50-302

CRYSTAL RIVER 99-301 -- FEBRUARY 1999
INITIAL SUBMITTAL -- JPMS

DISTRIBTION CODE
A070

Administrative Topics Outline

Facility: Crystal River Unit 3		Date of Examination: 2-8-99
Exam Level: RO		Operating Test No. :
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A1	Plant Parameter Verification	JPM - Perform a heat balance, SP-312A, Daily Heat Balance Power Comparison//015A1.01//3.5
	Fuel Handling	Question 1: Given the count rates from the two (2) source range instruments during refueling, what actions, if any, should be taken?//2.2.30//3.5
		Question 2: Given conditions which includes Auxiliary Building fan operation and Radiation Monitor operability, what actions, if any, should be taken?//2.2.30//3.5
A2	Surveillance Testing	JPM – Perform the pump seal data sheet in SP-300, Operating Daily Surveillance Log//003A4.04//3.1
A3	Radiation Hazards (Surveys)	Question 1: Using a survey map, what are the existing conditions at a particular location in the Auxiliary Building?//2.3.2//2.5
		Question 2: Given conditions in a radiation control area, what is the proper posting?//2.3.1//2.6
A4	Emergency Dose Assessment	JPM – Perform and EM-204A, Off-Site Dose Assessments during Radiological Emergencies Initial Assessment Method//2.4.39//3.3

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM A1A/ADMINISTRATIVE

Perform a Daily Heat Balance Power Comparison, SP-312A

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Perform a Daily Heat Balance Power Comparison, SP-312A.

Alternate Path:
N/A

Facility JPM #:
Requal JPM

K/ARating(s)/Task Number/AO, RO, SRO:
015A1.01//3.5/3.8//0150202003//RO, SRO

Task Standard:
Perform a Daily Heat Balance Power Comparison, SP-312A.

Preferred Evaluation Method:
Simulator_____ In-Plant _____

References:
SP-312A

Validation Time: 20 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

SP-312A

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is at full power.
SP-312A is being done to comply with the daily 0200 requirements.
The Tag Status Verification Sheet has been completed, all instruments are within their allowable calibration frequency.
The plant has been at steady state conditions for > 15 minutes.
The plant computer is operable.
There are no computer points on the deleted point summary.
Control Console NI power is as follows: NI-5 101; NI-6 100; NI-7 101; NI-8 100.

INITIATING CUES:

You are requested to perform Enclosure 1 of SP-312A (Group 59 is attached).

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of SP-312A.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	IF a heat balance point is found on the "Deleted Point Summary", THEN the point may be returned to scan to determine operability, OR NPTS or Reactor Engineering may be contacted to determine operability. N/A, see initial conditions.	_____ SAT _____UNSAT
STEP 3: STANDARD: COMMENTS:	Using Group 59 and initial condition information complete Enclosure 1. Operator records values on Enclosure 1 from Group 59 and information provided in initial conditions. END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is at full power.
SP-312A is being done to comply with the daily 0200 requirements.
The Tag Status Verification Sheet has been completed, all instruments are within their allowable calibration frequency.
The plant has been at steady state conditions for > 15 minutes.
The plant computer is operable.
There are no computer points on the deleted point summary.
Control Console NI power is as follows: NI-5 101; NI-6 100; NI-7 101; NI-8 100.

INITIATING CUES:

You are requested to perform Enclosure 1 of SP-312A (Group 59 is attached).

DAILY NI POWER TO HEAT BALANCE POWER COMPARISON

Performance of this enclosure to meet the daily requirement should be as close to 0200 hrs as is reasonably possible. If it is performed early, or delayed, by more than 2 hours the NSM/NSS should refer to the completion time recorded for the last prior performance to determine the allowable window.

A		B	C	COMPARISON
Heat Balance Power	Detector	NI Power	Control Console NI Power	Heat Balance (A) - NI Power (B) = (D)
99.87 % RTP	NI-5	100.88	101	99.87 - 100.88 = -1.01
Method Used (√):	NI-6	100.70	100	99.87 - 100.70 = -0.83
Group 59 √	NI-7	100.76	101	99.87 - 100.76 = -0.89
SP-312D _____	NI-8	100.76	100	99.87 - 100.76 = -0.89

1. IF (D) < 0.8% RTP, THEN (D) is acceptable.
2. IF 0.8% RTP ≤ (D) ≤ 2.0% RTP, THEN refer to Step 5.2.2.
3. IF (D) > 2.0% RTP, THEN refer to Step 5.2.1.

NI Power - Heat Balance

	(B) - (A) = (E)
NI-5	100.88 - 99.87 = 1.01
NI-6	100.70 - 99.87 = 0.83
NI-7	100.76 - 99.87 = 0.89
NI-8	100.76 - 99.87 = 0.89

IF (E) > 2.0% RTP, THEN refer to Step 5.2.3.

Comparison (Control Console) NI Power - NI Power

(C) - (B) = (F)
101 - 100.88 = 0.12
100 - 100.70 = -0.7
101 - 100.76 = 0.24
100 - 100.76 = -0.76

IF |(F)| > 5.0% RTP, THEN refer to Step 5.2.4.

(Control Console) NI Power - Heat Balance

(C) - (A) = (G)
101 - 99.87 = 1.13
100 - 99.87 = 0.13
101 - 99.87 = 1.13
100 - 99.87 = 0.13

IF |(G)| > 5.0% RTP, THEN refer to Step 5.2.5.

Computer groups 59 and 7 attached? (Yes) No (circle one)

Performed By: _____ Date: 10-29-98 Time: 0221

Verified By: _____ Date: 10-29-98 Time: 0240

*

98 corr 10-29-98

10/29/~~97~~ GROUP 59 REACTOR CORE PARAMETERS 2:18:00 AM

CORE POWER IMBALANCE = TOP - BOTTOM , % FP

	INCORE	NI-5	NI-6	NI-7	NI-8
NI POWER, %	NA	100.88	100.70	100.76	100.76
IMBALANCE, %FP	-4.96	-5.71	-3.51	-4.85	-4.85

CALC IMBALANCE LIMITS NEG = -18.05 POS = 15.26

CORE POWER TILT = ((QUAD POW/AVG QUAD POW)-1)*100 = %

	WX QUAD	XY QUAD	YZ QUAD	ZW QUAD
INCORE SYM DET, % =	-.56	-.22	.71	.07
OUTCORE NI DET, % =	.11	-.02	-.08	-.02

CALC TILT LIMITS, % = 4.49 STEADY STATE, 4.49 TRANSIENTS

CONTROL ROD WITHDRAWAL INDEXS, %WD = 291.38 GPS 5,6,7
CALC GP 5,6,7 INDEX LIMITS, %WD MIN = 266.41 MAX = 305.00
%WD = 30.96 GP 8 (APSR)
CALC GP 8 INDEX LIMIT, %WD MIN = -1.00 MAX =105.00

TOP HALF CORE POWER, MWT = 1207.7 POWUP BOT HALF = 1333.9 POWLW

SHIFT AVG CORE POWER (ANY POWER) = 2538.9 MWT
CORE POWER ALPHA CONSTANTS 1= 1.000 2= .000 3= .000 4= .000
NUMBER OF RC PUMPS RUNNING = 4
REFERENCE CORE POWER (QCORE) = 2540.8 MWT = 99.87 % FP (2 MIN)

* Computer data entered incorrectly —
C McKean
10-29-98

A1 (RO) QUESTION #1

Question: While inserting a fuel assembly into the core the count rates from the two (2) source range instruments changed as follows:

Instrument	Base Count Rate	Current Count Rate
#1	17	21
#2	32	49

What actions, if any, should be taken?

Answer: Withdraw the fuel assembly in question; immediately cease all other core alterations; perform subcritical multiplication steps 4.5.7 through 4.5.9 of FP-203; and obtain a boron analysis of the Reactor Coolant.

CANDIDATE'S RESPONSE

K/A Rating:
2.2.30//3.5

References:
FP-203

A1 (RO) QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: While inserting a fuel assembly into the core the count rates from the two (2) source range instruments changed as follows:

Instrument	Base Count Rate	Current Count Rate
#1	17	21
#2	32	49

What actions, if any, should be taken?

A1 (RO) QUESTION #2

Question: During Refueling operations the following plant conditions exist:

RM-G13 is inoperable.
RM-G14 is inoperable.
RM-G16 is in High alarm.
The Purge is in progress.

What action, if any, should be taken to continue refueling?

Answer: Meet the requirements of RM-G13 and RM-G14 with continuous HP coverage and an alarming dosimeter stationed in the affected areas (Decontamination Pit Area and Auxiliary Building Fuel Storage Pool). Secure the Containment Purge System and verify AHV-1A, AHV-1B, AHV-1C and AHV-1D are closed.

CANDIDATE'S RESPONSE

K/A Rating:
2.2.30//3.5

References:
FP-203

A1 (RO) QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: During Refueling operations the following plant conditions exist:

RM-G13 is inoperable.
RM-G14 is inoperable.
RM-G16 is in High alarm.
The Purge is in progress.

What action, if any, should be taken to continue refueling?

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM A2R/ADMINISTRATIVE

Perform RC Pump Seal Data Sheet

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

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** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Perform RC Pump Seal Data Sheet.

Alternate Path:
N/A

Facility JPM #:
New

K/ARating(s)/Task Number/AO, RO, SRO:
003A4.04//3.1//1150202001//RO

Task Standard:
Perform RC Pump Seal Data Sheet, SP-300 Enclosure 2.

Preferred Evaluation Method:
Simulator_____ In-Plant _____

References:
SP-300

Validation Time: 20 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

SP-300

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

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INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is at 100% rated thermal power.
Attached information sheet.

INITIATING CUES:

You are requested to complete the RC Pump Seal Data Sheet.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of SP-300, Enclosure 2. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Using supplied information sheet, complete Enclosure 2, page 4 of 12. STANDARD: Operator uses information sheet to complete the RC Pump Seal Data Sheet. EXAINER'S CUE: Computer points X922, X923, X924 and X925 are not available; use calculated CBO (Controlled Bleed-off) flow figure. EXAMINER'S NOTE: Rounding may cause slight variations between operator and key. COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is at 100% rated thermal power.
Attached information sheet.

INITIATING CUES:

You are requested to complete the RC Pump Seal Data Sheet.

OPERATING DAILY SURVEILLANCE LOG

SPECIAL SURVEILLANCES ENCLOSURE
RC PUMP SEAL DATA SHEET

Date _____

Reactor Inlet Temperature (R730) 557 °F

RC System Pressure (R724) 2160 psig

Reactor Power (N766) 100 %

MUT Temperature 108 °F

RC PUMP	A	B	C	D	COMMENTS
RC RUNNING (✓)	✓	✓	✓	✓	
3rd Stage Seal Pressure	706	718	731	712	
2nd Stage Seal Pressure	1418	1431	1425	1450	
Seal Leak-Off Flow					
End Count/Time: 1200	110	92	86	120	
Beginning Count/Time: 0800	0	0	0	0	
Difference					
O Time (4 hrs., nominal; convert time to minutes)					
Conversion Factor	.25	.24	.24	.25	
Leakage = Conversion Factor x Difference / O Time in Min. - .05 (gpm)					
Seal Injection Flow	9.5	9.5	9.7	9.5	
Control Bleed-off Flow Rate* (X922, X923, X924, X925)					
Component Cooling Water Temp.	76	X	X	X	
3rd Stage Seal Temperature (X383, X386, X389, X392)	116	115	116	117	

*Sum of controlled leakage ≤ 12 gpm.
(Calculated CBO Flow figure may be used as backup)

Data Taken By _____

COMMENTS:

OPERATING DAILY SURVEILLANCE LOG

SPECIAL SURVEILLANCES ENCLOSURE
RC PUMP SEAL DATA SHEET

Date _____

Reactor Inlet Temperature (R730) 557 °F

RC System Pressure (R724) 2160 psig

Reactor Power (N766) 100 %

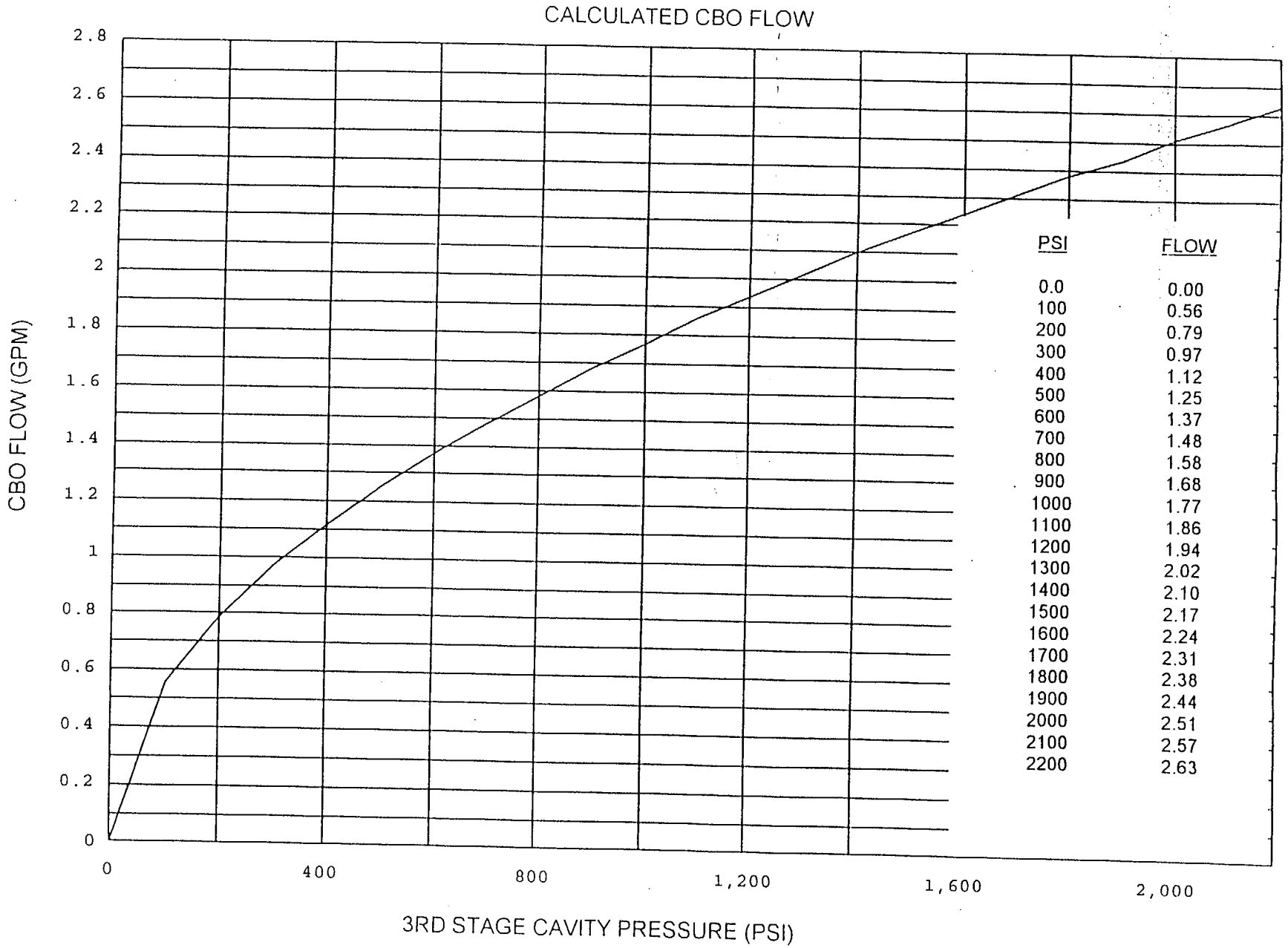
MUT Temperature 108 °F

RC PUMP	A	B	C	D	COMMENTS
RC RUNNING (✓)	✓	✓	✓	✓	
3rd Stage Seal Pressure	706	718	731	712	
2nd Stage Seal Pressure	1418	1431	1425	1450	
Seal Leak-Off Flow					
End Count/Time: 1200	110	92	86	120	
Beginning Count/Time: 0800	0	0	0	0	
Difference	110	92	86	120	
O Time (4 hrs., nominal; convert time to minutes)	240	240	240	240	
Conversion Factor	.25	.24	.24	.25	
Leakage = Conversion Factor x Difference / O Time in Min. - .05 (gpm)	0.06	0.04	0.04	0.08	
Seal Injection Flow	9.5	9.5	9.7	9.5	
Control Bleed-off Flow Rate* (X922, X923, X924, X925)	1.5	1.5	1.5	1.5	
Component Cooling Water Temp.	76	X	X	X	
3rd Stage Seal Temperature (X383, X386, X389, X392)	116	115	116	117	

*Sum of controlled leakage ≤ 12 gpm.
(Calculated CBO Flow figure may be used as backup)

Data Taken By _____

COMMENTS:



PSI	FLOW
0.0	0.00
100	0.56
200	0.79
300	0.97
400	1.12
500	1.25
600	1.37
700	1.48
800	1.58
900	1.68
1000	1.77
1100	1.86
1200	1.94
1300	2.02
1400	2.10
1500	2.17
1600	2.24
1700	2.31
1800	2.38
1900	2.44
2000	2.51
2100	2.57
2200	2.63

A3 (RO) QUESTION #1

Question: Using a survey map, what are the existing conditions at the Block Orifice?

Answer: Outside the barrier from the block orifice the dose is 25mR/hr; the contact reading is 140 mR/hr.

CANDIDATE'S RESPONSE

K/A Rating:
2.3.2//2.5

References:
Survey map

A3 (RO) QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Using a survey map, what are the existing conditions at the Block Orifice?

A3 (RO) QUESTION #2

Question: Using survey map, #98-10-183, what sample points, if any, constitute a High Radiation Area?

Answer: Sample point 30.

