN THE OPERATOR LOCATES THE APPLICABLE BREAKER AND DEMONSTRATES ACTION TO CLOSE THE BREAKER, THEN CUE THE OPERATOR THAT THE APPLICABLE BREAKER IS CLOSED.

STANDARDS:

1. THE OPERATOR LOCATES THE APPLICABLE 480VAC MOTOR CONTROL CENTER AND CLOSES THE CORRECT BREAKER. (DC-EBKR-311A-4D)(EAST END OF MCC 311A, SECOND ROW IN, SECOND BREAKER FROM TOP)

2. THE OPERATOR LOCATES THE APPLICABLE DC DISTRIBUTION PANEL AND CLOSES THE CORRECT BREAKER. (DC-EBKR-A-34)(PDP A-DC, RIGHT HAND SECTION, THIRD BREAKER FROM BOTTOM ON RIGHT FACING PANEL)

3: (C) SET EQUALIZE/FLOAT SWITCH (INSIDE CABINET) TO FLOAT POSITION.

CUES:

1. WHEN THE OPERATOR LOCATES THE EQUALIZE/FLOAT SWITCH INSIDE THE BATTERY CHARGER CABINET CUE THE OPERATOR THAT THE SWITCH IS IN FLOAT.

STANDARDS:

1. THE OPERATOR LOCATES THE EQUALIZE/FLOAT SWITCH.
2. THE OPERATOR VERIFIES THE SWITCH IS IN THE FLOAT POSITION.

4: (C) PLACE LOAD SHARING SWITCH TO OFF.

CUES:

1. WHEN THE OPERATOR LOCATES THE LOAD SHARING SWITCH ON THE FRONT PANEL OF THE BATTERY CHARGER, THEN CUE THE OPERATOR THAT THE SWITCH IS IN OFF.

STANDARDS:

1. THE OPERATOR LOCATES THE LOAD SHARING SWITCH.
2. THE OPERATOR VERIFIES THE SWITCH IS IN THE OFF POSITION.

5: (C) CLOSE BATTERY CHARGER ISOLATION (DC) BREAKER AND CHECK THE FOLLOWING:

- DC VOLTMETER EQUALS BATTERY POTENTIAL
- NO CHARGE LAMP ILLUMINATES
- PHASE FAIL LAMP EXTINGUISHES

CUES:

1. WHEN THE OPERATOR DEMONSTRATES THE ACTION TO CLOSE THE DC BREAKER, THEN CUE THE OPERATOR THAT THE BATTERY CHARGER ISOLATION (DC) BREAKER IS CLOSED.

2. WHEN THE OPERATOR LOCATES THE DC VOLTMETER, THEN CUE THE OPERATOR THAT THE VOLTMETER INDICATION EQUALS BATTERY POTENTIAL (~135 VDC).

3. WHEN THE OPERATOR LOCATES THE NO CHARGE LAMP ON THE FRONT PANEL OF THE BATTERY CHARGER, THEN CUE THE OPERATOR THAT THE NO CHARGE LAMP IS ILLUMINATED.

4. WHEN THE OPERATOR LOCATES THE PHASE FAIL LAMP, THEN CUE THE OPERATOR THAT THE PHASE FAIL LAMP IS ILLUMINATED.

STANDARDS:

1. THE OPERATOR LOCATES AND CLOSES THE BATTERY CHARGER ISOLATION (DC) BREAKER.

2. THE OPERATOR VERIFIES INDICATION OF DC VOLTAGE AND LAMP STATUS.

6: (C) WHEN 25 SECONDS HAVE ELAPSED, THEN CLOSE BATTERY CHARGER AC ISOLATION BREAKER AND CHECK THE FOLLOWING:

- DC VOLTMETER REMAINS AT BATTERY POTENTIAL
- NO CHARGE LAMP EXTINGUISHES
- PHASE FAIL LAMP EXTINGUISHES

CUES:

1. WHEN THE OPERATOR LOCATES THE BATTERY CHARGER AC ISOLATION BREAKER AND DEMONSTRATES THE ACTION TO CLOSE IT, THEN CUE THE OPERATOR THAT THE BATTERY CHARGER AC ISOLATION BREAKER IS CLOSED.

2. WHEN THE OPERATOR LOCATES THE DC VOLTMETER, THEN CUE THE OPERATOR THAT THE VOLTMETER READS 148 VDC FOR A SHORT PERIOD AND THEN DROPPED DOWN TO BATTERY POTENTIAL (~135 VDC).

3. WHEN THE OPERATOR LOCATES THE NO CHARGE LAMP, THEN CUE THE OPERATOR THAT THE NO CHARGE LAMP EXTINGUISHED FOR A SHORT PERIOD AND THEN ILLUMINATED.

4. WHEN THE OPERATOR LOCATES THE PHASE FAIL LAMP, THEN CUE THE OPERATOR THAT THE PHASE FAIL LAMP IS EXTINGUISHED.

5. CUE THE OPERATOR THAT THE HI-V SHUTDOWN LAMP IS ILLUMINATED

STANDARDS:

1. THE OPERATOR LOCATES AND CLOSES THE BATTERY CHARGER AC ISOLATION BREAKER AFTER WAITING AT LEAST 25 SECONDS SINCE CLOSING THE DC ISOLATION BREAKER.

2. THE OPERATOR VERIFIES DC VOLTMETER INDICATION AND INDICATOR STATUS.

7: (C) IF HI-V SHUTDOWN LAMP IS ILLUMINATED AND OUTPUT VOLTAGE IS < 144 VDC, THEN DEPRESS THE HIGH VOLTAGE RESET PUSHBUTTON LOCATED ON HV SHUTDOWN CARD INSIDE CABINET.

CUES:

1. WHEN THE OPERATOR LOCATES AND RESETS THE HIGH VOLTAGE RESET PUSHBUTTON, THEN CUE THE OPERATOR THAT THE HI-V SHUTDOWN LAMP EXTINGUISHED FOR A SHORT PERIOD AND THEN RE-ILLUMINATED.

STANDARDS:

1. THE OPERATOR OPENS THE BATTERY CHARGER AC ISOLATION BREAKER.
2. THE OPERATOR OPENS BATTERY CHARGER ISOLATION (DC) BREAKER
3. THE OPERATOR NOTIFIES SS/CRS OF CONDITION

8: END OF TASK.

Facility: Waterford III Scenario No.: 1 Op-Test No.: 1

Examiners: _____ Operators: _____

Objectives: To evaluate the applicants' ability to:

a. perform required actions for a failure of an NI Safety channel,
b. implement AOPs for a CCW pump trip, multiple RCP seal failures, and a FWCS malfunction,
c. perform actions required for a power reduction,
d. execute EOP steps for a small break LOCA with malfunctions in the HPSI system.

Initial Conditions: IC-20, 100%, MOC

Turnover: Charging Pump A has been OOS for 24 hours to rebuild the crosshead and repack the pump. The plant is in T.S. 3.1.2.4 due to the alignment of the AB safety busses. Maintenance estimates another 24 hours to return Charging Pump A to service. EFW pump AB has been OOS for 66 hours to rebuild MS-416, EFW Pump AB Stop Valve. Maintenance estimates 2 hours to complete the required work. HPSI Pump A has been OOS for 4 hours due to a breaker failure, which occurred while on recirculation to fill SIT 2A.