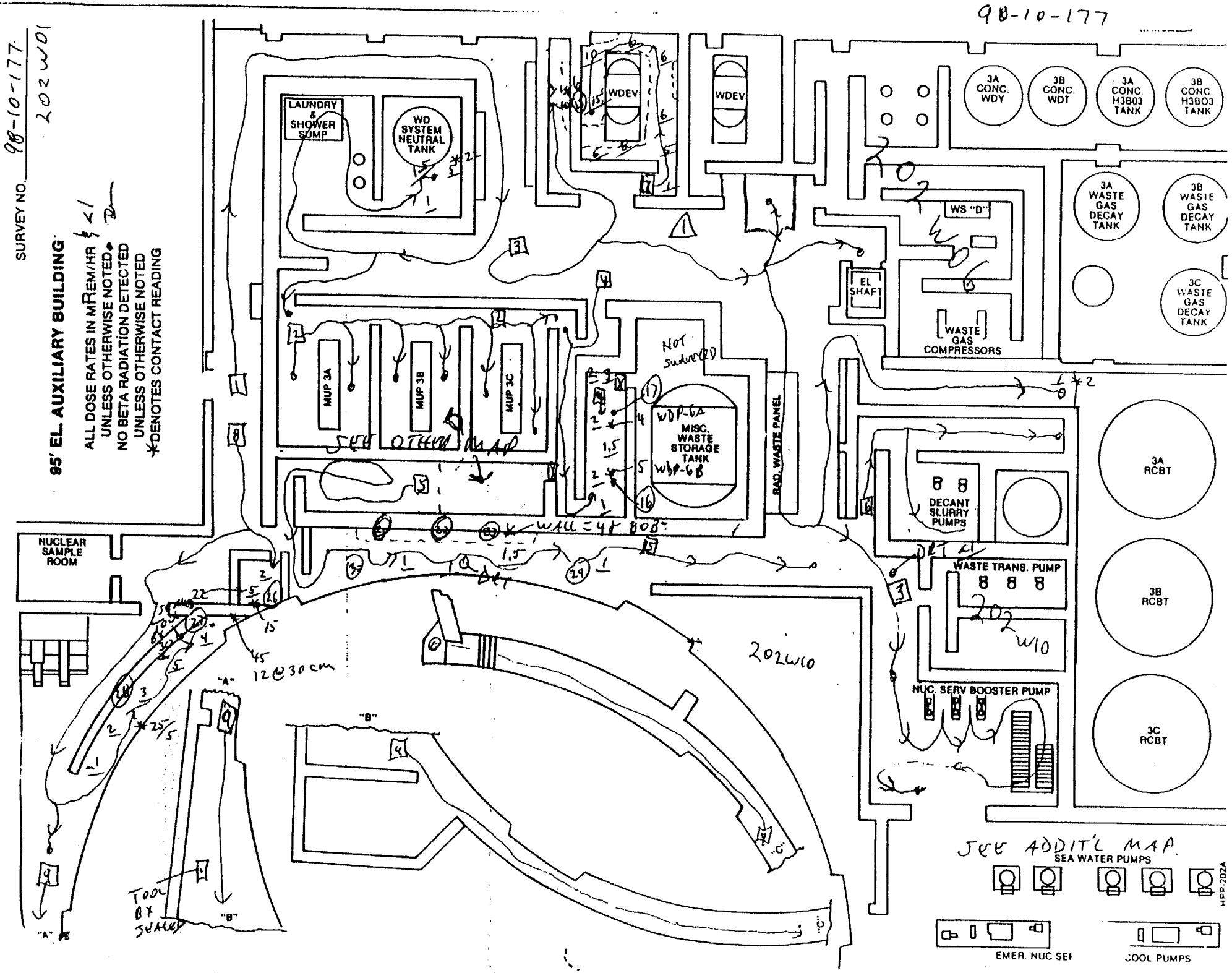
CANDIDATE'S RESPONSE

K/A Rating:
2.3.2//2.5

References:
Survey map

A3 (RO) QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Using survey map, #98-10-183, what sample points, if any, constitute a High Radiation Area?

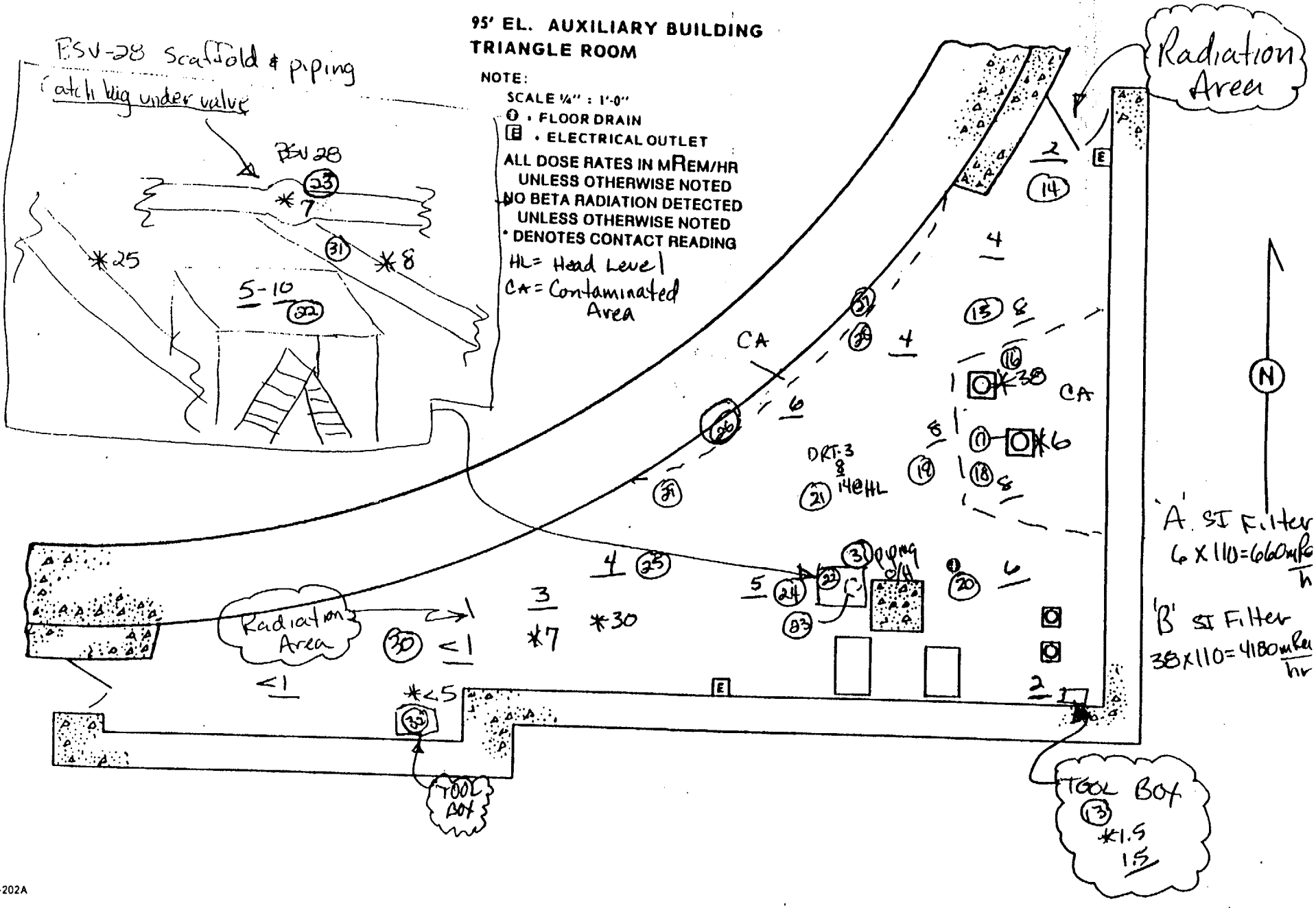

98-10-177
SURVEY NO. 98-10-177
202 W01
95' EL. AUXILIARY BUILDING
ALL DOSE RATES IN MREM/HR
UNLESS OTHERWISE NOTED
NO BETA RADIATION DETECTED
UNLESS OTHERWISE NOTED
*DENOTES CONTACT READING
LAUNDRY & SHOWER SUMP
WD SYSTEM NEUTRAL TANK
WDEV
WDEV
3A CONC. WDT
3B CONC. WDT
3A CONC. H3BO3 TANK
3B CONC. H3BO3 TANK
3A WASTE GAS DECAY TANK
3B WASTE GAS DECAY TANK
3C WASTE GAS DECAY TANK
WS "D"
EL SHAFT
WASTE GAS COMPRESSORS
MUP 3A
MUP 3B
MUP 3C
SEE OTHER MAP
NOT SHOWN
WDP-6A
MISC. WASTE STORAGE TANK
WDP-6B
RAD. WASTE PANEL
WALL = 48" BOP
DECANT SLURRY PUMPS
3A RCBT
3B RCBT
3C RCBT
NUCLEAR SAMPLE ROOM
WASTE TRANS. PUMP
202 W10
202W10
NUC. SERV BOOSTER PUMP
12@30cm
"A"
"B"
"C"
TOOL BOX SUMP
SEE ADDIT'L MAP
SEA WATER PUMPS
EMER. NUC SER
COOL PUMPS
HPP-202A

Florida Power
CORPORATION

SURVEY NO. 98-10-0172

95' EL. AUXILIARY BUILDING
TRIANGLE ROOM

NOTE:
SCALE ¼" = 1'-0"
F • FLOOR DRAIN
E • ELECTRICAL OUTLET
ALL DOSE RATES IN mREM/HR UNLESS OTHERWISE NOTED
NO BETA RADIATION DETECTED UNLESS OTHERWISE NOTED
* DENOTES CONTACT READING
HL= Head Level
CA= Contaminated Area



3/88 HPP-202A

SURVEY NO. 98-10-183
202 W02

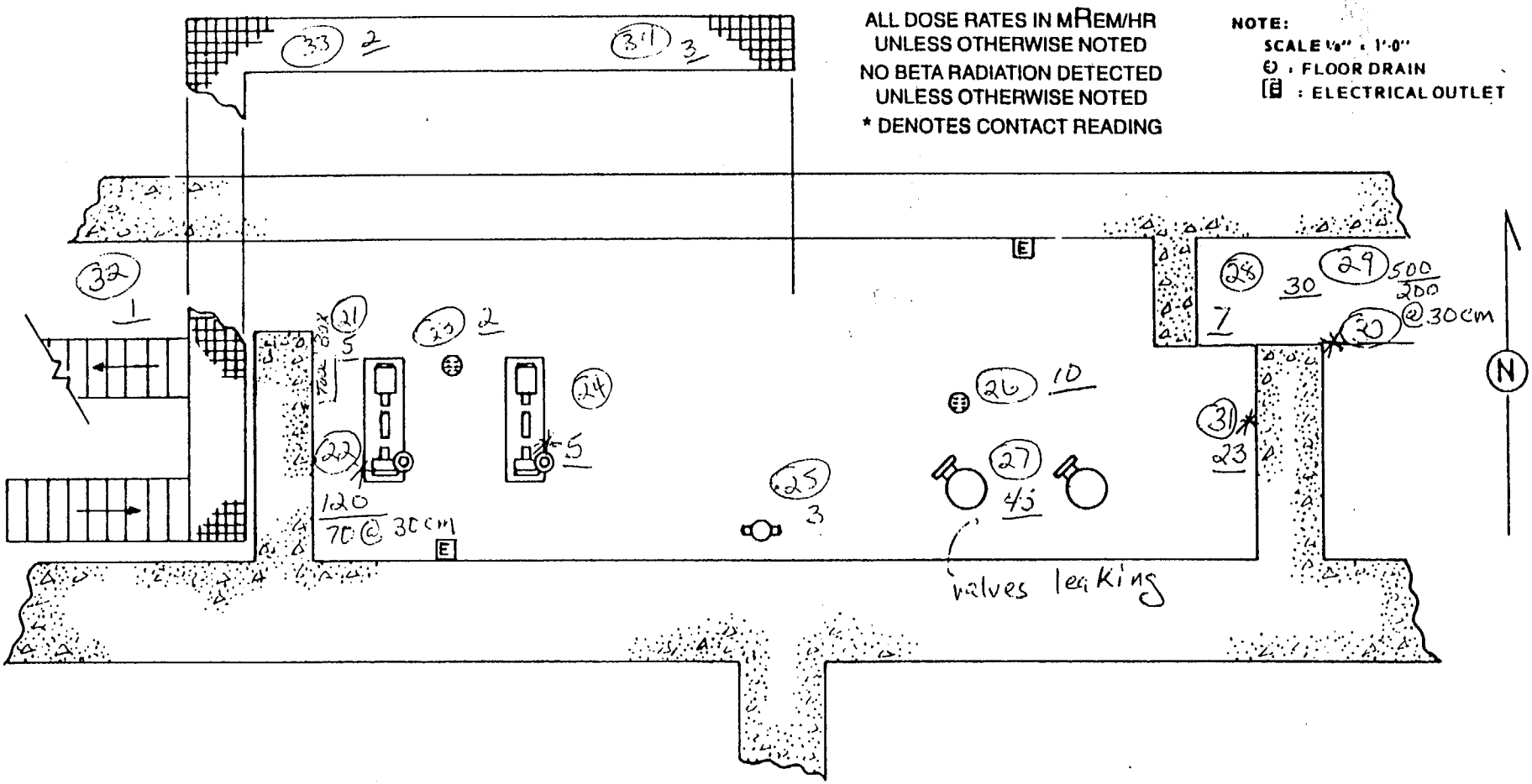
119' EL. AUXILIARY BUILDING
SPENT FUEL COOLANT PUMPS

NOTE:
SCALE 1/8" = 1'-0"
FD = FLOOR DRAIN
E = ELECTRICAL OUTLET

PERSONNEL HATCH

ALL DOSE RATES IN MREM/HR
UNLESS OTHERWISE NOTED
NO BETA RADIATION DETECTED
UNLESS OTHERWISE NOTED
* DENOTES CONTACT READING

NOTE:
SCALE 1/8" = 1'-0"
FD = FLOOR DRAIN
E = ELECTRICAL OUTLET

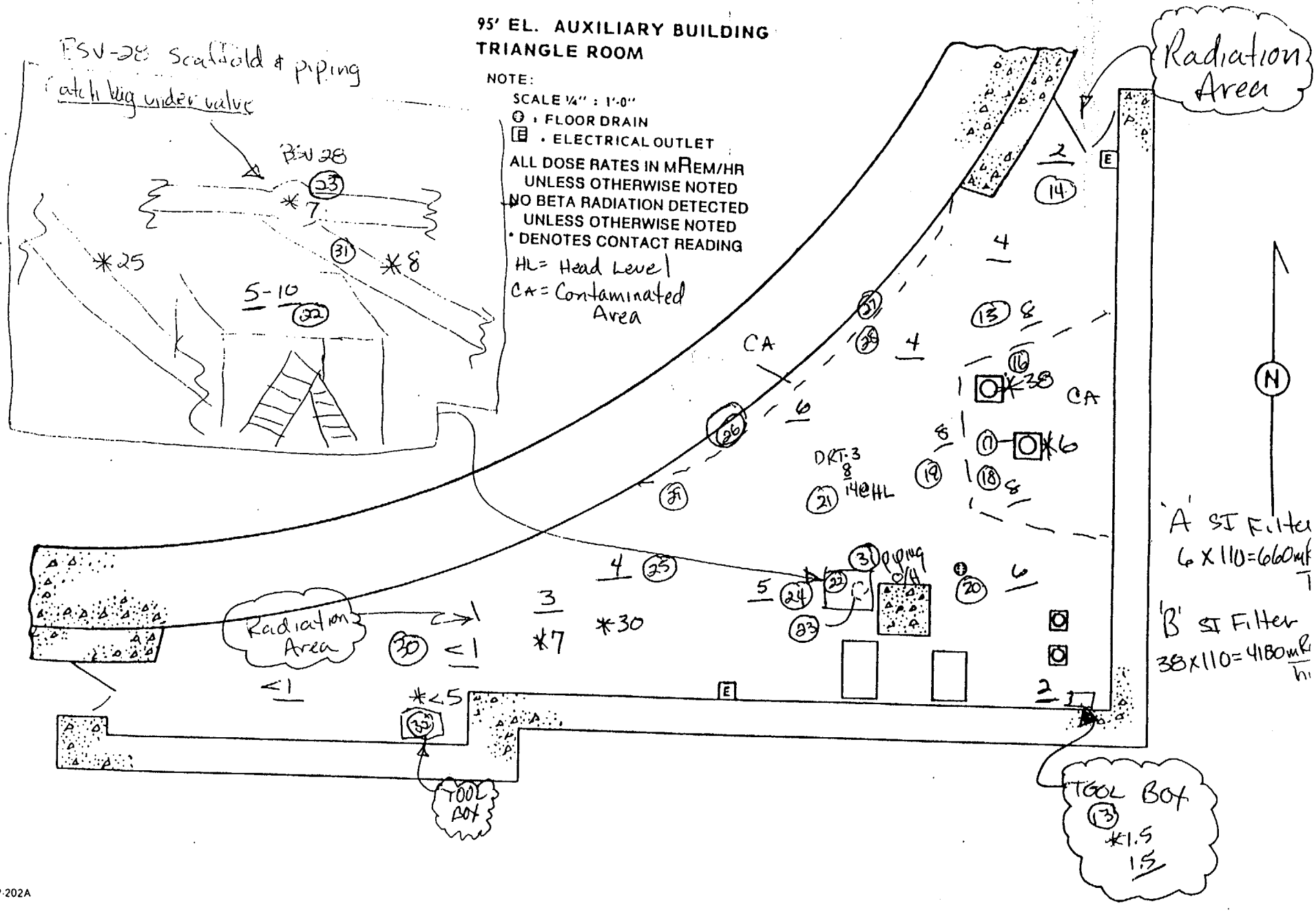


Florida Power
CORPORATION

SURVEY NO. 98-10-0173

95' EL. AUXILIARY BUILDING
TRIANGLE ROOM

NOTE:
SCALE ¼" : 1'-0"
⊙ = FLOOR DRAIN
E = ELECTRICAL OUTLET
ALL DOSE RATES IN mREM/HR UNLESS OTHERWISE NOTED
NO BETA RADIATION DETECTED UNLESS OTHERWISE NOTED
* DENOTES CONTACT READING
HL = Head Level
CA = Contaminated Area



Florida Power
CORPORATION

SURVEY NO. 98-10-0172

119' EL. AUXILIARY BUILDING

RMA-6 AREA, BLOCK ORIFICE ROOM, DEBORATING DEMIN. VALVE ALLEY AND EVAP. COND. DEMIN. AND CATION DEMIN. VALVE ALLEY.