Event No.	Malf. No.	Event Type*	Event Description
1	NI01E	I (PNPO)	ENI Safety Channel A Middle Detector Fails Low, energizing a source range channel NI.
2	CC03B	C (SNPO)	CC Pump B Bearing Seizure
3	RC09D	C (PNPO) R (PNPO) N (SNPO)	RCP 2B middle seal fails, as a result of CC malfunction, forcing a controlled shutdown.
4	SG05D	I (SNPO)	S/G 2 Level Transmitter Fails High requiring manual control of S/G Level.
5	RC08D, RD1101, RD1102,	C (PNPO)	Second RCP seal fails forcing a manual reactor trip and RCP 2B is secured. Two CEAs fail to insert on the reactor trip, which requires Emergency Boration.
6	RC10D, RC23D, SI02B	M (All)	Remaining RCP seals fail, causing a small break LOCA. HPSI Pump B fails to auto start on a SIAS signal; however, the pump can be started manually from CP-8.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Simulator Scenario
Waterford 3 Nuclear Plant
Simulator Scenario Number: O-RO9901

Author: avest **Scenario Status:** APPROVED **Estimated Time:** 50

Approval: rfletch 8/29/99 **Revision Number:** 7/26/99

References Verified: avest 7/26/99

Applications: Initial Exam

Initial Conditions: IC-20

Scenario Description:
The crew takes the shift with the plant at 100% power. Shortly after taking the shift Safety Channel A ENI middle detector fails low, energizing Startup Channel 2. After the crew takes action to de-energize Startup Channel 2 and bypasses trip bistables for Linear Power Hi, DNBR Lo, and LPD Hi in PPS Channel A (the crew may also bypass Log Power Hi) CC Pump B trips on overcurrent due to a bearing seizure. Shortly after restoring normal CC flow, by starting CC Pump AB to replace CC Pump B, RCP 2B middle seal fails requiring entry into OP-901-130. After the crew commences a controlled shutdown based on input from the system engineer, S/G 2 level control channel, SG-ILT-1121 fails high. This shifts all FWCS 2 controllers to manual. When the crew has implemented the actions of OP-901-201 and recommenced the controlled shutdown, the lower seal completely fails on RCP 2B, requiring a manual reactor trip and shutdown of RCP 2B. Two CEAS do not insert when the reactor trips, requiring emergency boration initiation. During the diagnostics section of OP-902-000 the remaining seals of RCP 2B fail and a small break LOCA occurs. HPSI pump B fails to auto start on the SIAS requiring a manual start of HPSI Pump B. The crew should diagnose to OP-902-002. The scenario may be terminated when the crew initiates an RCS cooldown or at the lead examiners discretion.

Scenario Notes:

Initial Setup Chg pump A - Set remote CVR20 to RACKOUT, place Chg pump A C/S on CP-4 to OFF, and place danger tag on C/S.

Initial Setup HPSI pump A - Set remote SIR29 to RACKOUT, place HPSI pump A C/S on CP-8 to OFF, and place danger tag on C/S.

Initial Setup EFW pump AB - Set malfunction FW05 to TRUE. Set annunciators A10 and M03 on panel M and M13 on panel N to CRYWOLF. Override red, green, and white lights for MS-401A and B to OFF. Override C/Ss for MS-401A and B to CLOSE and place danger tags on MS-401A and B C/Ss on CP-8. Override red and green lights for MS-416 and MS-417 to OFF and place danger tag on MS-417 C/S on CP-8. Override EFW Pump AB Disch Press, Speed and Stm Press indicators to 0 on CP-8.

When the crew sends a NAO to the CCW pump report that the pump outboard bearing has no oil level and oil is on the floor.

When the crew notifies the System Engineer of the seal failure tell the crew that you recommend performing a controlled shutdown as a precautionary measure because in addition to the seal failure, vibration monitoring equipment has shown an upward trend recently on RCP 2B.

Scenario Timeline:

Item	Malfunction		Time	Severity	Ramp	TUA	TRA	Trigger	Event
1	RD11	01	LOAD	TRUE	N/A	N/A	N/A	N/A	
	CEA MECHANICALLY STUCK								
2	RD11	02	LOAD	TRUE	N/A	N/A	N/A	N/A	
	CEA MECHANICALLY STUCK								
3	SI02	B	LOAD	TRUE	N/A	N/A	N/A	N/A	
	LOSS AUTOSTART SIGNAL TO HPSI								
4	NI01	E	2 MIN	0%	N/A	N/A	N/A	MTF03	AR008,
	SAFETY CHANNEL ENI DETECTOR FAILS								
5	CC03	B	10 MIN	TRUE	N/A	N/A	N/A	MTF04	A510,e
	CCW PUMP BEARING SEIZURE								
6	RC09	D	15 MIN	100%	N/A	N/A	N/A	MTF05	A130,e
	RCP MIDDLE SEAL FAILURE (0-100%)								
7	SG05	D	25 MIN	100%	N/A	N/A	N/A	MTF06	A201,e
	SG ILT WR LEVEL FAIL (1-100%)								
8	RC08	D	30MIN	100%	N/A	N/A	N/A	MTF07	
	RCP LOWER SEAL FAILURE (0-100%)								
9	RC10	D	POST-T	100%	N/A	N/A	N/A	MTF08	E000
	RCP UPPER SEAL FAILURE								
10	RC23	D	POST-T	0.2%	N/A	N/A	N/A	MTF08	
	RCS COLD LEG RUPTURE (DBL-END 30" BREAK @100%, MAX IS 14% = 10,000 LBM/SEC)								
11									E002

Manip #	Manipulation Description
14	Loss of CC Trains or CC to an Individual Component
17	Loss of Protective System Channel
2	Plant Shutdown
23	Malfunction of Auto Control System Which Affects Reactivity
27	Nuclear Instrumentation Failure
3B	Manual Control of Feedwater During Plant Shutdown
7B	LOCA, Inside Containment

Scenario Critical Tasks

Event Number E000 STANDARD POST TRIP ACTIONS

1	Establish Reactivity Control.	The task is identified by at least one member of the crew. The PNPO establishes Emergency Boration prior to exiting Reactivity Control Verification by CRS and crew.

Event Number E002 LOSS OF COOLANT ACCIDENT

2	Establish RCS Inventory Control	The task is identified by at least one crew member. The SNPO takes action to start HPSI "B" prior to Plenum Level dropping below 20%.
3	Stop all Reactor Coolant Pumps.	The task is identified by at least one crew member. The PNPO takes action to stop all Reactor Coolant Pumps within 3 minutes on a loss of CCW flow or on a loss of subcooled margin.
4	Maintain RCS Heat Removal.	The task is identified by at least one crew member. The PNPO/SNPO take action to maintain RCS Heat Removal by initiating a plant cooldown to restore subcooled margin.

Event	Reference	Rev	Chng	Event	Reference	Rev	Chng
A130,e1	OP-901-130	02	00	A201,e1	OP-901-201	1	00
A510,e2	TS 3.7.3			A510,e2	OP-901-510	03	00
A510,e2	OP-100-014	09	05	AR008,I3	TS 3.3.1		
AR008,I3	OP-009-007	05	00	E000	OP-902-000	08	00
E002	OP-902-002	08	00	E002	EP-001-001	18	00

Scenario Objectives

The ABILITY to:

1 Communicate as a team, prioritize actions, demonstrate attention to detail.

2 Analyze plant parameters in abnormal / emergency conditions to diagnose and determine which emergency / off-normal operating procedure should be entered, if appropriate.

3 Verify automatic actions, and perform procedural immediate operator actions from memory.

4 Identify all LCO conditions in Technical Specifications and interpret / apply required actions.

5 Classify emergencies, make notifications and apply required actions of EP-001-001 "Recognition and Classification of Emergency Conditions".

6 Locate and utilize pertinent plant reference material available in the control room, including electrical and mechanical drawings.

7 Make clear, accurate, and concise verbal reports, writtten logs, and in-plant communications.

Event Number A130,e1 REACTOR COOLANT PUMP SEAL FAILURE

1 Monitor Component Cooilng Water parameters for reactor Coolant Pumps Cooling and take appropriate action as necessary.

2 Determine which reactor coolant pump seal(s) have failed and take appropriate actions in accordance with OP-901-130, Reactor Coolant Pump Malfunction.