ALL DOSE RATES IN MREM/HR UNLESS OTHERWISE NOTED

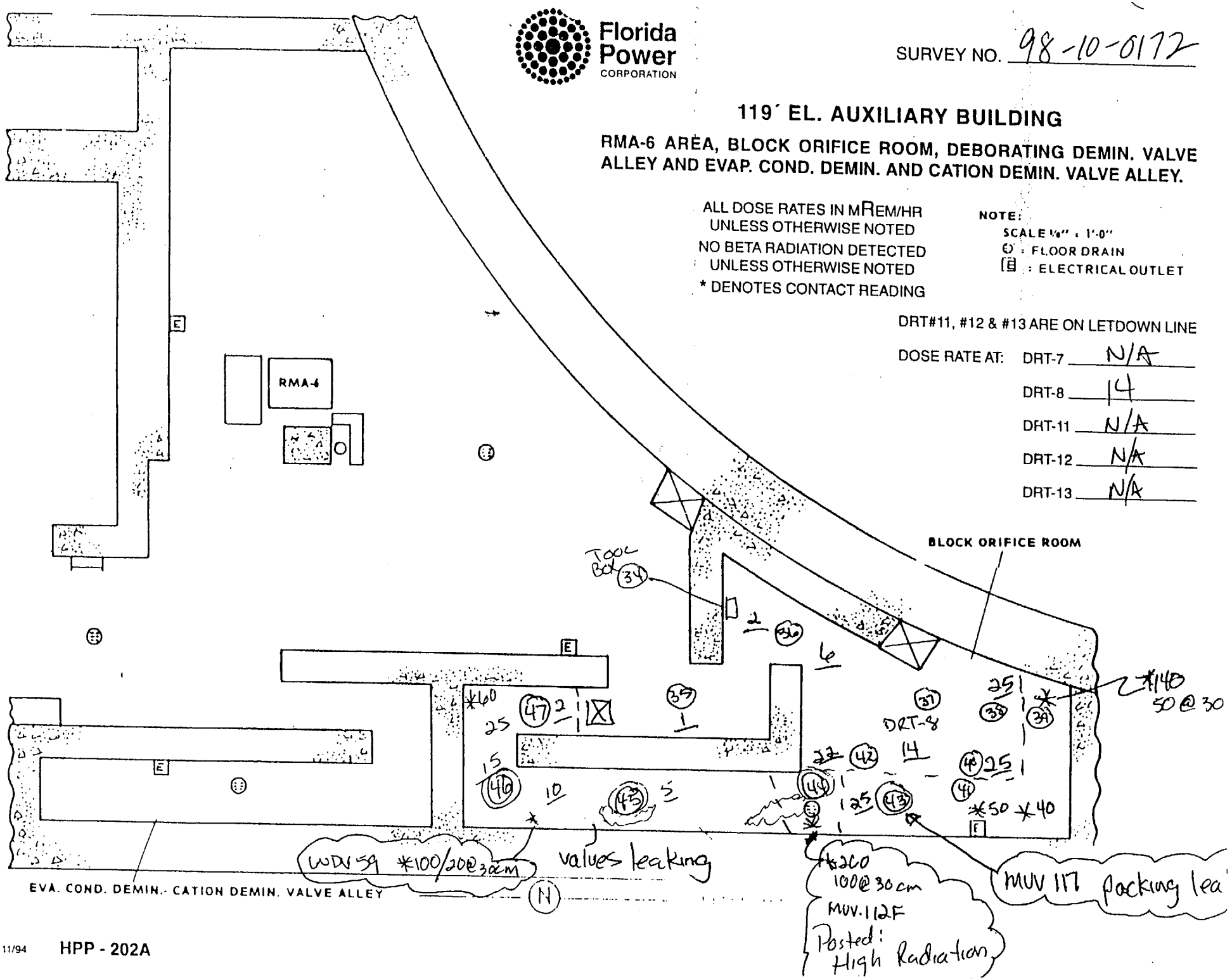
NO BETA RADIATION DETECTED UNLESS OTHERWISE NOTED

* DENOTES CONTACT READING

NOTE:
SCALE 1/8" = 1'-0"
FD : FLOOR DRAIN
E : ELECTRICAL OUTLET

DRT#11, #12 & #13 ARE ON LETDOWN LINE

DOSE RATE AT: DRT-7 N/A
DRT-8 14
DRT-11 N/A
DRT-12 N/A
DRT-13 N/A



Form Rev. 11/94 HPP - 202A

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM A4R/ADMINISTRATIVE

Complete an Off-Site Dose Assessment During Radiological Emergencies (Control Room Method)

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Complete an Off-Site Dose Assessment during Radiological Emergencies (Control Room Method).

Alternate Path:
N/A

Facility JPM #:
122 Modified

K/ARating(s)/Task Number/AO, RO, SRO:
2.4.39//3.3//1150402007//RO, SRO

Task Standard:
Complete an Off-Site Dose Assessment during Radiological Emergencies (Control Room Method), EM-204A.

Preferred Evaluation Method:
Simulator_____ In-Plant _____

References:
EM-204A

Validation Time: 15 min. Time Critical: YES

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

EM-204A

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
A LOCA is in progress.

INITIATING CUES:

You are requested to perform EM-204A using the provided information sheet.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of EM-204A.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	Using supplied information sheet, complete Enclosure 1. Operator uses information sheet to complete the EM-204A Enclosure 1. END of TASK	_____SAT _____UNSAT

STOP TIME: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
A LOCA is in progress.

INITIATING CUES:

You are requested to perform EM-204A using the provided information sheet.

DATA SHEET

STEP #	RAD AND MET MONITOR DATA			STATE NOT. FORM
4.1.1	RM-A2 LOW RANGE GAS CHANNEL	200 K	CPM	
or 4.1.2	RM-A2 MID-RANGE GAS CHANNEL		mR/HR	
4.2.1	ΔTEMPERATURE		° F *	
or 4.2.2	SIGMA-THETA (33')	24.3	DEGREES **	
4.2.3	WIND FROM (33')	233	DEGREES *	11.A
4.2.4	WIND SPEED (33')	4.1	M/SEC	11.C mph = m/sec x 2.24
4.2.5	STABILITY CLASS			11.D
	* 15 minute average from chart recorder on meteorological panel ** Meter displays a rolling 15 minute average			

DATA SHEET

STEP#	SITE BOUNDARY DOSE INFORMATION			STATE NOT. FORM
4.3.1 or 4.3.2	DDE mR/HR	THYROID mR/HR	TEDE mR/HR	
	2.1 E-01	6.3 E-01	2.3 E-01	
4.4.1	DOSE RATE CORRECTED FOR WIND SPEED = (mR/HR ÷ M/SEC)			10
	DDE mR/HR	THYROID mR/HR	TEDE mR/HR	
	0.05	0.15	0.06	
		Enter on State Form	Enter on State Form	
4.5.1	PROJECTED RELEASE DURATION 1 HOURS. (If duration can't be estimated, assume 1 hour.)			7.C,D
4.5.2	DOSE = (CORRECTED DOSE RATE X DURATION HOURS)			
	DDE mR	THYROID mR	TEDE mR	
	0.05	0.15	0.06	
	NOBLE GAS CI/SEC	IODINE CI/SEC		
4.6.1	2.1 E-01	4.3 E-05		8.A,B
4.6.2	AFFECTED SECTORS D, E, F, _____ (three minimum)			11.B
4.7.1	_____ Performed by		Date/Time	
4.7.2	_____ Emergency Coordinator		Date/Time	

Administrative Topics Outline

Facility: Crystal River Unit 3		Date of Examination: 2-8-99
Exam Level: SRO		Operating Test No. :
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A1	Plant Parameter Verification	JPM - Perform a heat balance, SP-312A Daily Heat Balance Power Comparison//015A1.01//3.8
	Key Control	JPM - A new valve has been installed; using CP-123, Restrained Components and Key Control, and flow diagrams, determine if the new valve meets the criteria for being locked/sealed//2.1.30//3.4
A2	Surveillance Testing	JPM – Review a completed SP-320, Operability of Boron Injection Sources and Pumps, for accuracy for transmittal //2.2.12//3.4
A3	Reportable Limits	JPM - Given certain radiation conditions use CP-151, External Reporting Requirements, and NOD-3, Reporting Requirement Program, to determine notifications //2.3.1//3.0
A4	Emergency PAR	JPM – Determine Emergency Action Level and Protective Action Recommendation for a given set of conditions //2.4.41//4.1 and 2.4.44//4.0

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM A1A/ADMINISTRATIVE

Perform a Daily Heat Balance Power Comparison, SP-312A

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Barbara Walker Date/ 12-17-98

VALIDATED BY: * D. Johnson Date/ 12-17-98

APPROVED BY: R. Wadsworth Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Perform a Daily Heat Balance Power Comparison, SP-312A.

Alternate Path:
N/A

Facility JPM #:
Requal JPM

K/ARating(s)/Task Number/AO, RO, SRO:
015A1.01//3.5/3.8//0150202003//RO, SRO

Task Standard:
Perform a Daily Heat Balance Power Comparison, SP-312A.

Preferred Evaluation Method:
Simulator_____ In-Plant _____

References:
SP-312A

Validation Time: 20 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

SP-312A

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is at full power.
SP-312A is being done to comply with the daily 0200 requirements.
The Tag Status Verification Sheet has been completed, all instruments are within their allowable calibration frequency.
The plant has been at steady state conditions for > 15 minutes.
The plant computer is operable.
There are no computer points on the deleted point summary.
Control Console NI power is as follows: NI-5 101; NI-6 100; NI-7 101; NI-8 100.

INITIATING CUES:

You are requested to perform Enclosure 1 of SP-312A (Group 59 is attached).

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of SP-312A.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	IF a heat balance point is found on the "Deleted Point Summary", THEN the point may be returned to scan to determine operability, OR NPTS or Reactor Engineering may be contacted to determine operability. N/A, see initial conditions.	_____ SAT _____UNSAT
STEP 3: STANDARD: COMMENTS:	Using Group 59 and initial condition information complete Enclosure 1. Operator records values on Enclosure 1 from Group 59 and information provided in initial conditions. END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is at full power.
SP-312A is being done to comply with the daily 0200 requirements.
The Tag Status Verification Sheet has been completed, all instruments are within their allowable calibration frequency.
The plant has been at steady state conditions for > 15 minutes.
The plant computer is operable.
There are no computer points on the deleted point summary.
Control Console NI power is as follows: NI-5 101; NI-6 100; NI-7 101; NI-8 100.

INITIATING CUES:

You are requested to perform Enclosure 1 of SP-312A (Group 59 is attached).

DAILY NI POWER TO HEAT BALANCE POWER COMPARISON

Performance of this enclosure to meet the daily requirement should be as close to 0200 hrs as is reasonably possible. If it is performed early, or delayed, by more than 2 hours the NSM/NSS should refer to the completion time recorded for the last prior performance to determine the allowable window.

A		B	C	COMPARISON
Heat Balance Power	Detector	NI Power	Control Console NI Power	Heat Balance (A) - NI Power (B) = (D)
99.87 % RTP	NI-5	100.88	101	99.87 - 100.88 = -1.01
Method Used (√):	NI-6	100.70	100	99.87 - 100.70 = -0.83
Group 59 ✓	NI-7	100.76	101	99.87 - 100.76 = -0.89
SP-312D _____	NI-8	100.76	100	99.87 - 100.76 = -0.89

1. IF (D) < 0.8% RTP, THEN (D) is acceptable.
2. IF 0.8% RTP ≤ (D) ≤ 2.0% RTP, THEN refer to Step 5.2.2.
3. IF (D) > 2.0% RTP, THEN refer to Step 5.2.1.

NI Power - Heat Balance

	(B)	-	(A)	=	(E)
NI-5	100.88	-	99.87	=	1.01
NI-6	100.70	-	99.87	=	0.83
NI-7	100.76	-	99.87	=	0.89
NI-8	100.76	-	99.87	=	0.89

IF (E) > 2.0% RTP, THEN refer to Step 5.2.3.

Comparison (Control Console) NI Power - NI Power

(C)	-	(B)	=	(F)
101	-	100.88	=	0.12
100	-	100.70	=	-0.7
101	-	100.76	=	0.24
100	-	100.76	=	-0.76

IF |(F)| > 5.0% RTP, THEN refer to Step 5.2.4.

(Control Console) NI Power - Heat Balance

(C)	-	(A)	=	(G)
101	-	99.87	=	1.13
100	-	99.87	=	0.13
101	-	99.87	=	1.13
100	-	99.87	=	0.13

IF |(G)| > 5.0% RTP, THEN refer to Step 5.2.5.

Computer groups 59 and 7 attached? (Yes) No (circle one)

Performed By: _____ Date: 10-29-98 Time: 0221

Verified By: _____ Date: 10-29-98 Time: 0240

*

98 corr 10-29-98

10/29/97 GROUP 59 REACTOR CORE PARAMETERS 2:18:00 AM

CORE POWER IMBALANCE = TOP - BOTTOM , % FP

	INCORE	NI-5	NI-6	NI-7	NI-8
NI POWER, %	NA	100.88	100.70	100.76	100.76
IMBALANCE,%FP	-4.96	-5.71	-3.51	-4.85	-4.85

CALC IMBALANCE LIMITS NEG = -18.05 POS = 15.26

CORE POWER TILT = ((QUAD POW/AVG QUAD POW)-1)*100 = %

	WX QUAD	XY QUAD	YZ QUAD	ZW QUAD
INCORE SYM DET, % =	-.56	-.22	.71	.07
OUTCORE NI DET, % =	.11	-.02	-.08	-.02

CALC TILT LIMITS, % = 4.49 STEADY STATE, 4.49 TRANSIENTS

CONTROL ROD WITHDRAWAL INDEXS, %WD = 291.38 GPS 5,6,7

CALC GP 5,6,7 INDEX LIMITS, %WD MIN = 266.41 MAX = 305.00

%WD = 30.96 GP 8 (APSR)

CALC GP 8 INDEX LIMIT, %WD MIN = -1.00 MAX =105.00

TOP HALF CORE POWER, MWT = 1207.7 POWUP BOT HALF = 1333.9 POWLW

SHIFT AVG CORE POWER (ANY POWER) = 2538.9 MWT

CORE POWER ALPHA CONSTANTS 1= 1.000 2= .000 3= .000 4= .000

NUMBER OF RC PUMPS RUNNING = 4

REFERENCE CORE POWER (QCORE) = 2540.8 MWT = 99.87 % FP (2 MIN)

* Computer data entered in correctly—

C McKean
10-29-98

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM A1BS/ADMINISTRATIVE

Use CP-123, Determine if a New Valve Meets Criteria to be Locked/Sealed

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Selkin Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Using CP-123, determine if a New Valve Meets Criteria to be Locked/Sealed.

Alternate Path:
N/A

Facility JPM #:
New

K/ARating(s)/Task Number/AO, RO, SRO:
2.1.30//3.4//1150101010//SRO

Task Standard:
Using CP-123, determine if a New Valve Meets Criteria to be Locked/Sealed.

Preferred Evaluation Method:
Simulator_____ In-Plant _____

References:
CP-123

Validation Time: 8 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

CP-123

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are a Senior Reactor Operator.
A MAR is installing a recirculation line around EFP-4 (see provided print) and will provide autostart capability for EFP-4.
There are no commitments associated with this MAR.
Management has made no decision concerning the new valves' restraining requirements.