Event Number A201,e1 STEAM GENERATOR LEVEL TRANSMITTER DEVIATION >7%

1 Verify feedwater control systems respond to level deviation.

2 Restore and maintain steam generator levels in accordance with OP-901-201, Steam Generator Level Control System Malfunction.

Event Number A510,e2 LOSS OF CCW PUMP(S)

1 Restore and properly align CCW in accordnace with off-normal operating procedure OP-901-510, Component Cooling Water System Malfunction.

2 Recognize that losing all CCW flow requires a Reactor Trip and Securing of RCPs.

Event Number AR008,I3 EXCORE NUCLEAR INSTRUMENTATION FAILURES (SAFETY)

1 Identify the failed NIS channel, making appropriate switch manipulations locally on drawer/CP-10

2 Properly bypass affected protection channel bistables according to Tech Specs.

Event Number E000 STANDARD POST TRIP ACTIONS

1 Carry out all operator actions, including necessary contingency actions in accordance with OP-902-000, Standard Post Trip Actions, in the event of a reactor trip.

2 Properly diagnose event in progress and transition to appropriate EOP recovery procedure.

Event Number E002 LOSS OF COOLANT ACCIDENT

1 Take appropriate actions to mitigate the consequences of a large break loss of coolant accident in accordance with OP-902-002, Loss of Coolant Accident Recovery Procedure.

2 Monitor RCS/Core conditions and verify all critical safety functions are being addressed.

3 Ensure reactor coolant pumps are secured as required, and the automatic & manual actions required for recirc actuation take place with two minutes of signal.

Number:	Position:	Action
	Event Number	**AR008,I3 EXCORE NUCLEAR INSTRUMENTATION FAILURES (SAFETY)**
1	PNPO	RECOGNIZE AND REPORT INDICATIONS OF FAILED CHANNEL
2	NOTE	STARTUP CHANNEL HIGH VOLTAGE, AUDIBLE, AND METER INDICATION WILL ENERGIZE IF THE SELECTED LOG SAFETY CHANNEL (MIDDLE DETECTOR) FAILS LOW. (PRIMARY/ALTERNATE - A/B FOR STARTUP B, C/D FOR STARTUP A)
3	PNPO/SNPO	IF LOG SAFETY CHANNEL FAILS LOW, SELECT HV PRIMARY, ALTERNATE, OR OFF IN STARTUP/CONTROL DRAWER (IF STARTUP CHANNEL REENERGIZED)
4	PNPO/SNPO	IF LOG SAFETY CHANNEL FAILED HIGH, RESET RATE LIGHT FOR ASSOCIATED CP-10 CHANNEL
5	PNPO/CRS	VERIFY RPS/CPC FUNCTION BISTABLES RESPOND AS EXPECTED
6	CRS	REVIEW AND/OR IMPLEMENT ACTIONS REQUIRED BY TECHNICAL SPECIFICATION SECTION 3.3.1 (RPS)
7	CRS	DIRECT BISTABLE BYPASS WITHIN 1 HOUR OF FAILURE (FOR FIRST CHANNEL FAILURE)
7.1	NOTE	FAILURE OF A SECOND CHANNEL WILL REQUIRE THAT CHANNEL TO BE PLACED IN THE TRIP CONDITION. TO BYPASS A SECOND CHANNEL WILL REMOVE BOTH CHANNELS FROM BYPASS
8	PNPO/SNPO	BYPASS AFFECTED CHANNEL IN ACCORDANCE WITH OP-009-007, SECTION 6.2
9	TERM	BYPASS LIGHTS ILLUMINATE ON BCP AND ROM FOR THE DESIRED CHANNEL
	Event Number	**A510,e2 LOSS OF CCW PUMP(S)**
1	SNPO	RECOGNIZE AND REPORT CCW PUMP B TRIP.
2	SNPO	VERIFY OPEN SUCTION/ AND DISCHARGE CROSS CONNECT VALVES FROM TRAIN B ARE OPEN.
3	SNPO	ALIGN AB CCW PUMP ASSIGNMENT SWITCH TO B POSITION.
4	SNPO	START THE STANDBY CCW PUMP, VERIFY ELECTRICAL BUS ALIGNMENT.
5	SNPO/CRS/TE	EVALUATE TECHNICAL SPECIFICATION IMPACT. T. S. 3.7.3 AND CASCADING TECH SPECS PER OP-100-014, TRM 3.7.3.

	Event Number	**A130,e1 REACTOR COOLANT PUMP SEAL FAILURE**
1	PNPO	IF ONLY ONE SEAL HAS FAILED ON A RCP, THEN OPERATIONS MAY CONTINUE PROVIDED SEAL IS MONITORED FOR FURTHER DEGRADATION.
2	CRS/SS	INFORM SYSTEM ENGINEER OF REACTOR COOLANT PUMP SEAL FAILURE.
3	SNPO	IF CONTROLLED BLEEDOFF HIGH TEMPERATURE ALARM OCCURS, THEN LOWER CCW TEMPERATURE BY STARTING DRY COOLING TOWER FANS OR START ACCW PUMPS AND ASSOCIATED WET COOLING TOWER FANS (SYSTEM ENGINEER, DUTY PLANT MANAGER, AND SS WILL RECOMMEND PLANT SHUTDOWN PER OP-010-005 AT THIS TIME)
4	PNPO/SNPO/C	ANNOUNCE POWER REDUCTION TO STATION PERSONNEL.
5	PNPO	PERFORM ALIGNMENT FOR BORON EQUALIZATION.
6	PNPO	COMMENCES BORATION TO COMMENCE REACTOR SHUTDOWN.
7	SNPO	WHEN TAVG BEGINS TO DROP REDUCE GENERATOR LOAD TO MATCH TAVG AND TREF.
8	PNPO/CRS (T	IF TWO OR MORE SEALS FAIL IN RAPID SUCCESSION, TRIP THE REACTOR, SECURE THE AFFECTED RCP, GO TO OP-902-000.
	Event Number	**A201,e1 STEAM GENERATOR LEVEL TRANSMITTER DEVIATION >7%**
1	S,P,C	IF ACTUAL S/G LEVEL RISES 87.7% NR OR DROPS 27.4% NR VERIFY REACTOR TRIP AND GO TO OP-902-000
2	SNPO	AT CRS DISCRETION, STOP TURBINE LOAD CHANGES.
3	PNPO	AT CRS DISCRETION, SECURE BORATION OR DILUTION TO RCS.
4	SNPO	VERIFIES THE FOLLOWING CONTROLLERS SHIFT TO MANUAL ON S/G WITH AFFECTED LEVEL (>7% DEVIATION): MAIN FEEDWATER REG VALVE B (FW-IHIC-1121) STARTUP FEEDWATER REG VALVE B (FW-IHIC-1106) MAIN FEEDWATER PUMP B SPEED (FW-HIC-1108)
5	SNPO	RESTORE S/G LEVEL TO 60 - 70% NR BY: PLACING THE SPEED CONTROLLER FOR THE NON-AFFECTED CHANNEL TO MANUAL AND ADJUSTING SGFPT SPEED (CRS MAY ALSO GIVE INSTRUCTIONS TO ADJUST MFRV CONTROLLER FOR RAPID CHANGES)
6	SNPO	VERIFY MFW PUMP DISCHARGE PRESSURE GREATER THAN S/G PRESSURE

7	TERM	INITIATE MAINTENANCE ON THE FAILED CHANNEL LEVEL TRANSMITTER
	Event Number	**E000 STANDARD POST TRIP ACTIONS**
1	PNPO	VERIFY REACTIVITY CONTROL. CHECK REACTOR POWER DROPPING OR PERFORM ANY OF THE FOLLOWING: MANUALLY TRIP THE REACTOR, MANUALLY INITIATE DRTS, OPEN BOTH 32 BUS BKRS FOR 5 SECONDS AND RE-CLOSE. CHECK STARTUP RATE IS NEGATIVE. CHECK LESS THAN 2 CEAS INSERTED OR EMERGENCY BORATE.
2	SNPO	VERIFY MAINTENANCE OF VITAL AUXILIARIES CHECK THE MAIN TURBINE TRIPPED OR PERFORM ANY OF THE FOLLOWING: MANUALLY TRIP THE TURBINE OR CLOSE BOTH MSIVS. CHECK THE GENERATOR TRIPPED OR MANUALLY TRIP THE MAIN GENERATOR BY PERFORMING ANY OF THE FOLLOWING: DEPRESS BOTH GENERATOR EMERG TRIP PUSHBUTTONS OR TRANSFER BOTH ELECTRICAL TRAINS TO THE SUTS AND OPEN BOTH GENERATOR OUTPUT BKRS AND THE EXCITER FIELD BKR. CHECK TRAIN A AND B STATION LOADS ARE ENERGIZED FROM OFFSITE POWER OR VERIFY THE APPLICABLE EDG STARTS AND ITS OUTPUT BKR CLOSES.
3	PNPO	VERIFY RCS INVENTORY CONTROL BY CHECKING PZR LEVEL 7% AND 60% AND SUBCOOLING MARGIN GREATER THAN OR EQUAL TO 28 DEG. F. IF PZR LEVEL CONTROL SYSTEM IS MALFUNCTIONING THE OPERATOR TAKES MANUAL CONTROL OF THE SYSTEM OR OPERATES CHARGING AND LETDOWN COMPONENTS TO RESTORE PZR LEVEL (THIS STEP MAY BE N/A FOR ESD, LOCA, OR SGTR EVENTS)
4	PNPO	VERIFY RCS PRESSURE CONTROL BY CHECKING PZR PRESSURE BETWEEN 1750 PSIA AND 2300 PSIA OR 1) IF PZR PRESS CONTROL SYSTEM (PPCS) IS MALFUNCTIONING THE OPERATOR TAKES MANUAL OF PPCS CONTROLLERS TO RESTORE PRESSURE 2) IF PZR PRESSURE IS LESS THAN 1684 PSIA, THE OPERATOR VERIFIES THAT SIAS AND CIAS INITIATE OR PERFORMS MANUAL INITIATION 3)IF PZR PRESSURE IS LESS THAN 1621, THE OPERATOR VERIFIES NO MORE THAN TWO RCPS ARE OPERATING. 4) IF PZR PRESSURE IS LESS THAN MINIMUM RCP NPSH OF APP. 2A THE OPERATOR SECURES ALL RCPS.
5	PNPO	VERIFY CORE HEAT REMOVAL BY CHECKING AT LEAST ONE RCP OPERATING, OPERATING LOOP DELTA-T LESS THAN 13 DEG. F, AND RCS SUBCOOLING GREATER THAN OR EQUAL TO 28 DEG. F. (MAY BE N/A FOR ESD, LOCA, AND LOOP EVENTS)
6	SNPO	CHECK RCS HEAT REMOVAL BY CHECKING AT LEAST ONE S/G IS BOTH 15-80% NR AND MAIN FEEDWATER IS AVAILABLE TO RESTORE LEVEL OR VERIFY EFW IS AVAILABLE TO RESTORE LEVEL IN AT LEAST ONE S/G.

7	PNPO/SNPO	CHECK RCS TEMPERATURE 535-555 DEG. F OR 1) IF TC IS > 555 DEG. F VERIFY LEVEL IS BEING RESTORED TO AT LEAST ONE S/G AND VERIFY SBCS OR ADVs ARE MAINTAINING RCS TEMP 535-555 DEG. F. 2) IF TC IS < 535 DEG. F THEN VERIFY FEED FLOW IS NOT EXCESSIVE AND VERIFY SBCS OR ADVs ARE MAINTAINING RCS TEMP 535-555 DEG. F 3) IF TC IS < 500 DEG. F VERIFY NO MORE THAN 2 RCPs OPERATING 4) IF ESD IN PROGRESS STABILIZE RCS TEMPERATURE USING LEAST AFFECTED S/G PER APP. 13.
8	SNPO	CHECK S/G PRESSURE 925-1050 PSIA OR 1) IF S/G PRESS <925 PSIA VERIFY STEAM BYPASS VALVES AND ADVs ARE CLOSED. 2) IF S/G PRESS LESS THAN OR EQUAL TO 764 PSIA VERIFY MSIS IS INITIATED. 3) IF S/G PRESS > 1050 PSIA VERIFY SBCS OR ADVs ARE RESTORING S/G PRESS TO < 1050 PSIA
9	SNPO	VERIFY FWCS IN RTO BY CHECKING MAIN FEED REG VALVES ARE CLOSED, STARTUP FEED REG VALVES ARE 20-25% OPEN, AND OPERATING FEED PUMPS ARE 3800 TO 4000 RPM OR MANUALLY OPERATE FEEDWATER SYSTEM TO RESTORE LEVEL IN AT LEAST ONE S/G TO 50-70 NR.(N/A IF MSIS IS INITIATED)
10	SNPO	RESET MOISTURE SEPARATOR REHEATERS AND CHECK THE TEMP CONTROL VALVES CLOSED OR NOTIFY AN NAO TO FAIL CLOSE THE VALVES LOCALLY. (N/A IF MSIS IS INITIATED)
11	PNPO	VERIFY CONTAINMENT ISOLATION BY CHECKING CONTAINMENT PRESSURE < 16.4 PSIA, CHECK THAT NO CONT. AREA RAD MONITORS ARE IN ALARM OR SHOW AN UNEXPLAINED RISE IN ACTIVITY, AND CHECK THAT NO STEAM PLANT RAD MONITORS ALARM OR SHOW AN UNEXPLAINED RISE IN ACTIVITY. iF CONTAINMENT PRESSURE IS GREATER THAN OR EQUAL TO 17.1 PSIA VERIFY CIAS, SIAS, AND MSIS INITIATE.
12	SNPO/PNPO	VERIFY CONTAINMENT TEMPERATURE AND PRESSURE CONTROL AND CONTAINMENT COMBUSTIBLE GAS CONTROL BY VERIFYING CONTAINMENT TEMP LESS THAN OR EQUAL TO 120 DEG. F AND CONTAINMENT PRESSURE IS < 16.4 PSIA OR 1) VERIFY AT LEAST 3 CFCs OPERATING. 2) IF CONTAINMENT PRESS IS GREATER OR EQUAL TO 17.1 PSIA VERIFY ALL CFCs ARE OPERATING IN EMERGENCY MODE. 3) IF CONTAINMENT PRESS IS GREATER THAN OR EQUAL TO 17.7 VERIFY CSAS IS INITIATED, ALL AVAILABLE CS PUMPS ARE DELIVERING > 1750 GPM, AND SECURE ALL RCPs .
13	CRS	VERIFY ALL SAFETY FUNCTION ACCEPTANCE CRITERIA ARE MET
14	CRS/PNPO/SN	PERFORM DIAGNOSTICS
15	TERM	CREW DIAGNOSES A(N) _____ EVENT AND EXITS TO OP-902-_____.