INITIATING CUES:

You are requested to determine if the new valves installed in this MAR meet the criteria for being locked/sealed using CP-123.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of CP-123.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	Using CP-123, determine if new valves meet lock/seal criteria. Operator looks at print and reviews CP-123. Operator states EFV-1111 meets the criteria and EFV-1112 does NOT meet the criteria. END of TASK	_____SAT _____UNSAT

STOP TIME: _____

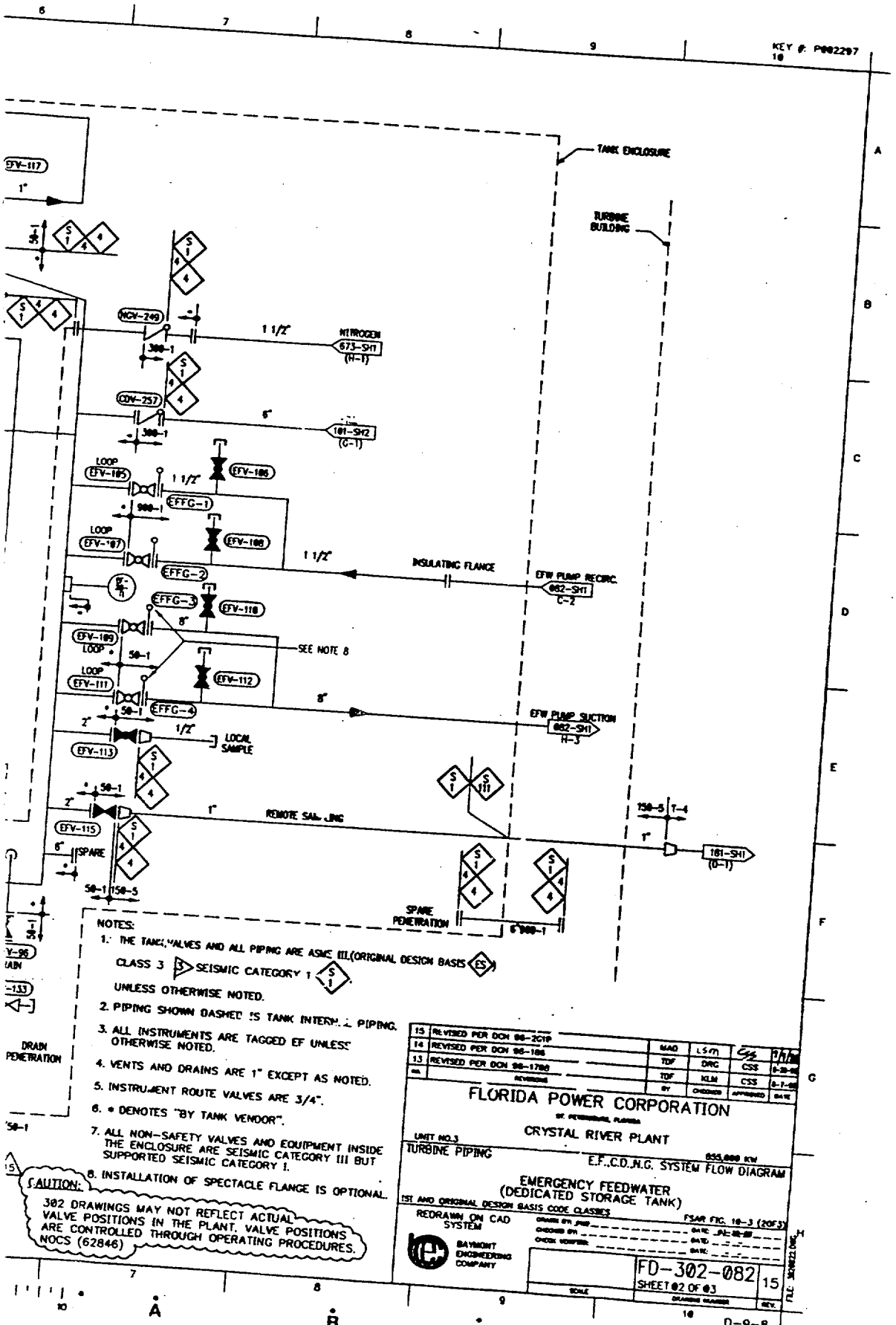
CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

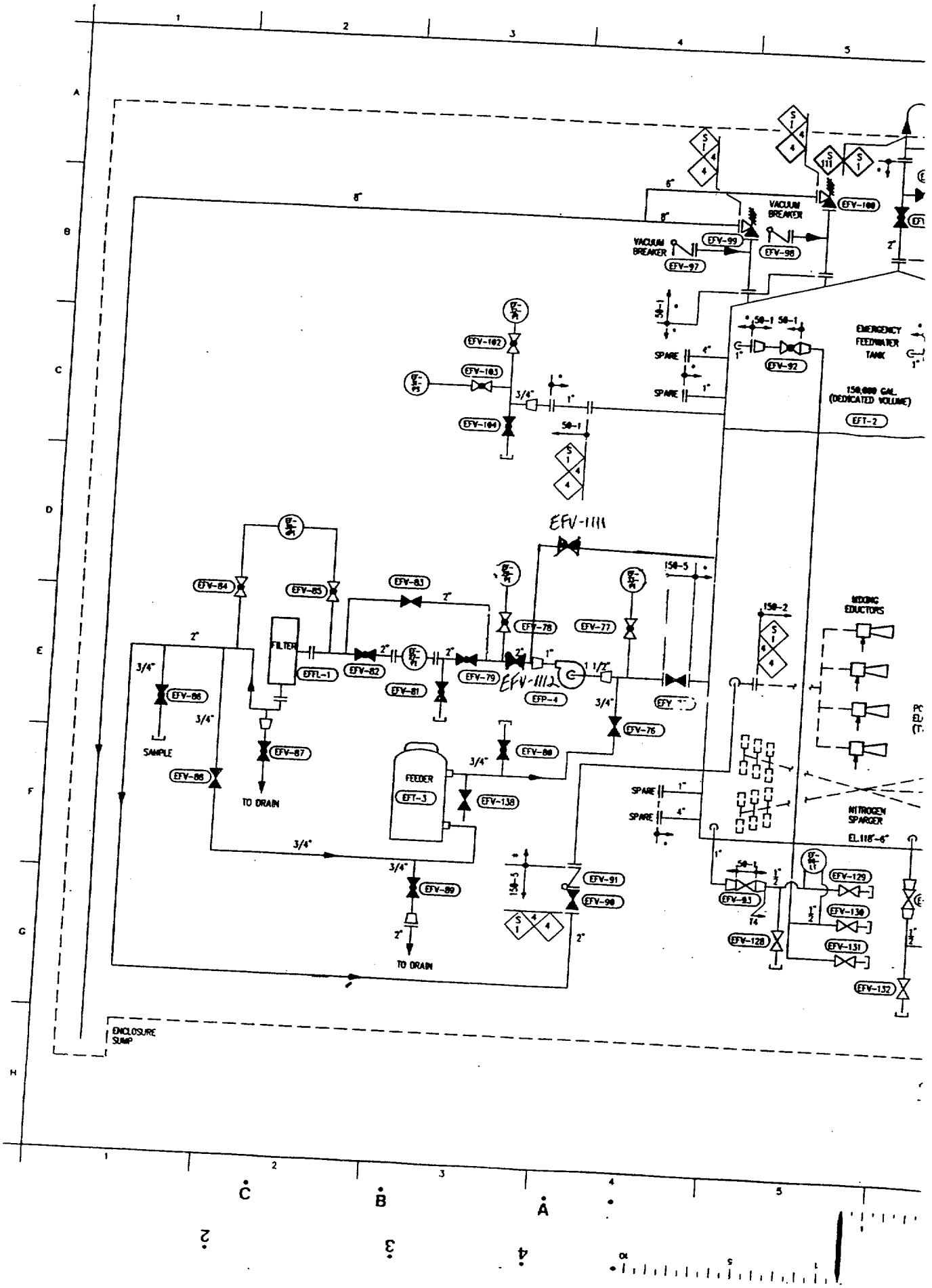
INITIAL CONDITIONS:

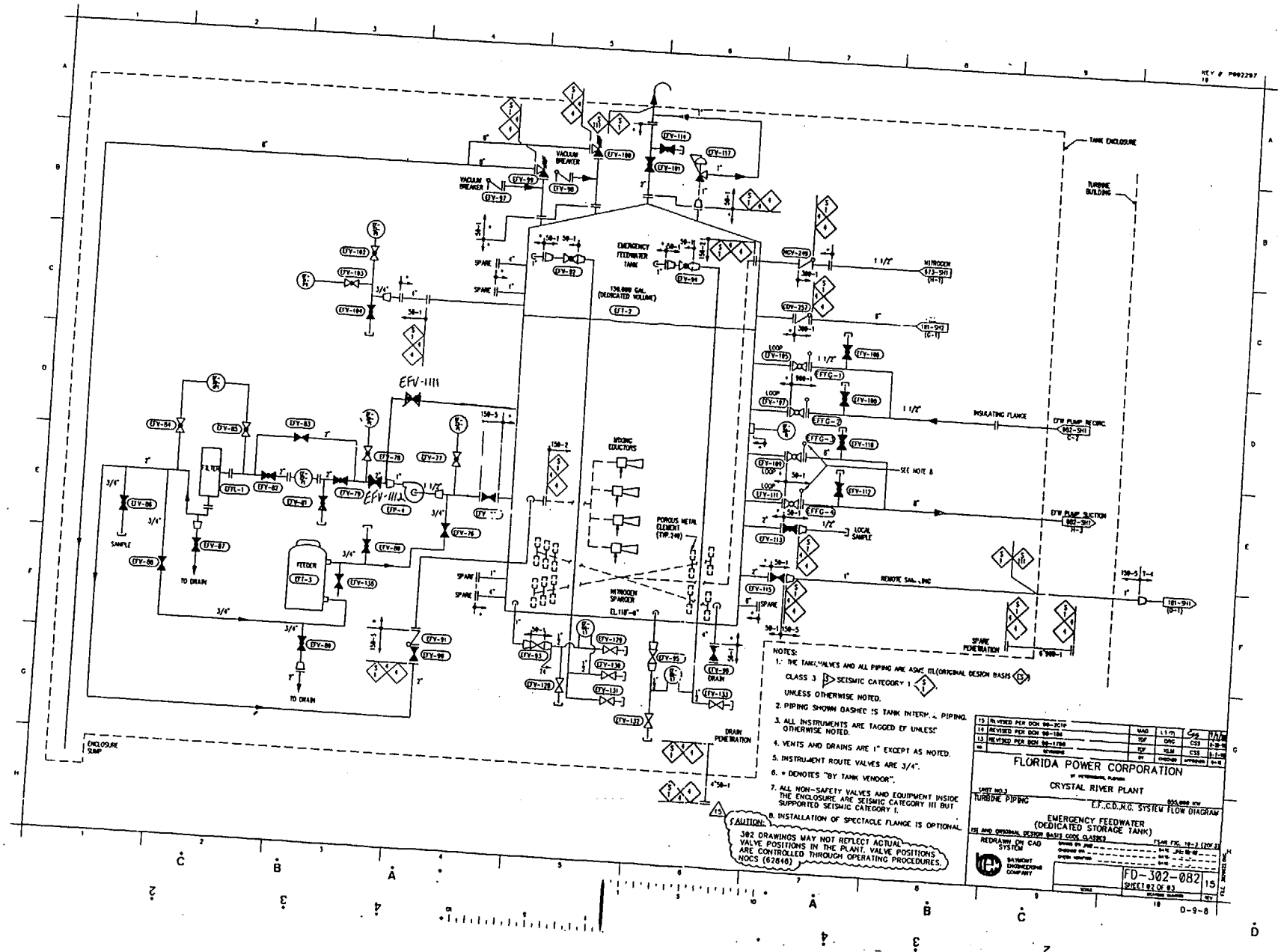
You are a Senior Reactor Operator.
A MAR is installing a recirculation line around EFP-4 (see provided print) and will provide autostart capability for EFP-4.
There are no commitments associated with this MAR.
Management has made no decision concerning the new valves' restraining requirements.

INITIATING CUES:

You are requested to determine if the new valves installed in this MAR meet the criteria for being locked/sealed using CP-123.


KEY #: P002297
TANK ENCLOSURE
TURBINE BUILDING
NCV-249
1 1/2"
NITROGEN
673-SH1
(H-1)
CDV-257
6"
181-SH2
(C-1)
LOOP
EFV-105
EFV-106
EFFG-1
EFV-107
EFV-108
EFFG-2
INSULATING FLANGE
EFW PUMP RECIRC.
852-SH1
C-2
EFFG-3
EFV-110
8"
EFV-109
SEE NOTE 8
EFV-111
EFV-112
EFFG-4
EFW PUMP SUCTION
852-SH1
H-3
2"
1/2"
LOCAL SAMPLE
EFV-113
1"
REMOTE SAMPLING
EFV-115
6"
SPARE
SPARE PENETRATION
DRAIN PENETRATION
181-SH1
(D-1)
NOTES:
1. THE TANK, VALVES AND ALL PIPING ARE ASME III (ORIGINAL DESIGN BASIS ES) CLASS 3 SEISMIC CATEGORY 1 UNLESS OTHERWISE NOTED.
2. PIPING SHOWN DASHED IS TANK INTERNAL PIPING.
3. ALL INSTRUMENTS ARE TAGGED EF UNLESS OTHERWISE NOTED.
4. VENTS AND DRAINS ARE 1" EXCEPT AS NOTED.
5. INSTRUMENT ROUTE VALVES ARE 3/4".
6. * DENOTES "BY TANK VENDOR".
7. ALL NON-SAFETY VALVES AND EQUIPMENT INSIDE THE ENCLOSURE ARE SEISMIC CATEGORY III BUT SUPPORTED SEISMIC CATEGORY 1.
8. INSTALLATION OF SPECTACLE FLANGE IS OPTIONAL.
CAUTION:
302 DRAWINGS MAY NOT REFLECT ACTUAL VALVE POSITIONS IN THE PLANT. VALVE POSITIONS ARE CONTROLLED THROUGH OPERATING PROCEDURES.
NOCS (62846)
15 REVISED PER DCN 98-2019 MAD LSM CSS
14 REVISED PER DCN 98-186 TDF DRC CSS
13 REVISED PER DCN 98-1788 TDF KLM CSS
FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO.3
TURBINE PIPING
855,000 KW
E.F.,C.D.,N.G. SYSTEM FLOW DIAGRAM
EMERGENCY FEEDWATER
(DEDICATED STORAGE TANK)
1ST AND ORIGINAL DESIGN BASIS CODE CLASSES
FSAR FIG. 10-3 (2OF3)
REDRAWN ON CAD SYSTEM
BAYMONT ENGINEERING COMPANY
FD-302-082
SHEET 02 OF 03
15
0-9-8


VACUUM BREAKER
EFV-100
EFV-99
EFV-98
VACUUM BREAKER
EFV-97
EFV-102
EFV-103
EFV-104
SPARE
SPARE
EFV-92
EMERGENCY FEEDWATER TANK
150,000 GAL. (DEDICATED VOLUME)
EFT-2
EFV-1111
EFV-84
EFV-85
EFV-83
EFV-78
EFV-77
EFV-79
EFV-1112
EFP-4
EFV-82
EFV-81
FILTER
EFFL-1
EFV-86
SAMPLE
EFV-87
TO DRAIN
EFV-88
FEEDER
EFT-3
EFV-138
EFV-80
EFV-76
MIXING EDUCTORS
NITROGEN SPARGER
EL.118'-6"
EFV-91
EFV-90
EFV-89
TO DRAIN
EFV-93
EFV-129
EFV-130
EFV-131
EFV-128
EFV-132
ENCLOSURE SUMP


TANK ENCLOSURE
TURBINE BUILDING
EMERGENCY FEEDWATER TANK
130,000 GAL. (DEDICATED VOLUME)
EFV-1111
EFV-1112
MIXING EDUCTORS
POROUS METAL ELEMENT (TYP.2 PL)
NITROGEN SPARGER
EL.118'-6"
INSULATING FLANGE
SEE NOTE 8
LOCAL SAMPLE
REMOTE SAMPLING
SPARE PENETRATION
DRAIN PENETRATION
ENCLOSURE SUMP
SAMPLE
TO DRAIN
FILTER
FEEDER
NOTES:
1. THE TANK, VALVES AND ALL PIPING ARE ASME III (ORIGINAL DESIGN BASIS) CLASS 3 SEISMIC CATEGORY I UNLESS OTHERWISE NOTED.
2. PIPING SHOWN DASHED IS TANK INTERNAL PIPING.
3. ALL INSTRUMENTS ARE TAGGED EF UNLESS OTHERWISE NOTED.
4. VENTS AND DRAINS ARE 1" EXCEPT AS NOTED.
5. INSTRUMENT ROUTE VALVES ARE 3/4".
6. * DENOTES "BY TANK VENDOR".
7. ALL NON-SAFETY VALVES AND EQUIPMENT INSIDE THE ENCLOSURE ARE SEISMIC CATEGORY III BUT SUPPORTED SEISMIC CATEGORY I.
8. INSTALLATION OF SPECTACLE FLANGE IS OPTIONAL.
CAUTION:
302 DRAWINGS MAY NOT REFLECT ACTUAL VALVE POSITIONS IN THE PLANT. VALVE POSITIONS ARE CONTROLLED THROUGH OPERATING PROCEDURES. NOCS (62846)
FLORIDA POWER CORPORATION
CRYSTAL RIVER PLANT
UNIT NO. 3
TURBINE PIPING
E.F.,C.D.,N.G. SYSTEM FLOW DIAGRAM
EMERGENCY FEEDWATER (DEDICATED STORAGE TANK)
REDRAWN ON CAD SYSTEM
BABCOCK ENGINEERING COMPANY
FD-302-082
SHEET 82 OF 83
15

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM A2S/ADMINISTRATIVE

Review a Completed SP-320, Operability of Boron Injection Sources and Pumps, for Accuracy

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Barbara Gallion Date/ 12-17-98

VALIDATED BY: * [signature] Date/ 12-17-98

APPROVED BY: R. Wes Ray Date/ 12.18.98
(Operations Training Manager)

CONCURRED: ** [signature] Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Review a completed SP-320, Operability fo Boron Injection Sources and Pumps, for accuracy.

Alternate Path:

N/A

Facility JPM #:

New

K/ARating(s)/Task Number/AO, RO, SRO:

2.2.12//3.4//1190201001//SRO

Task Standard:

Review a completed SP-320, Operability of Boron Injection Sources and Pumps, for accuracy.

Preferred Evaluation Method:

Simulator_____ In-Plant _____

References:

SP-320

Validation Time: 10 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

SP-320

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Shift Supervisor.
The plant is at 100% rated thermal power.
SP-320 has been completed.

INITIATING CUES:

You are requested to review the portions completed by the operators of SP-320 for accuracy for transmittal.

START TIME: _____ Shaded Block Indicates Critical Step

EXAMINER'S NOTE: Provide Operator with a completed copy of SP-320. STEP 1: Obtain a copy of completed procedure. STANDARD: Operator is given a copy of SP-320. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Using supplied SP-320 review for accuracy. STANDARD: Operator uses supplied copy of SP-320 and find the following errors: HT-001-TR Ch 6 reads 103 and should be circled and commented. Total BAST volume had not been added correctly. COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Shift Supervisor.
The plant is at 100% rated thermal power.
SP-320 has been completed.

INITIATING CUES:

You are requested to review the portions completed by the operators of SP-320 for accuracy for transmittal.

Rev. 69

Effective Date 10/15/98

SURVEILLANCE PROCEDURE

SP-320

FLORIDA POWER CORPORATION

CRYSTAL RIVER UNIT 3

AVAILABILITY OF BORON INJECTION SOURCES AND PUMPS

APPROVED BY: Procedure Owner

(SIGNATURE ON FILE)

DATE: _____

PROCEDURE OWNER: Supervisor, Nuclear Plant Technical Support

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6 Recirculation and Restoration Lineup for CAT-5B/CAP-1B....22

1.0 PURPOSE

1.1 INTENT

1.1.1 To satisfy the Technical Specifications and FPC Commitments listed in Step 2.2.1. This procedure verifies the availability of the boron injection sources, pumps, and flow paths required in various plant modes.

1.2 CMIS EQUIPMENT

1.2.1 The following tags are listed in CMIS as being affected by this procedure:

CAP-1A	CAP-1B	CAT-5A	CAT-5B	CAV-36	
CAV-37	CAV-38	CAV-39	CAV-40	CAV-41	
CAV-42	CAV-43	CAV-44	CAV-45	CAV-46	
CAV-47	CAV-48	CAV-49	CAV-50	CAV-51	
CAV-52	CAV-53	CAV-55	CAV-60	CAV-64	
CAV-67	CAV-101	CAV-112	CAV-113	CAV-116	
CAV-119	CAV-120	CAV-123	CAV-412	CAV-414	
DHT-1	SFP-1B	SFP-2	SFV-7	SFV-11	
SFV-12	SFV-13	SFV-14	SFV-28	SFV-34	
SFV-35	SFV-37	SFV-46	SFV-49	SFV-50	
SFV-54	SFV-87	SFV-88			
BS-1-FI1	BS-1-FI2	CA-11-LI	CA-25A-LI	CA-25A-PI	CA-25B-PI
CA-45-FE	CA-45-FI	DH-1-FI1	DH-1-FI2	DH-7-LI	DH-58-LI
DH-59-LI	HT-001-TR	HT-002-TR	SF-2-FI	CAMX-1A	CAMX-1B
CAMX-1C	CAMX-1D	CAV-57			

2.0 REFERENCES

2.1 IMPLEMENTING REFERENCES

2.1.1 OP-406, Spent Fuel Cooling System

2.1.2 OP-403B, Chemical Addition - Boric Acid System

2.1.3 OP-404, Decay Heat Removal System

2.1.4 OP-405, Reactor Building Spray System

2.2 DEVELOPMENTAL REFERENCES

2.2.1 Technical Specification References

Applicable References	Surv.Perf. During Modes	LCO/Other Requirements During Modes	Surv. Freq.	Freq. Notes	Mode Notes
FPC #62189	5,6	5,6	M		None
FPC #60595	1,2,3,4	1,2,3,4	M	40	
FPC #62193	5,6	5,6	M		None
FPC #62190	1,2,3,4	1,2,3,4	M	40	
3.5.4.3	1,2,3,4	1,2,3,4	M,(SP)	40	
FPC #62192	5,6	5,6	M	23	
FPC #62191	1,2,3,4	1,2,3,4	M	23,40	
FPC #62194	5,6	5,6	M		
FPC #62195	1,2,3,4	1,2,3,4	M		
FPC #62196	1,2,3,4	1,2,3,4	M		
FPC #62316	5,6	5,6	M		

SURVEILLANCE FREQUENCY:

M - Monthly

SP - Within 12 hours after each solution volume increase of ≥ 4000 gallons.

FREQUENCY NOTES:

23 - Prior to returning equipment to service.

40 - Establish surveillance prior to ascending into the applicable mode.

MODE NOTES:

None

2.2.2 Thermon Manufacturing Company, Dwg. 72-120A, Sht. 2-4

2.2.3 FPC Drawing Numbers 302-671, 302-641, 302-621

2.2.4 SP-334B, SFP Quarterly Operability Surveillance

2.2.5 OP-403A, Recirculation of Boric Acid Storage Tank "A" or "B"

2.2.6 OP-103F, Tank Volumes Curve

2.2.7 IOC NEA 93-0859, Minimum Initial RB Pressure Limit to Mitigate Accidental RB Spray Actuation Effects

2.2.8 Calculation I95-0017, Reactor Building Narrow Range Pressure

2.2.9 REA 95-0589, Minimum Level in BWST

2.2.10 PC 97-0085, Restart Issue D-18

2.2.11 PC 97-0994, Loss of BWST Seismic Qualification

2.2.12 NOE 97-0250, Design Basis Concern Relative to Using a Non-Seismic System to Recirculate the BWST

2.2.13 Calculation F97-0016, Determination of Boric Acid Requirements for 1% Δk/k Makeup Capability

3.0 PERSONNEL INDOCTRINATION

3.1 SET POINTS

None

3.2 DESCRIPTION

3.2.1 The boron concentration of the Borated Water Storage Tank (BWST) shall be demonstrated to be within limits monthly in Modes 1 through 4 as shown on Enclosure 1.

NOTE: In Modes 1 through 4, one train of the Boric Acid Storage System is required to be available by FPC Commitment. A train shall include the tank, pump, piping (lined up monthly in SP-347), and heat tracing. In Modes 5 and 6, either the BWST or one train of the Boric Acid Storage System is required to be available.

3.2.2 The Boric Acid Storage System shall be demonstrated available, in Modes 1 through 4, as follows:

3.2.2.1 The Boric Acid Storage Tank(s) (BASTs) shall be demonstrated available monthly by satisfying the applicable FPC Commitment limits of Enclosure 1.

3.2.2.2 The flow path from a BAST via a BA pump (CAP) and Makeup Pump (MUP) or Decay Heat Pump (DHP) to the Reactor Coolant System (RCS) shall be demonstrated available monthly by verifying the pipe temperature of the heat traced portions of the flow path is $\geq$ 105°F per Enclosure 2.

3.2.3 The boron concentration of the Borated Water Storage Tank (BWST) shall be demonstrated to be within limits monthly, in Modes 5 and 6, as shown on Enclosure 1, when the BWST is the required emergency boration injection water source.

3.2.4 At least one train of the Boric Acid Storage System shall be demonstrated available monthly, in Modes 5 and 6, when the Boric Acid Storage System is the required emergency boration injection water source, by satisfying the applicable FPC Commitment limits of Enclosure 1.

3.2.5 In all Modes, each BA pump (CAP-1A, 1B) should be run monthly to assure proper operation. Testing of these pumps is not required by the Inservice Inspection Program since they are non safety related. They are required to be available by an FPC commitment.

3.3 DEFINITIONS

None

3.4 RESPONSIBILITIES

3.4.1 Nuclear Plant Technical Support will be responsible for the content of this procedure.

3.4.2 The CR-3 Operations Department will be responsible for the performance of this procedure.

3.4.3 As required, I&C personnel will perform the installation and removal of any temporary ultrasonic flow instrumentation and verify the proper operation of the elctronics associated with the instrumentation.

3.5 LIMITS AND PRECAUTIONS

3.5.1 When level indications are used to calculate suction pressure, indicators should be closely monitored for deviation in level until data retrieval is complete.

3.5.2 Heat tracing temperature measurements shall be performed under static or no flow conditions, before the tanks are recirculated. Adequate time should be allowed for temperatures to increase when flow has been placed through the heat traced lines.

3.5.3 For work located in Radiation Controlled Area, due consideration must be given to the ALARA Program. This may result in a determination that special preparations and/or precautions are necessary.

3.5.4 The minimum RB pressure allowed during the performance of this procedure is -0.25 psig as indicated on BS-93-PIR, or -0.43 psig as indicated on Plant Computer Point P254.

3.5.5 Do NOT operate BAST mixers (CAMX-1A,-1B,-1C,-1D) of BAST level < 55% (59 inches).

3.6 ACCEPTANCE CRITERIA

NOTE: The BWST is required to be operable in Modes 1 through 4 by Technical Specifications. The remainder of the Acceptance Criteria below originates from FPC Commitments.

3.6.1 In Modes 1 through 4, the BWST shall be demonstrated operable by verifying monthly BWST boron concentration between 2270 and 3000 ppm.

3.6.2 In Modes 1 through 4, the Boric Acid Storage System shall be demonstrated available monthly by:

- o Verifying a minimum volume of 6000 gallons (83 inches).
- o Verifying a boron concentration between 11,600 and 14,000 ppm.
- o Verifying a minimum solution temperature of $\geq$ 105°F.
- o Verifying the temperature of the heat traced portion of the flow path pipe is $\geq$ 105°F, under no flow conditions.

  Verifying at least one BA pump in the Boron Injection Flowpath is capable of being powered from an operable emergency bus.

- o Verifying EITHER CAV-60 OR CAV-57 is available.

3.6.3 IF the plant is in Mode 5 or 6,
THEN either the BWST OR one train of the Boric Acid Storage System shall be demonstrated available as follows:

3.6.3.1 IF the BWST is the required emergency boration water source,
THEN monthly, the BWST shall be demonstrated available by:

- o Verifying a minimum volume of $\geq$ 35,000 gallons (11 ft)
- o Verifying a boron concentration between 2270 and 3000 ppm

3.6.3.2 IF the Boric Acid Storage System is the required emergency boration water source,
THEN monthly, the Boric Acid Storage System shall be demonstrated available by:

- o Verifying a minimum volume of $\geq$ 1200 gallons (28 inches).
- o Verifying a boron concentration $\geq$ 11,600 and $\leq$ 14,000 ppm.
- o Verifying a minimum solution temperature of $\geq$ 105°F.
- o Verifying the temperature of the heat traced portion of the flow path piping is $\geq$ 105°F, under no flow conditions.
- o Verifying at least one BA pump in the Boron Injection Flowpath is capable of being powered from an operable emergency bus.
- o Verifying EITHER CAV-60 OR CAV-57 is available.

3.6.4 In all Modes, the BA pumps (CAP-1A, 1B) should be demonstrated available monthly by verifying the data is within the values listed in Enclosures 3 & 4. The pumps are required to deliver ≥ 10 gpm.

3.7 PREREQUISITES

3.7.1 Notify the Nuclear Shift Supervisor on Duty prior to starting this procedure.

MT, 2-8-98
Initial/Date

3.7.2 Section 3.0, Personnel Indoctrination, must have been read and understood by those who will be performing this procedure.

3.7.3 Prior to running CAP-1A/1B, verify no evolutions are in progress which would interfere with tank recirculations such as a clearance, operating procedures, etc.

MT, 2-8-98
Initial/Date

4.0 INSTRUCTIONS

NOTE: Performance of every section below may not be required. Performance is required only for the applicable subsections as required to satisfy Technical Specification requirements and FPC Commitments based on plant mode. All steps not used during performance of Section 4.0 should be N/A'd.

NOTE: Sections of this procedure may be performed concurrently or in any order except only one BAST may be recirculated at a time.

4.1 OPERABILITY CHECK OF THE BWST

****

CAUTION: BWST level should be monitored prior to and at least 20 minutes after starting recirculation to ensure BWST inventory has not been inadvertently transferred.

****

NOTE: During Modes 1 through 4, this section is required monthly, or when the solution volume is increased by ≥ 4,000 gallons. During Modes 5 & 6, this section is required to be performed monthly, when the BWST is the required emergency boration water source.

NOTE: SFP-2 is the preferred method to recirculate the BWST. Utilizing DHP-1A/1B or BSP-1A/1B requires entry into a Technical Specification Action Statement.

4.1.1 Align the BWST for recirculation by one of the following AND check the appropriate box.

Recirc using SFP-2 per OP-406, [ ]
OR
Recirc using DHP-1A per OP-404, [ ]
OR
Recirc using DHP-1B per OP-404, [ ]
OR
Recirc using BSP-1A per OP-405, [ ]
OR
Recirc using BSP-1B per OP-405, [ ]
OR
BWST on recirc via DHP-1A per SP-340B [✓]
OR
BWST on recirc via DHP-1B per SP-340E [ ]
OR
BWST on recirc via BSP-1A per SP-340B [ ]
OR
BWST on recirc via BSP-1B per SP-340E [ ]

4.1.2 Start the applicable pump AND check the appropriate box.

IF SFP-2 is used,
THEN use flowmeter (SF-2-FI)
for measurement. [ ]

IF DHP-1A/B is used,
THEN maintain flowrate between 1500 gpm
and 3400 gpm utilizing DH-1-FI1/2. [✓]

IF BSP-1A/B pump is used,
THEN maintain flowrate between 1400 gpm and 1700 gpm
utilizing BS-1-FI1/2. [ ]

MG / 2-8-98
Initial/Date

4.1.3 Calculate the required time to recirculate two tank volumes, using information in OP-103F. You may use the formula provided below:

[(Gallons in tank X 2) ÷ (gpm flowrate)] ÷ 60 = hours to recirc

[(423,390 gallons X 2) ÷ (3000 gpm)] ÷ 60 = 4.7 hours

Calculated by: MG / 2-8-98
Initial/Date

Verified by: SC / 2-8-98
Initial/Date

4.1.4 Request a boron analysis for the BWST, specifying the completion time for the required recirculation duration.

MG / 2-8-98
Initial/Date

4.1.5 WHEN sampling is complete,
THEN perform the following:

- o Stop recirculation, if desired
- o Restore system per the procedure or enclosure selected in Step 4.1.1.

MG / 2-8-98
Initial/Date

4.1.6 Complete Enclosure 1 for the BWST. MG / 2-8-98
Initial/Date

4.1.7 Rezero the Control Center Note Book (CCNB) for BWST additions.

MG / 2-8-98
Initial/Date

4.2 HEAT TRACE

NOTE: If any recorder(s) are inoperable, I&C should be contacted to read the appropriate channel locally.

NOTE: Heat tracing temperature measurements shall be performed under no flow conditions, before the tanks are recirculated. Adequate time should be allowed for temperatures to increase when flow has been placed through the lines.

4.2.1 Record the heat tracing recorder data on Enclosure 2.

MG / 2-8-98
Initial/Date

4.3 RECIRCULATION OF CAT-5A USING CAP-1A

****

CAUTION: BAST level should be monitored prior to and at least 20 minutes after starting the recirculation to ensure BAST inventory has not been inadvertently transferred.

****

4.3.1 Obtain CAT-5A local level from CA-11-LI and calculate CAP-1A suction pressure on Enclosure 3.

MG / 2-8-98
Initial/Date

4.3.2 Perform the CAT-5A/CAP-1A recirculation lineup per Enclosure 5.

MG-/ 2-8-98
Initial/Date

4.3.3 Operate CAP-1A as follows:

4.3.3.1 Start CAP-1A from the Control Center.

MG-/ 2-8-98
Initial/Date

4.3.3.2 Record start time on Enclosure 3.

MG / 2-8-98
Initial/Date

NOTE: If CA-45-FI is unavailable, the flow rate may be obtained from a temporarily installed, calibrated, flow instrument.

4.3.3.3 IF an instrument other than CA-45-FI is used,
THEN record the information requested below.
IF CA-45-FI is used,
THEN NA this step.

Instrument Identification:_____

Instrument Calibration Due Date: _____

N/A /
Initial/Date

4.3.3.4 Throttle CAV-36 to obtain between 20 and 48 gpm on either, CA-45-FI, or alternate indication.

MK / 2-8-98
Initial/Date

4.3.4 WHEN constant flow is established,
THEN, record flow rate from either, CA-45-FI, or alternate indication, on Enclosure 3.

MK / 2-8-98
Initial/Date

4.3.5 Record CAP-1A discharge pressure from CA-25A-PI on Enclosure 3.

MK / 2-8-98
Initial/Date

4.3.6 Calculate CAP-1A differential pressure on Enclosure 3.

MK / 2-8-98
Initial/Date

4.3.7 Verify that the calculated differential pressure is between the minimum and maximum differential pressure listed in Enclosure 3.

MK / 2-8-98
Initial/Date

4.3.8 IF CAP-1A is being utilized to recirculate CAT-5A for Boron analysis,
THEN GO TO STEP 4.4.1.2, otherwise NA this step.

MK / 2-8-98
Initial/Date

4.3.9 SECURE CAP-1A, RECORD stop time on Enclosure 3, and RESTORE the Boric Acid System per Enclosure 5.

_____ /
Initial/Date

4.4 AVAILABILITY CHECK OF CAT-5A

4.4.1 Mix CAT-5A as follows:

4.4.1.1 If agitator is being used for mixing, perform the following:
(IF agitator is not being used for mixing,
THEN NA this step)

- o Ensure agitator has operated for > 30 minutes.
- o Request boron analysis. _____/_____ Initial/Date

4.4.1.2 If using CAP-1A to mix CAT-5A, perform the following:
(IF not using CAP-1A to mix CAT-5A,
THEN NA this step)

- o Calculate the required recirculation duration to achieve a recirculation of twice the tank volume, using information in OP-103F. You may use the formula provided below:

[(Gallons in tank X 2) ÷ (gpm flowrate)] ÷ 60 = hours to recirc

[(7192 gallons X 2) ÷ (31 gpm)] ÷ 60 = 7.7 hours

Calculated by: NL / 12-8-98 Initial/Date

Verified by: SC / 12-8-98 Initial/Date

- o Request boron analysis. NL / 12-8-98 Initial/Date

- o WHEN sampling is complete,
THEN secure CAP-1A and record stop time on Enclosure 3.

NL / 12-8-98 Initial/Date

4.4.2 If CAP-1A used to mix CAT-5A, perform the following:
Restore the Boric Acid System per Enclosure 5.
(IF CAP-1A NOT used to mix CAT-5A,
THEN NA this step)

NL / 12-8-98 Initial/Date

4.4.3 Complete Enclosure 1 for CAT-5A.

NL / 12-8-98 Initial/Date

4.5 RECIRCULATION OF CAT-5B USING CAP-1B

****

CAUTION: BAST level should be monitored prior to and at least 20 minutes after starting the recirculation to ensure BAST inventory has not been inadvertently transferred.

****

4.5.1 Obtain CAT-5B local level from CA-13-LI and calculate CAP-1B suction pressure on Enclosure 4.

ML / 2-8-98
Initial/Date

4.5.2 Perform the CAT-5B/CAP-1B recirculation lineup per Enclosure 6.

ML / 2-8-98
Initial/Date

4.5.3 Operate CAP-1B as follows:

4.5.3.1 Start CAP-1B from the Control Center.

ML / 2-8-98
Initial/Date

4.5.3.2 Record start time on Enclosure 4.

ML / 2-8-98
Initial/Date

NOTE: If CA-45-FI is unavailable, the flow rate may be obtained from a temporarily installed, calibrated, flow instrument.

4.5.3.3 IF an instrument other than CA-45-FI is used,
THEN record the information requested below.
IF CA-45-FI is used,
THEN NA this step.