10	PNPO/SNPO	IF CONTAINMENT PRESSURE IS > 17.1 PSIA OR CONTAINMENT AREA RAD MONITORS ARE IN HI ALARM, VERIFY CIAS IS INITIATED AND VERIFY ALL AVAILABLE CFCs ARE IN THE EMERGENCY MODE. IF ANY CFC IS NOT OPERATING AND CONTAINMENT PRESSURE IS > 17.1 PSIA NOTIFY A NAO TO PERFORM APPENDIX 22B AND CLOSE THE ASSOCIATED CFC CCW ISOLATION VALVES.
11	SNPO/PNPO	IF CONTAINMENT PRESSURE IS > 17.7 PSIA VERIFY CSAS IS INTIATED AND ALL OPERATING CS PUMPS ARE DELIVERING > 1750 GPM. IF ANY CS PUMP IS NOT OPERATING AND ITS ASSOCIATED CS-125 VALVE IS OPEN, PERFORM APPENDIX 22A AND CLOSE THE ASSOCIATED VALVE.
12	SNPO	IF OFFSITE POWER HAS BEEN LOST VERIFY MSIVs AND BLOWDOWN CONTAINMENT ISOLATIONS ARE CLOSED.
13	SNPO	RESTORE IA 1) IF A TCW PUMP AND CW PUMP ARE NOT RUNNING NOTIFY NAO TO ALIGN IA COMPRESSORS TO POTABLE WATER 2) IF IA PRESURE < 95 PSIG DISPATCH AN OPERATOR TO START ALL AVAILABLE AIR COMPRESSORS 3) IF IA PRESS > 95 PSIG ENSURE IA CONTAINMENT ISOLATION VALVE IA-909 IS OPEN.
14	PNPO/SNPO	COOLDOWN/DEPRESSURIZE/RESET MSIS AND SIAS SETPOINTS (AFTER COOLDOWN HAS BEEN STARTED THE EXAM LEAD MAY TERMINATE THE SCENARIO)

Facility: Waterford III Scenario No.: 2 Op-Test No.: 1

Examiners: _____ Operators: _____

Objectives: To Evaluate the applicants' ability to:

a. perform a power reduction,
b. recognize T.S. implications and perform required actions for a failure of a safety related S/G pressure instrument,
c. perform actions within AOPs for a loss of charging, condenser air in-leakage, failure of the controlling pressurizer pressure instrument, and failure of a PZR Spray valve.
d. perform actions required to mitigate a Main Steam Line Break inside containment with a failure of one motor driven EFW pump to auto start and the turbine driven EFW pump OOS.

Initial Conditions: IC-20, 100%, MOC

Turnover: Charging Pump A has been OOS for 24 hours to rebuild the crosshead and repack the pump. The plant is in T.S. 3.1.2.4 due to the alignment of the AB safety busses. Maintenance estimates another 24 hours to return Charging Pump A to service. EFW pump AB has been OOS for 66 hours to rebuild MS-416, EFW Pump AB Stop Valve. Maintenance estimates 2 hours to complete the required work. HPSI Pump A has been OOS for 4 hours due to a breaker failure, which occurred while on recirculation to fill SIT 2A. A power reduction to 90% must be performed to allow for turbine valve testing.

Event No.	Malf. No.	Event Type*	Event Description
1	N/A	R (PNPO) N (SNPO)	Power reduction to 90% power for turbine valve testing.
2	SG04A	I (SNPO)	S/G 2 Safety Pressure instrument fails low.
3	CV01B	C (PNPO)	Charging pump B trips on overcurrent.
4	FW21A	C (SNPO)	Condenser A air in-leakage.
5	RX14A	I (PNPO)	In-service PZR pressure control channel fails high.
6	RC14 A1	C (PNPO)	Pressurizer Spray Valve RC-301A fails open due to mechanical binding, forcing a manual reactor trip to secure RCP 1A to stop the plant depressurization.
7	MS11A, FW07A	M (All)	Main Steam Line Break inside containment with a failure of EFW Pump A to automatically start on an EFAS.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Simulator Scenario
Waterford 3 Nuclear Plant
Simulator Scenario Number: O-RO9902

Author: avest **Scenario Status:** APPROVED **Estimated Time:** 50

Approval: rfletch 8/29/99 **Revision Number:** 7/26/99

References Verified:

Applications: Initial Exam

Initial Conditions: IC-20

Scenario Description:

Plant power is initially 100%. After assuming the shift the crew will commence a down power to 90% for turbine valve testing. During the power reduction S/G 2 pressure transmitter SG-IPT-1023A fails low. When the crew bypasses the appropriate trip bistables in PPS Channel A, Charging Pump B trips on overcurrent. The crew should implement the applicable actions of OP-901-112 for a charging malfunction. After implementing OP-901-112 an air leak will occur in Condenser A. The condenser vacuum will stabilize between the auto start pressure for backup air evacuation pumps and the turbine trip setpoint. After implementing the actions of OP-901-220, the in-service PZR pressure control channel fails high, initiating PZR spray and securing PZR heaters. The crew should implement OP-901-120 and transfer to the non-faulted channel. When the crew transfers pressure control to the non-faulted channel PZR spray valve RC-301A remains open due to mechanical binding. The crew should manually trip the reactor and secure RCP 1A to stop the plant depressurization. During the performance of OP-902-000, Standard Post Trip Actions, an unisolable main steam line break occurs on MS line 1 inside containment. EFW Pump A fails to start automatically when EFAS is initiated. the crew should diagnose to OP-902-004 and take the appropriate actions. the scenario may be terminated after the crew takes action to stabilize RCS temperature and pressure or at the lead examiner's discretion.

Scenario Notes:

Initial Setup Chg pump A - Set remote CVR20 to RACKOUT, place Chg pump A C/S on CP-4 to OFF, and place danger tag on C/S.

Initial Setup HPSI pump A - Set remote SIR29 to RACKOUT, place HPSI pump A C/S on CP-8 to OFF, and place danger tag on C/S.

Initial Setup EFW pump AB - Set malfunction FW05 to TRUE. Set annunciators A10 and M03 on panel M and M13 on panel N to CRYWOLF. Override red, green, and white lights for MS-401A and B to OFF. Override C/Ss for MS-401A and B to CLOSE and place danger tags on MS-401A and B C/Ss on CP-8. Override red and green lights for MS-416 and MS-417 to OFF and place danger tag on MS-417 C/S on CP-8. Override EFW Pump AB Disch Press, Speed and Stm Press indicators to 0 on CP-8.

Charging Pump B trip - If the crew sends a NAO to the Charging Pump report that the motor casing is discolored and the smell of burnt insulation is present.

Charging Pump B trip - If the crew sends a NAO to the Charging Pump breaker report flags on all phase of the overcurrent trip device. Use Remote Function CVR23 to rackout the breaker if requested.

Condenser A Air Inleakage - When requested to check the condenser vacuum breakers, allow time for the operator to check for leakage on all three vacuum breakers, then report that the water seal has been lost on condenser vacuum breaker A. After allowing time to fill the water seal delete malfunction FW21A.

Scenario Timeline:

Item	Malfunction		Time	Severity	Ramp	TUA	TRA	Trigger	Event
1	FW07	A	LOAD	TRUE	N/A	N/A	N/A	N/A	
	EMERGENCY FEEDWATER PUMP FAILS TO AUTO START								
2			0 MIN	N/A	N/A	N/A	N/A	N/A	N1000
3	SG04	A	10 MIN	0%	N/A	N/A	N/A	MTF03	T331
	SG PRESSURE SAFETY CHANNEL FAILS								
4	CV01	B	15 MIN	TRUE	N/A	N/A	N/A	MTF04	A112,e
	CHARGING PUMP TRIP								
5	FW21	A	20 MIN	15%	1 MIN	N/A	N/A	MTF05	A220
	CONDENSER AIR INLEAK								
6	RX14	A	25 MIN	100%	N/A	N/A	N/A	MTF06	A120,e
	PRESSURIZER PRESSURE CONTROL INSTRUMENT FAILURE HIGH								
7	RC14	A1	30 MIN	OPEN	N/A	N/A	N/A	MTF06	A120,e
	PZR SPRAY VALVE FAILS OPEN/CLOSED								
8	MS11	A	35 MIN	10%	5 MIN	N/A	N/A	MTF07	E000
	MS LINE BREAK INSIDE CNTMT (0-100%, 100% = 40								
9			N/A	N/A	N/A	N/A	N/A	N/A	E004

Manip #	Manipulation Description
11	Loss of Condenser Vacuum
17	Loss of Protective System Channel
2	Plant Shutdown
26A	Main Steam Line Break, Inside Containment

Scenario Critical Tasks

Event Number E000 STANDARD POST TRIP ACTIONS

1	Stop all Reactor Coolant Pumps.	The task is identified by at least one member of the crew. The PNPO takes actions to secure all RCP's within 3 minutes of loss of CCW due to the CSAS.