Instrument Identification:_____

Instrument Calibration Due Date: _____

N/A /
Initial/Date

4.5.3.4 Throttle CAV-37 to obtain between 20 and 48 gpm on either, CA-45-FI, or alternate indication.

MC, 2-8-98
Initial/Date

4.5.4 WHEN constant flow is established,
THEN record flow rate from either, CA-45-FI, or alternate indication, on Enclosure 4.

MC, 2-8-98
Initial/Date

4.5.5 Record CAP-1B discharge pressure from CA-25B-PI on Enclosure 4.

MC, 2-8-98
Initial/Date

4.5.6 Calculate CAP-1B differential pressure on Enclosure 4.

MC, 2-8-98
Initial/Date

4.5.7 Verify that the calculated differential pressure is between the minimum and maximum differential pressure listed in Enclosure 4.

MC, 2-8-98
Initial/Date

4.5.8 IF CAP-1B is being utilized to recirculate CAT-5B for Boron analysis,
THEN GO TO STEP 4.6.1.2, otherwise NA this step.

MC, 2-8-98
Initial/Date

4.5.9 SECURE CAP-1B, RECORD stop time on Enclosure 4, and RESTORE the Boric Acid System per Enclosure 6.

/
Initial/Date

4.6 AVAILABILITY CHECK OF CAT-5B

4.6.1 Mix CAT-5B as follows:

4.6.1.1 If agitator is being used for mixing, perform the following:
(If agitator is not being used for mixing, NA this step.)

- o Ensure agitator has operated for > 30 minutes.
- o Request boron analysis.

_____/
Initial/Date

4.6.1.2 If using CAP-1B to mix CAT-5B, perform the following:
(IF not using CAP-1B to mix CAT-5B,
THEN NA this step)

- o Calculate the required recirculation duration to achieve a recirculation of twice the tank volume, using information in OP-103F. You may use the formula provided below:

[(Gallons in tank X 2) ÷ (gpm flowrate)] ÷ 60 = hours to recirc

[(6305 gallons x 2) ÷ (40 gpm)] ÷ 60 = 5.3

Calculated by: MG / 2-8-98
Initial/Date

Verified by: SC / 2-8-98
nitial/Date

- o Request boron analysis.

SC / 2-8-98
Initial/Date

- o WHEN sampling is complete,
THEN secure CAP-1B and record stop time on Enclosure 4.

SC / 2-8-98
Initial/Date

4.6.2 IF CAP-1B used to mix CAT-5B, perform the following:
Restore the Boric Acid System per Enclosure 6.
(IF CAP-1B NOT used tp CAT-5B,
THEN NA this step.

MG / 2-8-98
Initial/Date

4.6.3 Complete Enclosure 1 for CAT-5B.

MG / 2-8-98
Initial/Date

4.7 BORIC ACID PUMP POWER AVAILABILITY VERIFICATION

4.7.1 Determine and record below if each boric acid pump is capable of being powered from an OPERABLE emergency bus:

Pump	Power Available
CAP-1A (ES-MCC-3A1, Brkr. 10B)	(Yes) / No
CAP-1B (ES-MCC-3B1, Brkr.4B)	(Yes) / No

MG / 2-8-98
Initial/Date

4.8 STROKE TEST TO VERIFY BORON INJECTION FLOWPATHS

NOTE: There are no time requirements on the speed that these valves open or close. This stroke exercise verifies system availability.

4.8.1 Stroke CAV-60 open/close. Ensure valve responds.

MG / 2-8-98
Initial/Date

4.8.2 Stroke CAV-57 open/close. Ensure valve responds.

MG / 2-8-98
Initial/Date

5.0 FOLLOW-UP ACTIONS

5.1 RESTORATION INSTRUCTIONS

5.1.1 Restoration is performed within Section 4 of this procedure.

5.1.2 IF a temporary instrument is used, in lieu of, CA-45-FI,
THEN ensure the temporary instrument is removed, when no longer required.
IF CA-45-FI is used,
THEN NA this step.

N/A /
Initial/Date

5.1.3 Notify the Nuclear Shift Supervisor on Duty upon completion of this procedure.

MG / 2-8-98
Initial/Date

5.2 CONTINGENCIES

5.2.1 Modes 1 through 4:

5.2.1.1 IF the BWST does not meet the its Acceptance Criteria,
THEN refer to the actions of LCO 3.5.4.

5.2.1.2 IF the Boric Acid Storage System does not meet its Acceptance Criteria,
THEN perform the following:

- With neither train of the Boric Acid Storage System available, restore an unavailable train to available status within 7 days or initiate a Precursor Card to document and track the corrective actions. The Precursor Card should include the following information:
  - The FPC commitment to have at least one operable BAST flow path for emergency boration was previously contained in STS 3.1.2.2 and 3.1.2.1.
  - FPC current commitments for at least one available BAST flow path for emergency boration are contained in FSAR 4.2.5.5, NOCS 62148, and SP-320.

5.2.2 Modes 5 and 6:

5.2.2.1 IF no boron injection flowpaths are available (BWST or one train of the Boric Acid Storage System),
THEN suspend all operations involving CORE ALTERATION or positive reactivity changes until at least one injection path is restored to available status.

5.2.3 All Modes:

NOTE: The acceptance criteria for CAPs is $\geq$ 10 gpm. Differential pressure versus flow rate may show degradation and should be investigated, but does not affect availability.

5.2.3.1 IF a Boric Acid Pump does not satisfy the d/p versus flow requirements of Enclosure 3 or 4,
THEN contact Nuclear Plant Systems Engineering the next scheduled working day.

COMMENTS: _____

_____

_____

_____

BWST AND BORIC ACID STORAGE SYSTEM DATA

Parameter	Modes Req'd	Limit	Notes	Reading
BWST Level	1, 2, 3, 4	Min ≥ 44.39 ft * Max < 47.46 ft *	(2) (4)	45 ft.
	5, 6	Min ≥ 11 ft *	(3) (5)	
BWST Boron Concentration	1, 2, 3, 4	Min ≥ 2270 ppm Max ≤ 3000 ppm	(2)	2500 ppm
		Min ≥ 2300 ppm Max ≤ 2960 ppm	(1)	
	5, 6	Min ≥ 2270 ppm Max ≤ 3000 ppm	(3)	
CAT-5A Level CA-11-LI	1, 2, 3, 4	Min ≥ 83 "in"	(1)	100 in.
	5, 6	Min ≥ 28 "in"		
CAT-5B Level CA-13-LI	1, 2, 3, 4	Min ≥ 83 "in"	(1)	85 in.
	5, 6	Min ≥ 28 "in"		
Total BAST Volume	1, 2, 3, 4	Min ≥ 6000 gals	(3)	15,397 gals
	5, 6	Min ≥ 600 gals		
CAT-5A Boron Concentration	All Modes	Min ≥ 11,600 ppm Max ≤ 14,000 ppm	(3)	12,490 ppm
		Min ≥ 11,800 ppm Max ≤ 13,800 ppm	(1)	
CAT-5B Boron Concentration	All Modes	Min ≥ 11,600 ppm Max ≤ 14,000 ppm	(3)	11,870 ppm
		Min ≥ 11,800 ppm Max ≤ 13,800 ppm	(1)	
CAT-5A Temperature	All Modes	Min ≥ 105°F	(3)	150 °F
CAT-5B Temperature	All Modes	Min ≥ 105°F	(3)	155 °F

* Modes 1-4 Tech Spec Requires BWST volume ≥ 415,200 gallons and ≤ 449,000 gallons; Modes 5-6 FSAR requires BWST usable volume ≥ 35,000 gallons; the levels specified include corrections for instrument error

(1) Administrative Limits
(2) Tech Spec Requirement
(3) FPC Commitment (Non Tech Spec)
(4) Utilize DH-58-LI for monitoring BWST level. If DH-58-LI is not available, utilize DH-59-LI. The level limits above also apply to DH-59-LI.
(5) Utilize DH-7-LI for monitoring BWST level.

COMMENTS: _____

Performed By T. J. Williams Date 2-8-98 Time 1700

Reviewed By S. C. Clause Date 2-8-98 Time 1500

HEAT TRACING RECORDER DATA

Location	Recorder	Ch	Temperature °F (required ≥ 105°F)
MU System Chemical Inlet Piping	HT-001-TR	2	120
MUV-106 to MU System Chemical Piping		3	145
MUV-156 to MUV-155 via MUV-108		6	103
MUV-156 to MUV-106 via MUV-158		7	115
MUV-106 to MUV-105 via MUV-107		9	119
CAV-59 to CAV-57/CAV-60		10	127
CAV-60 to MUV-114		12	★ 160
CAV-57 to MUV-109		13	★ 155
MUV- 541 Associated Piping		20	130
BAST "B" to CAV-44	HT-002-TR	3	176
CAV-44 to CAV-121		4	160
CAV-41 to CAV-121		5	187
BAST "A" to CAV-41		6	132
CAV-49 to CAV-50 via CAP-1B		14	147
CAV-48 to CAV-50 via CAP-1A		15	133
CAV-121 to CAV-48/CAV-49		17	158
CAV-50 to CAV-59		24	119

NOTE: Required temperatures ≥ 105° F. are only applicable when there is no flow through the line. Heat tracing is designed to maintain ≥ 105° F. only during no flow conditions.

★ Only one of these paths is required to be operable to meet the flowpath requirements. However, if both lines contain boric acid, then both lines should be > 105°F to prevent boron crystallization.

1. The channels listed meet the FPC Commitment for the boric acid storage system.

2. Valve numbers are used as approximate locations of a heat trace string. Thermon Manufacturing Company Drawings: 72-120A, Sheets 2 through 4, may be used for more details if needed.

COMMENTS: _____

Performed By R. Ballew Date 2-8-98 Time 1720 2-7-98

Reviewed By S. Clause Date 2-8-98 Time 1800

BORIC ACID PUMP (CAP-1A)

FLOW (GPM)	DIFFERENTIAL PRESSURE (PSI)		FLOW (GPM)	DIFFERENTIAL PRESSURE (PSI)	
	MIN. DP	MAX. DP		MIN. DP	MAX. DP
20	58	71	35	54	66
21	58	71	36	53	65
22	58	71	37	53	65
23	58	70	38	53	64
24	57	70	39	52	64
25	57	69	40	52	63
26	57	69	41	51	63
27	56	69	42	51	62
28	56	68	43	50	61
29	56	68	44	50	61
30	56	67	45	49	60
31	55	67	46	49	60
32	55	67	47	48	59
33	54	66	48	48	58
34	54	66			

CAP-1A

Start Time: 0800 Stop Time: 1600

Flow Rate: 31 gpm Discharge Pressure: 65 psi

Calculation of Suction Pressure

(CAT-5A Water Level - CAP-1A Elevation) X (Conversion Factor) = Suction Pressure

(102 in. - 14 in.) X (0.0361 lb_f/in^3) = 3.1 psi

Calculation of Differential Pressure

Discharge Pressure - Suction Pressure = Differential Pressure

65 psi - 3.1 psi = 61.9 psi

Performed By A. Sillin Date 2-8-98 ~~1600~~ 1600 2-8-98

Reviewed By S. Clause Date 2-8-98 ~~1700~~ 1700 2-8-98

BORIC ACID PUMP (CAP-1B)

FLOW (GPM)	DIFFERENTIAL PRESSURE (PSI)		FLOW (GPM)	DIFFERENTIAL PRESSURE (PSI)	
	MIN. DP	MAX. DP		MIN. DP	MAX. DP
20	58	71	35	54	66
21	58	71	36	53	65
22	58	71	37	53	65
23	58	70	38	53	64
24	57	70	39	52	64
25	57	69	40	52	63
26	57	69	41	51	63
27	56	69	42	51	62
28	56	68	43	50	61
29	56	68	44	50	61
30	56	67	45	49	60
31	55	67	46	49	60
32	55	67	47	48	59
33	54	66	48	48	58
34	54	66			

CAP-1B

Start Time: 0100 Stop Time: 0700

Flow Rate: 40 gpm Discharge Pressure: 65 psi

Calculation of Suction Pressure

(CAT-5B Water Level - CAP-1B Elevation) X (Conversion Factor) = Suction Pressure

(85 in. - 14 in.) X (0.0361 lb_f/in^3) = 2.6 psi

Calculation of Differential Pressure

Discharge Pressure - Suction Pressure = Differential Pressure

65 psi - 2.6 psi = 62.4 psi

Performed By A. Pillon Date 2-8-98

Reviewed By S. Clause Date 2-8-98

RECIRCULATION AND RESTORATION LINEUP FOR CAT-5A/CAP-1A

NOTE: CAT-5B/CAP-1B in service.

System: Chemical Addition and Sampling			Flow Diagram No. FD-302-671
Valve No.	Description	Position	Initials Performed by
	RECIRCULATION LINEUP FOR CAT-5A/CAP-1A		
CAV-36	Recirculation Return Inlet to CAT-5A	Throttle 2 Turns Open	ML
CAV-64	BAST Recirc. Iso.	Open	ML
CAV-412	CAP-1A Recirc.	Open	ML
CAV-51	CAP-1A Disch.	Closed	ML
	RESTORATION LINEUP FOR CAT-5A/CAP-1A		Perform/Verify
CAV-36	Recirculation Return Inlet to CAT-5A	Closed	ML / SC
CAV-64	BAST Recirc. Iso.	Closed	ML / SC
CAV-412	CAP-1A Recirc.	Closed	ML / SC
CAV-51	CAP-1A Disch.	Open	ML / SC

RESTORATION LINEUP FOR CAT-5A/CAP-1A:

Performed By [illegible] Date 2-8-98

Verified By S. Cline Date 2-8-98

RECIRCULATION AND RESTORATION LINEUP FOR CAT-5B/CAP-1B

NOTE: CAT-5A/CAP-1A in service.

System: Chemical Addition and Sampling		Flow Diagram No. FD-302-671	
Valve No.	Description	Position	Initials Performed by
	RECIRCULATION LINEUP FOR CAT-5B/CAP-1B		
CAV-37	Recirculation Return Inlet to CAT-5B	Throttle 2 Turns Open	MG
CAV-64	BAST Recirc. Iso.	Open	ME
CAV-50	CAP-1B Disch.	Closed	ME
CAV-55	CAP-1B Recirc.	Open	ME
	RESTORATION LINEUP FOR CAT-5B/CAP-1B		Perform/Verify
CAV-37	Recirculation Return Inlet to CAT-5B	Closed	MG / SC
CAV-64	BAST Recirc. Iso.	Closed	ME / SC
CAV-50	CAP-1B Disch.	Open	MG / SC
CAV-55	CAP-1B Recirc.	Closed	MG / SC

RESTORATION LINEUP FOR CAT-5B/CAP-1B:

Performed By M. Nelson Date 2-8-98

Verified By S. Chance Date 2-8-98

BORATED WATER STORAGE TANK: DHT-1

Notes:

ITS 3.5.4.2 Minimum Total Volume 415,200 gallons (Based on Total Volume not Usable Volume)
ITS 3.5.4.2 Maximum Total Volume 449,000 gallons (Based on Total Volume not Usable Volume)
Calculations I-91-0012 and M-93-0017.

INDICATED LEVELS ARE NOT ERROR CORRECTED

Tank Level DH-7-LI DH-37-LI (ft)	Tank Level DH-58-LI DH-59-LI (ft)	Tank Volume (gal)	REMARKS
0.0		0	
0.5		4,700	
1.0		9,400	Minimum Level Indication (9.75")
1.5		14,100	Centerline of DH Suction (15.75")
2.0		18,801	
2.5		23,501	
3.0		28,201	
3.5		32,901	
4.0		37,601	Heater Interlock (46 3/4 in = 3' 10 3/4")
4.5		42,301	
5.0		47,001	
5.5		51,702	Accident Vortex Limit (5.5')
6.0		56,402	
6.5		61,102	
7.0		65,802	Low-Low Alarm (7')
7.5		70,502	
8.0		75,203	
8.5		79,905	
9.0		84,607	
9.5		89,310	
10.0		94,012	
10.5		98,714	
11.0		103,416	
11.5		108,118	
12.0		112,821	
12.5		117,523	
13.0		122,225	
13.5		126,927	
14.0		131,630	
14.5		136,332	
15.0		141,034	Low Alarm (15')
15.5		145,736	
16.0		150,440	
16.5		155,144	

BORATED WATER STORAGE TANK: DHT-1

INDICATED LEVELS ARE NOT ERROR CORRECTED

Tank Level DH-7-LI DH-37-LI (ft)	Tank Level DH-58-LI DH-59-LI (ft)	Tank Volume (gal)	REMARKS
17.0		159,848	
17.5		164,553	
18.0		169,257	
18.5		173,961	
19.0		178,665	
19.5		183,370	
20.0		188,074	
20.5		192,778	
21.0		197,482	
21.5		202,187	
22.0		206,891	
22.5		211,595	
23.0		216,299	
23.5		221,004	
24.0		225,710	
24.5		230,416	
25.0		235,123	
25.5		239,829	
26.0		244,535	
26.5		249,242	
27.0		253,948	
27.5		258,654	
28.0		263,361	
28.5		268,067	
29.0		272,773	
29.5		277,480	
30.0		282,186	
30.5		286,892	
31.0		291,598	
31.5		296,305	
32.0		301,012	
32.5		305,719	
33.0		310,426	
33.5		315,132	
34.0		319,839	
34.5		324,546	
35.0		329,253	
35.5		333,960	
36.0		338,667	

INDICATED LEVELS ARE NOT ERROR CORRECTED

Tank Level DH-7-LI DH-37-LI (ft)	Tank Level DH-58-LI DH-59-LI (ft)	Tank Volume (gal)	REMARKS
36.5		343,373	
37.0		348,080	
37.5		352,787	
38.0		357,494	
38.5		362,201	
39.0		366,908	
39.5		371,614	
40.0		376,321	
40.5		381,028	
41.0		385,735	
41.5		390,442	
42.0		395,149	
42.5		399,856	
43.0		404,562	
43.5		409,269	
44.0	44.00	413,976	
	44.10	414,917	
	44.12	415,106	
	44.13	415,200	ITS 3.5.4.2 Min. Volume = 415,200 gal
	44.20	415,859	
	44.30	416,800	
	44.40	417,742	
44.5	44.50	418,683	
	44.60	419,624	Low Level Alarm (44.56')
	44.70	420,566	
	44.80	421,507	
	44.90	422,448	
45.0	45.00	423,390	
	45.10	424,331	
	45.20	425,273	
	45.30	426,214	
	45.40	427,155	
45.5	45.50	428,097	
	45.60	429,038	
	45.70	429,979	
	45.80	430,921	
	45.90	431,862	
46.0	46.00	432,803	
	46.10	433,745	

INDICATED LEVELS ARE NOT ERROR CORRECTED

Tank Level DH-7-LI DH-37-LI (ft)	Tank Level DH-58-LI DH-59-LI (ft)	Tank Volume (gal)	REMARKS
	46.20	434,686	
	46.30	435,628	High Level Alarm (47.29')
	46.40	436,569	
46.5	46.50	437,510	
	46.60	438,452	
	46.70	439,393	
	46.80	440,334	
	46.90	441,276	
47.0	47.00	442,217	
	47.10	443,156	
	47.20	444,094	
	47.30	445,030	
	47.40	445,964	
47.5	47.50	446,897	
	47.60	447,828	
	47.70	448,757	
	47.72	448,943	ITS 3.5.4.2 Max. Volume = 449,000 gal
	47.73	449,036	
	47.80	449,684	
	47.90	450,610	
48.0	48.00	451,533	
48.5		456,120	
49.0		460,650	
49.5		465,094	
50.0		469,428	

BORIC ACID STORAGE TANKS: CAT-5A/5B

NOTES:

Maximum Indicated Usable Volume = 7,162 gallons

Calculation M-93-0035

INDICATED LEVELS ARE NOT ERROR CORRECTED

Level (in)	Tank Level CA-11-LI CA-13-LI (in)	Tank Volume (gal)	Usable Volume (gal)	REMARKS
0	0	0		
1	1	11		
2	2	30	0	Vortex Limit (2")
3	3	54	24	
4	4	83	53	Minimum Level Indication for CA-11-LI (4")
5	5	116	86	
6	6	152	122	
7	7	192	162	
8	8	234	204	
9	9	279	250	Top of Heaters (9")
10	10	329	299	
11	11	380	350	
12	12	433	403	
13	13	488	458	Minimum Level Indication for CA-13-LI (13")
14	14	545	515	
15	15	604	575	
16	16	665	635	
17	17	728	698	
18	18	792	762	
19	19	858	828	
20	20	925	895	
21	21	994	964	
22	22	1,063	1,034	
23	23	1,135	1,105	
24	24	1,207	1,177	
25	25	1,281	1,251	
26	26	1,355	1,326	
27	27	1,431	1,401	
28	28	1,508	1,478	
29	29	1,586	1,556	
30	30	1,664	1,635	Low-Level Alarm and Heater Interlock (30")
31	31	1,744	1,714	
32	32	1,824	1,795	

INDICATED LEVELS ARE NOT ERROR CORRECTED

Level (in)	Tank Level CA-11-LI CA-13-LI (in)	Tank Volume (gal)	Usable Volume (gal)	REMARKS
33	33	1,906	1,876	
34	34	1,988	1,958	
35	35	2,070	2,040	
36	36	2,153	2,124	
37	37	2,237	2,207	
38	38	2,322	2,292	
39	39	2,407	2,377	
40	40	2,492	2,463	
41	41	2,579	2,549	
42	42	2,665	2,635	
43	43	2,752	2,722	
44	44	2,839	2,809	
45	45	2,927	2,897	
46	46	3,015	2,985	
47	47	3,103	3,073	
48	48	3,191	3,161	
49	49	3,280	3,250	
50	50	3,368	3,339	
51	51	3,457	3,427	
52	52	3,546	3,516	
53	53	3,635	3,605	
54	54	3,724	3,694	
55	55	3,813	3,783	
56	56	3,902	3,872	
57	57	3,991	3,961	
58	58	4,080	4,050	
59	59	4,169	4,139	
60	60	4,257	4,227	
61	61	4,345	4,315	
62	62	4,433	4,404	
63	63	4,521	4,491	
64	64	4,609	4,579	
65	65	4,696	4,666	
66	66	4,782	4,752	
67	67	4,869	4,839	
68	68	4,954	4,925	
69	69	5,040	5,010	
70	70	5,125	5,095	

INDICATED LEVELS ARE NOT ERROR CORRECTED

Level (in)	Tank Level CA-11-LI CA-13-LI (in)	Tank Volume (gal)	Usable Volume (gal)	REMARKS
71	71	5,209	5,179	
72	72	5,292	5,262	
73	73	5,375	5,345	
74	74	5,458	5,428	
75	75	5,539	5,509	
76	76	5,620	5,590	
77	77	5,700	5,670	
78	78	5,779	5,749	
79	79	5,857	5,827	
80	80	5,935	5,905	
81	81	6,011	5,981	
82	82	6,085	6,056	
83	83	6,160	6,130	
84	84	6,233	6,203	
85	85	6,305	6,275	
86	86	6,376	6,346	
87	87	6,445	6,415	
88	88	6,513	6,483	
89	89	6,579	6,549	
90	90	6,644	6,614	
91	91	6,708	6,678	
92	92	6,769	6,740	
93	93	6,829	6,800	
94	94	6,888	6,858	
95	95	6,944	6,914	Hi-Level Alarm (95")
96	96	6,998	6,968	
97	97	7,050	7,020	
98	98	7,100	7,070	
99	99	7,147	7,117	
100	100	7,192	7,162	
101		7,234	7,204	
102		7,273	7,243	
103		7,308	7,278	
104		7,340	7,310	
105		7,367	7,338	
106		7,390	7,360	
107		7,405	7,376	
107.5		7,409	7,379	Top of Tank (I. D. = 107.5")

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM A3S/ADMINISTRATIVE

Using CP-151, Determine External Reporting Requirements

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Marlene Dillon Date/ 12-17-98

VALIDATED BY: * [signature] Date/ 12-17-98

APPROVED BY: R. Wes Lowry Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** [signature] Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Using CP-151, determine external reporting requirements.

Alternate Path:
N/A

Facility JPM #:
New

K/ARating(s)/Task Number/AO, RO, SRO:
2.3.1//3.0//1190101035//SRO

Task Standard:
Using CP-151, determine external reporting requirements.

Preferred Evaluation Method:
Simulator_____ In-Plant _____

References:
CP-151; 10CFR

Validation Time: 10 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

CP-151
10CFR

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Shift Supervisor.
The plant is at 100% rated thermal power.
A Health Physics Supervisor has called the Control Room reporting a source is missing.
The missing source has a concentration of 240,000 μCi of Cs-136.
The source was normally kept in the Health Physics Calibration Laboratory.

INITIATING CUES:

You are requested to determine external reporting requirements.

START TIME: _____ Shaded Block Indicates Critical Step

EXAMINER'S NOTE: Provide Operator with a copy of CP-151. STEP 1: Obtain a copy of procedure. STANDARD: Operator is given a copy of CP-151. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Using supplied CP-151, operator determines reportability. STANDARD: Operator uses supplied copy of CP-151 and determines that from the initial conditions that an immediate notification shall be made to the NRC Operations Center. A written follow-up report must be submitted within 30 days of the verbal notification. COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Shift Supervisor.
The plant is at 100% rated thermal power.
A Health Physics Supervisor has called the Control Room reporting a source is missing.
The missing source has a concentration of 240,000 μCi of Cs-136.
The source was normally kept in the Health Physics Calibration Laboratory.

INITIATING CUES:

You are requested to determine external reporting requirements.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM A4S/ADMINISTRATIVE

Determination of Protective Action Requirements

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Using EM-202, determine protective action requirements.

Alternate Path:
N/A

Facility JPM #:
New

K/ARating(s)/Task Number/AO, RO, SRO:
2.4.41/2.4.44//4.1/4.0//1150101001//SRO

Task Standard:
Using EM-202, determine protective action requirements.

Preferred Evaluation Method:
Simulator_____ In-Plant _____

References:
EM-202

Validation Time: 15 min. Time Critical: YES

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____
_____
_____
_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

EM-202

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Emergency Coordinator.
The following events have occurred:

A small break LOCA is in progress.
No HPI is available.
No Main or Auxiliary Feedwater is available.
The "A" Emergency Diesel Generator is unavailable.
There is no power supply for the "A" 4160ES bus.
The steam driven Emergency Feedwater pump experiences a catastrophic failure and the subsequent steam leak causes EFP-1 to trip.
There has been no core cooling for 25 minutes.
Incores indicate that the RCS has entered the Severe Accident Region.
RM-G29's reading escalates to 100 R/hr and RM-G30 escalates to 120 R/hr and both are increasing.
Reactor Building Spray has failed.

INITIATING CUES:

You are requested to determine the appropriate Protective Action Recommendation, if any.

START TIME: _____ Shaded Block Indicates Critical Step

EXAMINER'S NOTE: Provide Operator with a copy of EM-202. STEP 1: Obtain a copy of procedure. STANDARD: Operator is given a copy of EM-202. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Using supplied EM-202, operator determines emergency classification and the protective action. STANDARD: Operator uses supplied copy of EM-202 and determines a General Emergency. Operator determines that the Protective Action Recommendation is to Evacuate for 5 miles 360° and shelter 5-10 miles 360°. COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Emergency Coordinator.
The following events have occurred:

A small break LOCA is in progress.
No HPI is available.
No Main or Auxiliary Feedwater is available.
The "A" Emergency Diesel Generator is unavailable.
There is no power supply for the "A" 4160ES bus.
The steam driven Emergency Feedwater pump experiences a catastrophic failure and the subsequent steam leak causes EFP-1 to trip.
There has been no core cooling for 25 minutes.
Incores indicate that the RCS has entered the Severe Accident Region.
RM-G29's reading escalates to 100 R/hr and RM-G30 escalates to 120 R/hr and both are increasing.
Reactor Building Spray has failed.

INITIATING CUES:

You are requested to determine the appropriate Protective Action Recommendation, if any.

Individual Walk-through Test Outline

Facility: Crystal River Unit 3		Date of Examination: 2-8-99
Exam Level: RO/SRO		Operating Test No. : 1
System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
Control Rod Drive //Transfer Single Rod to Auxiliary Power Supply//001A4.03// 4.0/3.7//S, N	1	A. 001K5.07//3.3/4.0//What are the Technical Specification requirements, if any, when given the positions of each rod in group 7 (one rod will be asymmetric)? B. 001K5.05//3.5/3.9//How much reactivity is added when group 7 is withdrawn from 85% to 93%?
Reactor Coolant System (RCS)//Respond to an RCS leak while Decay Heat Removal is in service//09EA2.02 //3.5/3.8//S, N, L	2	A. 002A2.01//4.3/4.4//Given a set of plant data, where is the Reactor Coolant System (RCS) leak location? B. 006A1.14//3.5/3.8//If the RCS leak developed while during a drained down condition, what is the minimum level required to maintain Net Positive Suction Head (NPSH) for a given flow through the operating Decay Heat Pump?
Reactor Building (RB)//Start an RB pressure Equalization /Mini-Purge under Non-Accident Conditions//029A2.03/ 2.7/3.1//S, N	8	A. 029K3.01//2.9/3.1//Is the average Reactor Building (RB) temperature acceptable, given a list of RB temperatures from SP-300? B. 029K4.03//3.2/3.5//While securing the RB equalization two (2) of the isolation valves do not close, what are the Technical Specification actions, if any?

Building Spray (BS) //Ensure BS actuation//026A3.01// 4.3/4.5//S, A, N	5	A. 026K3.01//3.9/4.1//What Technical Specification action, if any, is required for the loss of one Reactor Building Fan and the control valve for one Building Spray pump? B. 026K4.07//3.8/4.1//What is the required flow for the control valve for the operating Building Spray pump given a set of plant conditions?
Non-Nuclear Instrumentation (NNI)//Re-energize NNI-X//062A4.01 //3.3/3.1//CR, N	6	A. 015K6.01//2.9/3.2//While at 100% full power; power is lost to Nuclear Instrument, NI-6, given the readings from the other Nuclear Instruments and that the neutron flux selector switch is selected to NI-5/6; what are the results of this failure? B. 016K4.03//2.8/2.9//"A" Loop Turbine header pressure is selected to PT-2; MS-10 is selected to the "A" side for Turbine control; if Non-Nuclear Instrument, NNI-X, losses power what will happen to the "A" side Turbine Bypass Valves and Turbine control?
Reactor Protection System (RPS)//Reset an RPS channel //012A4.04//3.3/3.3//CR, D	7	A. 012K4.02//3.9/4.3//Given a set of plant parameters (variable low pressure trip), what is the condition of the Reactor Protection System (RPS)? B. 003K3.04//3.9/4.2//At 60% power, given the condition of the Reactor Coolant Pump Power Monitor and a set of the Reactor Coolant Pumps' kilowatt usage, what is the condition of the RPS system?
AC Electrical Distribution//Enable Turbine Lockout Functions prior to Generator Synchronization Startup//045A3.04//3.4/ 3.6//CR, N	4	A. 045K4.11//3.6/3.9//After the completion of step 4.3.21, in OP-203, Plant Startup, given Condensate Heater levels, what is the condition of the Turbine Stop Valve Lockout (86/TURB-1)? B. 045K1.18//3.6/3.7//With 423 Megawatts (electric) and Feedwater flow at 8.2×10^5 lbm/hr, what is the condition of the Turbine Stop Valve Lockout (86/TURB-1)?

Reactor Coolant System (RCS) //Depressurize RCS using High Pressure Auxiliary Spray //010A2.02//3.9/3.9//P, R, D	3	A. 010K5.01//3.5/4.0//During a cooldown directed in an Emergency Operating Procedure, High Pressure Auxiliary Spray is used to reduce pressure, at 530°F, what is the lowest pressure that can be achieved prior to loss of adequate subcooling margin? B. 010K4.03//3.8/4.1//What are the Low Temperature Over Pressure (LTOP) Technical Specification actions, if any, given a list of plant conditions (Pressurizer level will be high with the Power Operated Relief Valve, PORV, inoperable)?
Emergency Feedwater (EFW)//Crosstie Emergency Feedwater Pumps using EFV-12 and EFV-13//061A2.04 //3.4/3.8//P, N	4	A. 061K4.01//4.1/4.2//With CDV-103 open, what is the total volume available to the Emergency Feedwater Pumps if the level in Condensate Storage Tank is 8.5 feet and the level in Emergency Feedwater Tank is 9.25 feet? B. 061A2.08//2.7/2.9//Given plant conditions (Inadequate Subcooling Margin) and Emergency Feedwater flow control valves are in manual, what is the required Emergency Feedwater flow rate?
Liquid Radwaste//Start an Evaporator Condensate Storage Tank (ECST) release //068A4.02//3.2/3.1//P, N, R	9	A. 068K4.01//3.4/4.1//During a release of the "A" Evaporator Condensate Storage Tank, the flow instrument, WD-101-FIT, becomes inoperable; what are the requirements, if any, regarding the release? B. B. 068A4.02//3.2/3.1//Given a partially filled out Enclosure 1, from OP-407A, Operation of the Evaporator Condensate Storage Tanks, what are the release rates for the associated time periods?

* - Type codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow Power, (P)lant, (R)CA, (T)ime critical

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 1S/SIMULATOR

Transfer a Single Rod to the Auxiliary Power Supply

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Thelma Dellen Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12/17/98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Transfer a single control rod to the Auxiliary Power Supply.

Alternate Path:
N/A

Facility JPM #:
New

K/A Rating(s)/Task Number/AO, RO, SRO:
001A4.03//4.0/3.7//0010102010//RO, SRO

Task Standard:
Transfer a single control rod to the Auxiliary Power Supply by using OP-502, Control Rod Drive System, Section 4.16, Transferring a Group or Rod to the Auxiliary Power Supply.

Preferred Evaluation Method:
Simulator____X____ In-Plant _____

References:
OP-502

Validation Time: 6 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time_____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. Normal 100% power operations.
2. IC #11.

Tools/Equipment/Procedures Needed:

OP-502

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task, return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
The Plant is at 100% normal power.
Control Rod troubleshooting is underway.

INITIATING CUES:

You are requested to transfer Rod 5-4 to the Auxiliary Power Supply. Following transfer of the rod, leave the reactor diamond and demand station in manual for further manipulations.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-502. EXAMINER'S CUE: For purposes of this JPM assume SRO concurs with each rod manipulation. COMMENTS:	_____ SAT _____UNSAT
CAUTION: Tave control may go to Feedwater regulation. STEP 2: Place Reactor Demand control station in HAND if not in Mini Track. STANDARD: Operator depresses HAND and verifies that the white HAND light is ON and the red AUTO light is OFF. (Annunciator K-6-2) COMMENTS:	_____ SAT _____UNSAT
STEP 3: Place Reactor Diamond in MANUAL. STANDARD: Operator depresses MANUAL and verifies that the green MANUAL light is ON and the white AUTO light is OFF. The operator will also verify the Reactor Demand control station is in Mini Track by verifying that both red AUTO and white HAND lights are ON. COMMENTS:	_____ SAT _____UNSAT

STEP 4: STANDARD: COMMENTS:	Select GROUP SELECT Switch to desired group. Operator rotates GROUP SELECT Switch to Group 5.	_____SAT _____UNSAT
STEP 5: STANDARD: COMMENTS:	Select ALL or desired rod. Operator rotates SINGLE SELECT Switch to Rod 4.	_____SAT _____UNSAT
STEP 6: STANDARD: COMMENTS:	Select SEQ OR. Operator depresses SEQ/SEQ OR pushbutton and verifies amber SEQ OR light ON and green SEQ light ON.	_____SAT _____UNSAT

STEP 7: STANDARD: COMMENTS:	Select AUXIL. Operator depresses GROUP/AUXIL pushbutton and verifies AUXIL light ON and GROUP light OFF. The operator will also verify the CONTROL ON white light for group 5 is ON.	____ SAT ____ UNSAT
STEP 8: STANDARD: COMMENTS:	Place SPEED SELECTOR switch in JOG. Operator rotates RUN/JOG switch to JOG and verifies that the white SY light ON.	____ SAT ____ UNSAT
STEP 9: STANDARD: COMMENTS:	Select CLAMP. Operator depresses CLAMP/CLAMP RELEASE pushbutton and verifies green CLAMP light ON and amber CLAMP REL light OFF.	____ SAT ____ UNSAT

CAUTION: If amber CONTROL ON lights for more than one group is on, STOP, and notify Shift Management. STEP 10: Depress MAN TRANS. STANDARD: Operator depresses MAN TRANS pushbutton and verifies white TR CF light ON. The operator will also verify the amber CONTROL ON light for rod 5-4 is ON. COMMENTS:	____SAT ____UNSAT
STEP 11: Select CLAMP REL. STANDARD: Operator depresses CLAMP/CLAMP RELEASE pushbutton and verifies amber CLAMP REL light ON and green CLAMP light OFF. COMMENTS:	____SAT ____UNSAT
STEP 12: Select GROUP. STANDARD: Operator depresses GROUP/AUXIL pushbutton and verifies green GROUP light ON and amber AUXIL light OFF. The operator will also verify the SY light OFF. COMMENTS:	____SAT ____UNSAT

STEP 13:	If latching Safety Rods in accordance with Section 4.2, return to Section 4.2.3 after completion of this step.	_____ SAT
STANDARD:	This step N/A.	_____UNSAT
	EXAMINER'S CUE: Rod 5-4 is on the Auxiliary Power Supply.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: At 100% full power, Control Rod Group 7 Rods have the following positions. What are the Technical Specification requirements, if any?