Event Number E004 EXCESS STEAM DEMAND

2	Establish RCS Temperature Control.	The task is identified by at least one member of the crew. The SNPO takes actions to stabilize RCS Temperature within the limits of the PT Curve following Blowdown of the Affected SG.
3	Establish RCS Pressure Control.	The task is identified by at least one member of the crew. The PNPO takes actions to stabilize RCS Pressure within the Limits of the PT curve following Blowdown of the affected Steam Generator.

Event	Reference	Rev	Chng	Event	Reference	Rev	Chng
A112,e1	TS 3.1.2			A112,e1	OP-901-112	02	00
A120,e1	OP-901-120	02	00	A120,e1	TS 3.2.8		
A120,e3	OP-901-120	02	00	A120,e3	TS 3.2.8		
A220	OP-901-220	02	00	E000	OP-902-000	08	00
E004	EP-001-001	18	00	E004	OP-902-004	08	00
N10005a	TS 3.1.2			N10005a	OP-010-005	00	00
N10005a	TS 3.2.1			N10005a	TS 3.2.7		
N10005a	TS 4.4.7			T331	TS 3.3.1		
T331	TS 3.3.2			T331	OP-009-007	05	00

Scenario Objectives

The ABILITY to:

1 Communicate as a team, prioritize actions, demonstrate attention to detail.

2 Analyze plant parameters in abnormal / emergency conditions to diagnose and determine which emergency / off-normal operating procedure should be entered, if appropriate.

3 Verify automatic actions, and perform procedural immediate operator actions from memory.

4 Identify all LCO conditions in Technical Specifications and interpret / apply required actions.

5 Classify emergencies, make notifications and apply required actions of EP-001-001 "Recognition and Classification of Emergency Conditions".

6 Locate and utilize pertinent plant reference material available in the control room, including electrical and mechanical drawings.

7 Make clear, accurate, and concise verbal reports, writtten logs, and in-plant communications.

Event Number A112,e1 CHARGING PUMP MALFUNCTION

1 Determine the cause of charging malfunction and realign system as necessary to restore charging capability.

2 Properly perform subsequent operator actions in accordance with offnormal operating procedure OP-901-112, Charging and Letdown Malfunctions.

Event Number A120,e1 PRESSURIZER CONTROL PRESSURE TRANSMITTER FAILURE

1 Stabilize pressurizer pressure on alternate control channel according to off-normal operator procedure OP-901-120, Pressurizer Pressure Control Malfunction.

Event Number A120,e3 SPRAY VALVE FAILURE

1 Perform actions necessary for a spray valve failed open.

2 Realign pressuizer spray components for failed closed spray valve(s).

Event Number A220 LOSS OF CONDENSER VACUUM

1 Verify the equipment necessary to maintain condenser vacuum in operating properly.

2 Properly perform subsequent operator actions in accordance with offnormal operating procedure OP-901-220.

Event Number E000 STANDARD POST TRIP ACTIONS

1 Carry out all operator actions, including necessary contingency actions in accordance with OP-902-000, Standard Post Trip Actions, in the event of a reactor trip.

2 Properly diagnose event in progress and transition to appropriate EOP recovery procedure.

Event Number E004 EXCESS STEAM DEMAND

1 Verify the existence/location of an excess steam demand.

2 Ensure the reactor is maintained in a shutdown condition.

3 Ensure the conditions for pressurized thermal shock are minimized.

4 Mitigate the consequences of an excess steam demand by properly utilizing OP-902-004, Excess Steam Demand Recovery Procedure.

Event Number N10005a PLANT SHUTDOWN 100% TO 90%

1 Reduce reactor power and/or remove the unit from service by operating securing, or realigning plant equipment as directed by precautions, limitations, and procedural guidance of General Operating Procedure, OP-010-005.

Event Number T331 SAFETY CHANNEL INSTRUMENTATION FAILURES

1 Recognize failed instrument and verify RPS/CPC bistable functions as expected.

2 Bypass affected bistable channel.

Number:	Position:	Action
	Event Number	**N10005a** **PLANT SHUTDOWN 100% TO 90%**
1	SS/CRS	IF NECESSARY, ENSURE IPTE REQUIREMENTS ARE MET AND SENIOR LINE MANAGER ON SITE
2	CRS	NOTIFIES LOAD DISPATCHER PRIOR TO POWER REDUCTION AND ANNOUNCES POWER REDUCTION OVER PLANT PAGING SYSTEM
3	PNPO	MAINTAIN TCOLD 541-548 DURING DOWNPOWER. PERFORM BORATION EQUALIZATION. BORATES TO REDUCE REACTOR POWER.
4	PNPO	MAINTAINS ASI USING GROUP 5, 6 OR PART LENGTH CONTROL RODS
5	SNPO	REDUCES GENERATOR LOAD AS REQUIRED ONCE TAVE STARTS TO DROP TO MATCH REFERENCE TEMPERATURE AND TAVE
6	PNPO	REEVALUATE CEA SUBGROUPS SELECTED TO DROP ON RPC BETWEEN 90% AND 80% POWER.
7	TERM	TERMINATE EVENT AT 90% POWER OR AT LEAD EXAMINER'S DISCRETION
	Event Number	**T331** **SAFETY CHANNEL INSTRUMENTATION FAILURES**
1	PNPO	RECOGNIZE AND REPORT INDICATIONS OF FAILED CHANNEL
2	PNPO/CRS	VERIFY RPS/CPC FUNCTION BISTABLE RESPOND AS EXPECTED
3	CRS	REVIEW AND/OR IMPLEMENT ACTIONS REQUIRED BY TECHNICAL SPECIFICATION SECTION 3.3.1 OR 3.3.2 (RPS OR ESFAS)
4	CRS	DIRECT BISTABLE BYPASS WITH 1 HOUR OF FAILURE (FOR FIRST CHANNEL FAILURE)
4.1	CRS	NOTE: FAILURE OF A SECOND CHANNEL WILL REQUIRE THAT CHANNEL TO BE PLACED IN THE TRIP CONDITION. TO BYPASS A SECOND CHANNEL WILL REMOVE BOTH CHANNELS FROM BYPASS.
5	SNPO/PNP	BYPASS AFFECTED CHANNEL IN ACCORDANCE WITH OP-009-007 SECTION 6.2
6	TERM	BYPASS LIGHTS ILLUMINATE ON BCP AND ROM FOR THE DESIRED CHANNEL
	Event Number	**A112,e1** **CHARGING PUMP MALFUNCTION**
1	PNPO	RECOGNIZE AND REPORT CHARGING PUMP TRIP (ALARMS AND INDICATION)

2	SNPO/CRS	STOP TURBINE LOAD CHANGES (IF APPLICABLE)
3	PNPO	IF CHARGING PUMPS HAVE TRIPPED: VERIFY CHARGING PUMP SUCTION PATH (EITHER CVC-183 OR CVC-507 OPEN)
4	PNPO	IF LETDOWN IS NOT ISOLATED ATTEMPT TO RESTART CHARGING PUMPS
5	PNPO	CLOSE LETDOWN STOP VALVE (CVC-101) IF CHARGING PUMPS CANNOT BE RESTARTED
6	CRS/SS	CHECK TECHNICAL SPECIFICATIONS
7	PNPO	IF THE REASON FOR THE CHARGING PUMP TRIP IS CORRECTED AND PRESSURIZER LEVEL IS NORMAL, THEN PLACE CHARGING AND LETDOWN IN SERVICE
8	TERM	WHEN LETDOWN IS RESTORED

Event Number A220 LOSS OF CONDENSER VACUUM

1	SNPO	NOTIFY CRS/SS THAT VACUUM IS DROPPING
2	SNPO	VERIFY SUFFICIENT CIRC WATER/ VACUUM PUMPS IN SERVICE AND PROPER GLAND SEAL HEADER PRESSURES FOR THE HEADER, LP AND HP TURBINE, AND FEEDWATER PUMP TURBINES, VACUUM BREAKER SEALS.
3	CRS/SS	IF VACUUM CONTINUES TO DROP BELOW 25" VACUUM, COMMENCE PLANT SHUTDOWN. IF VACUUM HAS NOT STABILIZED AND IS APPROACHING 20" THEN TRIP REACTOR AND VERIFY TURBINE TRIP. GO TO 902-000.
4	SNPO	CHECK GLAND STEAM, TRAVELING SCREENS, VACUUM PUMP AIR FLOW, AND ATTEMPT TO CORRECT ABNORMALITIES.
5	TERM	REACTOR HAS TRIPPED, OR VACUUM HAS RETURNED TO NORMAL

Event Number A120,e1 PRESSURIZER CONTROL PRESSURE TRANSMITTER FAILURE

1	PNPO	VERIFIES PRESSURIZER PRESSURE INSTRUMENT FAILURE BY CHECKING X/Y RECORDER
2	PNPO	TRANSFER PRESSURIZER PRESSURE CONTROL TO OPERABLE CHANNEL USING PRESSURIZER PRESSURE CHANNEL SELECTOR CONTROL SWITCH
3	TERM	TERMINATE WHEN FAILED SPRAY VALVE IS NOTED.

Event Number A120,e3 SPRAY VALVE FAILURE

1	PNPO	PLACES PRESSURIZER SPRAY CONTROLLER TO MANUAL
2	PNPO	IF SPRAY VALVE FAILS OPEN, ADJUSTS PRESSURIZER SPRAY CONTROLLER OUTPUT TO ZERO % AND
3	PNPO	SELECTS OPERABLE SPRAY VALVE AND
4	PNPO	VERIFIES ALL BACKUP HEATERS ARE ON
5	PNPO/CRS/SN	IF PRESSURIZER PRESSURE STILL DROPS 1) TRIP REACTOR 2) STOPS REACTOR COOLANT PUMP FOR AFFECTED SPRAY VALVE(S)
6	TERM	ENTER OP-902-000.

Event Number E000 STANDARD POST TRIP ACTIONS

1	PNPO	VERIFY REACTIVITY CONTROL. CHECK REACTOR POWER DROPPING OR PERFORM ANY OF THE FOLLOWING: MANUALLY TRIP THE REACTOR, MANUALLY INITIATE DRTS, OPEN BOTH 32 BUS BKRS FOR 5 SECONDS AND RE-CLOSE. CHECK STARTUP RATE IS NEGATIVE. CHECK LESS THAN 2 CEAS INSERTED OR EMERGENCY BORATE.
2	SNPO	VERIFY MAINTENANCE OF VITAL AUXILIARIES CHECK THE MAIN TURBINE TRIPPED OR PERFORM ANY OF THE FOLLOWING: MANUALLY TRIP THE TURBINE OR CLOSE BOTH MSIVS. CHECK THE GENERATOR TRIPPED OR MANUALLY TRIP THE MAIN GENERATOR BY PERFORMING ANY OF THE FOLLOWING: DEPRESS BOTH GENERATOR EMERG TRIP PUSHBUTTONS OR TRANSFER BOTH ELECTRICAL TRAINS TO THE SUTS AND OPEN BOTH GENERATOR OUTPUT BKRS AND THE EXCITER FIELD BKR. CHECK TRAIN A AND B STATION LOADS ARE ENERGIZED FROM OFFSITE POWER OR VERIFY THE APPLICABLE EDG STARTS AND ITS OUTPUT BKR CLOSES.
3	PNPO	VERIFY RCS INVENTORY CONTROL BY CHECKING PZR LEVEL 7% AND 60% AND SUBCOOLING MARGIN GREATER THAN OR EQUAL TO 28 DEG. F. IF PZR LEVEL CONTROL SYSTEM IS MALFUNCTIONING THE OPERATOR TAKES MANUAL CONTROL OF THE SYSTEM OR OPERATES CHARGING AND LETDOWN COMPONENTS TO RESTORE PZR LEVEL (THIS STEP MAY BE N/A FOR ESD, LOCA, OR SGTR EVENTS)

4	PNPO	VERIFY RCS PRESSURE CONTROL BY CHECKING PZR PRESSURE BETWEEN 1750 PSIA AND 2300 PSIA OR 1) IF PZR PRESS CONTROL SYSTEM (PPCS) IS MALFUNCTIONING THE OPERATOR TAKES MANUAL OF PPCS CONTROLLERS TO RESTORE PRESSURE 2) IF PZR PRESSURE IS LESS THAN 1684 PSIA, THE OPERATOR VERIFIES THAT SIAS AND CIAS INITIATE OR PERFORMS MANUAL INITIATION 3)IF PZR PRESSURE IS LESS THAN 1621, THE OPERATOR VERIFIES NO MORE THAN TWO RCPS ARE OPERATING. 4) IF PZR PRESSURE IS LESS THAN MINIMUM RCP NPSH OF APP. 2A THE OPERATOR SECURES ALL RCPS.
5	PNPO	VERIFY CORE HEAT REMOVAL BY CHECKING AT LEAST ONE RCP OPERATING, OPERATING LOOP DELTA-T LESS THAN 13 DEG. F, AND RCS SUBCOOLING GREATER THAN OR EQUAL TO 28 DEG. F. (MAY BE N/A FOR ESD, LOCA, AND LOOP EVENTS)
6	SNPO	CHECK RCS HEAT REMOVAL BY CHECKING AT LEAST ONE S/G IS BOTH 15-80% NR AND MAIN FEEDWATER IS AVAILABLE TO RESTORE LEVEL OR VERIFY EFW IS AVAILABLE TO RESTORE LEVEL IN AT LEAST ONE S/G.
7	PNPO/SNPO	CHECK RCS TEMPERATURE 535-555 DEG. F OR 1) IF TC IS > 555 DEG. F VERIFY LEVEL IS BEING RESTORED TO AT LEAST ONE S/G AND VERIFY SBCS OR ADVs ARE MAINTAINING RCS TEMP 535-555 DEG. F. 2) IF TC IS < 535 DEG. F THEN VERIFY FEED FLOW IS NOT EXCESSIVE AND VERIFY SBCS OR ADVs ARE MAINTAINING RCS TEMP 535-555 DEG. F 3) IF TC IS < 500 DEG. F VERIFY NO MORE THAN 2 RCPs OPERATING 4) IF ESD IN PROGRESS STABILIZE RCS TEMPERATURE USING LEAST AFFECTED S/G PER APP. 13.
8	SNPO	CHECK S/G PRESSURE 925-1050 PSIA OR 1) IF S/G PRESS <925 PSIA VERIFY STEAM BYPASS VALVES AND ADVs ARE CLOSED. 2) IF S/G PRESS LESS THAN OR EQUAL TO 764 PSIA VERIFY MSIS IS INITIATED. 3) IF S/G PRESS > 1050 PSIA VERIFY SBCS OR ADVs ARE RESTORING S/G PRESS TO < 1050 PSIA
9	SNPO	VERIFY FWCS IN RTO BY CHECKING MAIN FEED REG VALVES ARE CLOSED, STARTUP FEED REG VALVES ARE 20-25% OPEN, AND OPERATING FEED PUMPS ARE 3800 TO 4000 RPM OR MANUALLY OPERATE FEEDWATER SYSTEM TO RESTORE LEVEL IN AT LEAST ONE S/G TO 50-70 NR.(N/A IF MSIS IS INITIATED)
10	SNPO	RESET MOISTURE SEPARATOR REHEATERS AND CHECK THE TEMP CONTROL VALVES CLOSED OR NOTIFY AN NAO TO FAIL CLOSE THE VALVES LOCALLY. (N/A IF MSIS IS INITIATED)
11	PNPO	VERIFY CONTAINMENT ISOLATION BY CHECKING CONTAINMENT PRESSURE < 16.4 PSIA, CHECK THAT NO CONT. AREA RAD MONITORS ARE IN ALARM OR SHOW AN UNEXPLAINED RISE IN ACTIVITY, AND CHECK THAT NO STEAM PLANT RAD MONITORS ALARM OR SHOW AN UNEXPLAINED RISE IN ACTIVITY. iF CONTAINMENT PRESSURE IS GREATER THAN OR EQUAL TO 17.1 PSIA VERIFY CIAS, SIAS, AND MSIS INITIATE.

12	SNPO/PNPO	VERIFY CONTAINMENT TEMPERATURE AND PRESSURE CONTROL AND CONTAINMENT COMBUSTIBLE GAS CONTROL BY VERIFYING CONTAINMENT TEMP LESS THAN OR EQUAL TO 120 DEG. F AND CONTAINMENT PRESSURE IS < 16.4 PSIA OR 1) VERIFY AT LEAST 3 CFCs OPERATING. 2) IF CONTAINMENT PRESS IS GREATER OR EQUAL TO 17.1 PSIA VERIFY ALL CFCs ARE OPERATING IN EMERGENCY MODE. 3) IF CONTAINMENT PRESS IS GREATER THAN OR EQUAL TO 17.7 VERIFY CSAS IS INITIATED, ALL AVAILABLE CS PUMPS ARE DELIVERING > 1750 GPM, AND SECURE ALL RCPs .
13	CRS	VERIFY ALL SAFETY FUNCTION ACCEPTANCE CRITERIA ARE MET
14	CRS/PNPO/SN	PERFORM DIAGNOSTICS
15	TERM	CREW DIAGNOSES A(N) _____ EVENT AND EXITS TO OP-902-_____.

Event Number E004 EXCESS STEAM DEMAND

1	CRS/STA	CONFIRM DIAGNOSIS BY PERFORMING SAFETY FUNCTION STATUS CHECK LIST AND NOTIFY CHEMISTRY TO SAMPLE BOTH S/GS FOR ACTIVITY.
2	CREW	ANNOUNCE THE EVENT
3	PNPO/SNPO	IF PZR PRESSURE < 1684 PSIA VERIFY SIAS INITIATED, SAFETY INJECTION PUMPS STARTED, INJECTION FLOW IS ACCEPTABLE PER APPENDIX 2 AND AVAILABLE CHARGING PUMPS (2) ARE RUNNING OR PERFORM ANY OF THE FOLLOWING: 1) VERIFY POWER TO SI PUMPS. 2) VERIFY INJECTION VALES OPEN. 3) START ADDITIONAL SI PUMPS UNTIL FLOW IS ACCEPTABLE PER APP. 2. 4) ALIGN HPSI AB TO REPLACE A OR B.
4	SNPO	VERIFY MSIS ACTUATION BY VERIFYING BOTH MSIVs AND BOTH MFIVs ARE CLOSED.
5	PNPO	IF PZR PRESS < 1621 PSIA AND SIAS IS ACTUATED VERIFY NO MORE THAN 2 RCPs OPERATING. IF PZR PRESS DOES NOT MEET APPENDIX 2A SECURE ALL RCPs.
6	PNPO/SNPO	VERIFY RCP OPERATING LIMITS 1) VERIFY CCW AVAILABLE TO RCPs OR SECURE AFFECTED RCPs IF NOT RESTORED WITHIN 3 MINUTES. 2) SECURE ALL RCPs IF CSAS IS INITIATED. 3) IF TC >500 DEG. F, VERIFY NO MORE THAN 2 RCPS OPERATING.

7	SNPO	VERIFY CCW OPERATION BY CHECKING A CCW PUMP IS OPERATING FOR EACH ENERGIZED 4 KV SAFETY BUS OR 1) IF AB BUS ALIGNED TO SAME SIDE AS FAULTED CCW PUMP START THE AB CCW PUMP 2) IF AB BUS ALIGNED TO OPPOSITE SIDE FROM FAULTED CCW PUMP START THE AB CCW PUMP AFTER THE SEQUENCER HAS TIMED OUT. 3) IF CCW FLOW CAN NOT BE RESTORED, NOTIFY AN NAO TO PULL THE OVERSPEED TRIP DEVICE ON THE AFFECTED EDG.
8	SNPO/CRS	DETERMINE MOST AFFECTED SG BY CONSIDERING THE FOLLOWING: 1) HIGH STEAM FLOW FROM S/G 2) DROPPING S/G PRESSURE 3) DROPPING RCS COLD LEG TEMPERATURE
9	SNPO	ISOLATE MOST AFFECTED SG: 1) VERIFY THE MSIV CLOSED 2) VERIFY MFIV CLOSED. 3) VERIFY ADV CLOSED AND CONTROLLER IN MANUAL 4) VERIFY EFW ISOLATION VALVES ARE CLOSED EFW-228A SG 1 PRIMARY EFW-229A SG 1 BACKUP 5) PLACE EFW FLOW CONTROL VALVES IN MANUAL AND CLOSE EFW-224A SG 1 PRIMARY EFW-223A SG 1 BACKUP 6) CLOSE MS-401A, PUMP AB TURB STM SUPPLY SG 1 7) CLOSE MAIN STEAM LINE DRAINS: MS-120A NORMAL MS-119A BYPASS 8) VERIFY SG BLOWDOWN ISOLATION VALVES ARE CLOSED: BD-103A STM GEN 1 (OUT) BD-102A STM GEN 1 (IN)
10	PNPO/SNPO	VERIFY CORRECT SG ISOLATED BY CHECKING S/G PRESSURES, S/G LEVELS, AND RCS COLD LEG TEMPERATURES. IF THE WRONG STEAM GENERATOR WAS ISOLATED RESTORE FEED AND STEAM CAPABILITY TO THE ISOLATED S/G AND THEN ISOLATE THE CORRECT STEAM GENERATOR.
11	PNPO/SNPO	STABILIZE RCS TEMPERATURE USING THE LEAST AFFECTED S/G: 1) PLACE THE ADV FOR THE LEAST AFFECTED S/G IN MANUAL AND FULLY OPEN. 2) MANUALLY INITIATE EFAS TO THE LEAST AFFECTED S/G. 3) PLACE THE EFW FLOW CONTROL VALVE TO MANUAL AND COMMENCE FEEDING THE LEAST AFFECTED S/G. 4) WHEN RCS PRESSURE IS GREATER THAN HPSI SHUTOFF HEAD STABILIZE RCS PRESSURE USING PZR SPRAY.
12	TERM	THE EVENT MAY BE TERMINATED WHEN ACTIONS TO STABILZE RCS TEMPERATURE AND PRESSURE HAVE BEEN PERFORMED.