ROD	POSITION WITHDRAWN
7-1	98.3%
7-2	97.8%
7-3	91.4%
7-4	99.1%
7-5	98.5%
7-6	97.9%
7-7	98.7%
7-8	99.2%

Answer: L.C.O. 3.1.4 is not met. The required actions for condition "A" must be performed.

Either align all CONTROL RODS in the group to within 6.5% of the group average height, while maintaining the rod insertion, group sequence, and group overlap limits in accordance with LCO 3.2.1, "Regulating Rod Insertion Limits" (A.1) in 1 hour.

OR

Either verify SDM is $\geq$ 1% $\Delta k/k$ (A.2.1.1) in 1 hour and once per 12 hours thereafter; OR initiate boration to restore SDM to within limit (A.2.1.2) within 1 hour;
AND, Reduce THERMAL POWER to $\leq$ 60% of the ALLOWABLE THERMAL POWER (A.2.2) in 2 hours.
AND, Reduce the nuclear overpower trip setpoint to $\leq$ 70% of the ALLOWABLE THERMAL POWER (A.2.3) in 10 hours.
AND, Verify the potential ejected rod worth is within the assumptions of the rod ejection analysis (A.2.4) in 72 hours.
AND, Perform SR 3.2.5.1, power peaking factors verification (A.2.5) in 72 hours.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

001K5.07//3.3/4.0

References:

Technical Specifications

JPM QUESTION #2

Question: At 100% full power, 300 EFPD, with equilibrium xenon and Control Rod Group 8 at its normal position, how much reactivity is added when group 7 is withdrawn from 85% to 93% withdrawn?

Answer: 0.0655 %Δk/k is added. [-0.0225 %Δk/k – (-0.088 %Δk/k) = 0.0655%Δk/k]

CANDIDATE'S RESPONSE

Time:

K/A Rating:

001K5.05//3.5/3.9

References:

OP-103C

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: At 100% full power, 300 EFPD, with equilibrium xenon and Control Rod Group 8 at its normal position, how much reactivity is added when group 7 is withdrawn from 85% to 93% withdrawn?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: At 100% full power, Control Rod Group 7 Rods have the following positions. What are the Technical Specification requirements, if any?

ROD	POSITION WITHDRAWN
7-1	98.3%
7-2	97.8%
7-3	91.4%
7-4	99.1%
7-5	98.5%
7-6	97.9%
7-7	98.7%
7-8	99.2%

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The Plant is at 100% normal power.
Control Rod troubleshooting is underway.

INITIATING CUES:

You are requested to transfer Rod 5-4 to the Auxiliary Power Supply. Following transfer of the rod, leave the reactor diamond and demand station in manual for further manipulations.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 2S/SIMULATOR

Respond to a Reactor Coolant System Leak While Decay Heat Removal is in Service

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12/17/98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Respond to a Reactor Coolant System Leak while Decay Heat Removal is in service.

Alternate Path:

N/A

Facility JPM #:

New

K/A Rating(s)/Task Number/AO, RO, SRO:

09EA2.02//3.5/3.8//0020402013//RO, SRO

Task Standard:

Respond to a Reactor Coolant System (RCS) Leak using AP-520, Loss of RCS Coolant or Pressure, while Decay Heat Removal is in service.

Preferred Evaluation Method:

Simulator____X____ In-Plant _____

References:

AP-520

Validation Time: 20 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. The plant is on Decay Heat Removal.
2. The "A" Decay Heat (DH) Train is in service.
3. There is a small leak in the "A" DH Heat Exchanger.
4. The "A" Decay Heat Closed Cycle Cooling Storage Tank (DCT-1A) level is increasing.
5. All Chemical Addition Valves found on the Control Board are closed.
6. OP-209 clearance is in place. (make new set)
7. IC #66.

Tools/Equipment/Procedures Needed:

AP-520

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
The Shift Supervisor has entered AP-520, due to loss of Reactor Coolant, and is now at step 3.77.
The Primary Plant Operator (PPO) has walked down the entire length of the drop line and has found no leak.
The "A" Decay Heat Train is in service.
The "B" Decay Heat Train is available.

INITIATING CUES:

You are requested to take appropriate actions for an RCS leak starting with step 3.77 of AP-520.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of AP-520. EXAMINER'S NOTE: There is a possibility that the Operator will look at the annunciator response and decide to use OP-404 to swap Decay Heat Trains. This will accomplish the task also. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Determine leak location. STANDARD: Operator will see alarm for RM-L5 and notice an increase in DCT-1A indicating a leak from the "A" Decay Heat Train into the "A" Decay Heat Closed Cycle Cooling Train. EXAMINER'S CUE: (If needed) The Auxiliary Building is accessible. The Reactor Building Sump level annunciator has not been in alarm for 4 hours. COMMENTS:	_____SAT _____UNSAT

STEP 3: STANDARD: COMMENTS:	IF leak to SF pool exists, THEN isolate SF pool from DHR. N/A.	_____ SAT _____UNSAT
STEP 4: STANDARD: COMMENTS:	IF leak stops, THEN EXIT this procedure. N/A	_____ SAT _____UNSAT
STEP 5: STANDARD: COMMENTS:	GO TO applicable step in this procedure based on leak location. Operator transitions to step 3.100.	_____ SAT _____UNSAT

STEP 6: STANDARD: COMMENTS:	IF alternate DHR train is available, THEN start alternate DHR train. IF "A" Train DHR is running, THEN PERFORM Enclosure 4, Starting "B" Train DHR, in this procedure. Operator continues on in the procedure, Enclosure 4.	_____ SAT _____UNSAT
STEP 7: STANDARD: COMMENTS:	Position DCV-178-MS to "0". Operator rotates knob of DCV-178-MS to "0".	_____ SAT _____UNSAT
STEP 8A: STANDARD: COMMENTS:	Isolate MU purification flow. Close DHV-105 Operator verifies DHV-105 is closed by green light ON and red light OFF.	_____ SAT _____UNSAT

STEP 8B: STANDARD: COMMENTS:	Close DHV-75. Operator verifies DHV-75 is closed by green light ON and red light OFF.	_____ SAT _____UNSAT
STEP 9: STANDARD: COMMENTS:	Align DHP-1B for DHR. Ensure the following valves are closed: DHV-35, DHV-43, DHV-7, DHV-106, DHV-76. Operator locates each valve's control switch and verifies green light ON. DHV-35 is verified by amber ES status light. DHV-43 is red tagged closed.	_____ SAT _____UNSAT
STEP 10A: STANDARD: COMMENTS:	Open DHP-1B isolation valves. DHV-40 Operator rotates DHV-40 control switch to OPEN and verifies red light ON green light OFF. EXAMINER'S NOTE: The stroke time on this valve is long.	_____ SAT _____UNSAT

STEP 10B: STANDARD: COMMENTS:	Open DHP-1B isolation valves. DHV-6 Operator rotates DHV-6 control switch to OPEN and holds until red light ON green light OFF.	_____ SAT _____UNSAT
STEP 11: STANDARD: COMMENTS:	Adjust DH control valves for 1500 gpm. DHV-111 and DHV-110 Operator adjusts thumb-wheel on each valve's controller to 1500 gpm. (Annunciator A-3-6)	_____ SAT _____UNSAT
STEP 12A: STANDARD: COMMENTS:	Start "B" DHR train. Start DCP-1B. Operator rotates DCP-1B control handle to START and verifies green light OFF and red light ON. Operator may also verify amperage and discharge pressure increases and stabilizes.	_____ SAT _____UNSAT

STEP 12B: Start "B" DHR train. Start RWP-3B. STANDARD: Operator rotates RWP-3B control handle to START and verifies green light OFF and red light ON. Operator may also verify amperage and discharge pressure increases and stabilizes. (Annunciator D-6-5 will alarm and then clear as pressure increases) COMMENTS:	_____ SAT _____UNSAT
STEP 12C: Start "B" DHR train. Start DHP-1B. STANDARD: Operator rotates DHP-1B control handle to START and verifies green light OFF and red light ON. Operator may also verify amperage increases and stabilizes. (Annunciator D-2-4 will alarm and then may clear as flow decreases). COMMENTS:	_____ SAT _____UNSAT
STEP 13: Establish RCS cooling. Adjust DCV-178-MS for desired cooling. STANDARD: Operator rotates knob of DCV-178-MS to a throttled position. EXAMINER'S NOTE: Operator may need to be cued that "adjustment of DCV-177 is appropriate for cooldown" to save time. Operator may match DCV-178-MS to the setting of DCV-177-MS. COMMENTS:	_____ SAT _____UNSAT

STEP 14: STANDARD: COMMENTS:	Stop DHP-1A. Operator rotates DHP-1A control handle to STOP and verifies red light OFF and green light ON. (Annunciator A-3-6)	_____ SAT _____UNSAT
STEP 15A: STANDARD: COMMENTS:	Isolate "B" DHR train. Close the following valves: DHV-39 Operator rotates DHV-39 control switch to CLOSE and verifies green light ON red light OFF.	_____ SAT _____UNSAT
STEP 15B: STANDARD: COMMENTS:	Isolate "B" DHR train. Close the following valves: DHV-5 Operator rotates DHV-5 control switch to CLOSE and verifies green light ON red light OFF.	_____ SAT _____UNSAT

STEP 16:	Control RCS temperature. Adjust DHV-111 setpoint to 3000 gpm.	_____ SAT
STANDARD:	Operator adjusts thumb-wheel of DHV-111 to 3000 gpm. (Annunciator D-3-6 may or may be in alarm and will clear).	_____UNSAT
COMMENTS:		
STEP 17:	Control RCS temperature. Adjust DCV-178-MS for desired cooling.	_____ SAT
STANDARD:	Operator rotates knob of DCV-178-MS to a throttled position.	_____UNSAT
	EXAMINER'S NOTE: Operator may need to be cued that "adjustment of DCV-178 is appropriate for cooldown" to save time.	
COMMENTS:		
	END OF TASK	

STOP TIME: _____

JPM QUESTION #1

Question: Given the following set of plant data, where is the Reactor Coolant System (RCS) leak location?

The Reactor Building Sump level is 1 foot and not rising.
The Auxiliary Building Sump is 1.3 feet and not rising.
The Reactor Coolant Drain Tank is at 11 feet and not rising.
The SW Surge Tank is at 12 feet and has increased 2 inches in the last 30 minutes.
Both DC Surge Tanks are at 11 feet and the "A" tank has increased 1 inch in the last hour.
RM-L5 is in alarm.
No other RMLs are in alarm.

Answer: The "A" Decay Heat Heat Exchanger is the source of the leak.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
002A2.01//4.3/4.4

References:
AP-330

JPM QUESTION #2

Question: If the RCS leak developed while during a drained down condition, what is the minimum tygon tube level required to maintain Net Positive Suction Head (NPSH) for 2000 gpm flow through the operating Decay Heat Pump?

Answer: 129 feet 10 inches using the instrument error corrected curve

CANDIDATE'S RESPONSE

Time:

K/A Rating:
006A1.14//3.5/3.8

References:
OP-103B Curve 18

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: If the RCS leak developed while during a drained down condition, what is the minimum tygon tube level required to maintain Net Positive Suction Head (NPSH) for 2000 gpm flow through the operating Decay Heat Pump?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Given the following set of plant data, where is the Reactor Coolant System (RCS) leak location?

The Reactor Building Sump level is 1 foot and not rising.
The Auxiliary Building Sump is 1.3 feet and not rising.
The Reactor Coolant Drain Tank is at 11 feet and not rising.
The SW Surge Tank is at 12 feet and has increased 2 inches in the last 30 minutes.
Both DC Surge Tanks are at 11 feet and the "A" tank has increased 1 inch in the last hour.
RM-L5 is in alarm.
No other RMLs are in alarm.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The Shift Supervisor has entered AP-520, due to loss of Reactor Coolant, and is now at step 3.77.
The Primary Plant Operator (PPO) has walked down the entire length of the drop line and has found no leak.
The "A" Decay Heat Train is in service.
The "B" Decay Heat Train is available.

INITIATING CUES:

You are requested to take appropriate actions for an RCS leak starting with step 3.77 of AP-520.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 3S/SIMULATOR

Start a Reactor Building Pressure Equalization/Mini-Purge under Non-Accident Conditions

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Sullivan Date/ 12-17-98

VALIDATED BY: * J Nyon Date/ 12/17/98

APPROVED BY: R. Wes Hoy Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Start a Reactor Building pressure Equalization/Mini-Purge under Non-Accident Conditions.

Alternate Path:

N/A

Facility JPM #:

New

K/A Rating(s)/Task Number/AO, RO, SRO:

029A2.03//2.7/3.1//0880102016//RO, SRO

Task Standard:

Finish the start of a Reactor Building (RB) pressure equalization/mini-purge under non-accident conditions using OP-417, section 4.7.

Preferred Evaluation Method:

Simulator____X____ In-Plant _____

References:

OP-417

Validation Time: 10 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. The plant is at 100% normal full power.
2. IC #11.
3. Power up RM-A1G/I/P monitoring and pump.

Tools/Equipment/Procedures Needed:

OP-417
Calculator

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
Chemistry has asked that a mini-purge be started in the Reactor Building (RB).
The previous shift has completed OP-417 up to and including step 4.7.14.

INITIATING CUES:

You are requested to finish the start of the RB mini-purge.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-417. COMMENTS:	_____ SAT _____UNSAT
NOTE: The "Reactor Bldg Purge Air Flow Low" alarm is expected to come in when AHF-7A or AHF-7B is started. As long as step 4.7.16 (flow requirement) is met, no actions are required. STEP 2A: Start Reactor Bldg Purge Exhaust Fan. Notify Chemistry prior to start of purge. STANDARD: Operator contacts Chemistry to inform them of the purge start. COMMENTS:	_____ SAT _____UNSAT
STEP 2B: Start Reactor Bldg Purge Exhaust Fan. Start AHF-7A OR AHF-7B. STANDARD: Operator rotates either the control handle for either AHF-7A OR AHF-7B to the start position and hold until white permissive lights are ON and then verifies the red light ON and the green light OFF. (Annunciator F-4-7) COMMENTS:	_____ SAT _____UNSAT

STEP 2C:	Notify HP that RB purge has started.	_____ SAT
STANDARD:	Operator contacts Health Physics to inform them of the purge start.	_____UNSAT
COMMENTS:		
STEP 3:	Verify total purge flow Channel "D" on AH-32-FIR is above the minimum required for fan operation. (> 20,000 SCFM).	_____ SAT
STANDARD:	Operator observes the Channel "D" flow on AH-32-FIR is approximately 27.2 x 10^3 SCFM.	_____UNSAT
COMMENTS:		
NOTE: LR-60-FI1/FI2 will not indicate until RB pressure > 0 psig.		
STEP 4:	IF monitoring RB vent flow with LR-60-FI1/FI2, THEN multiply reading by 1.2273	_____ SAT
STANDARD:	Operator locates LR-60-FI1/FI2.	_____UNSAT
COMMENTS:		

STEP 5:	In modes 1-4, Perform RM-A1 gas Channel Checks every 8 hours. N/A if not required. EXAMINER'S CUE: Another operator will perform this step. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 6A:	Perform RB Vent mini-purge, and/or Equalization. Open LRV-70 and LRV-71 OR Open LRV-72 and LRV-73 STANDARD: Operator rotates control switch for either LRV-70 and LRV-71 OR LRV-72 and LRV-73 in the OPEN position until the red light is ON and the green light is OFF. COMMENTS:	_____ SAT _____UNSAT

STEP 6B: STANDARD: COMMENTS:	Perform RB Vent mini-purge, and/or Equalization. IF LRV-70 and LRV-71 are Open THEN Throttle Open LRV-121 to maintain LR-60-FI1 or LR-60-FI2 on scale OR Throttle Open LRV-123 to maintain LR-60-FI1 or LR-60-FI2 on scale N/A; Flow is on scale.	_____ SAT _____UNSAT
STEP 6C: STANDARD: COMMENTS:	Notify Chemistry when flow is established, so they can obtain the required samples. Operator notifies Chemistry that the RB Mini-Purge has commenced.	_____ SAT _____UNSAT

STEP 6D:	IF RB Mini-Purge is to be ESTABLISHED, THEN concurrently Perform Section 4.6 of OP-417 to supply air to the RB.	_____ SAT
	EXAMINER'S CUE: Section 4.6 is being performed by other operators.	_____UNSAT
STANDARD:	Operator has completed the start of the Mini-Purge.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: Is the average Reactor Building (RB) temperature acceptable, given the following list of RB temperatures from SP-300?

COMPUTER POINT	TEMPERATURE °F
S358	107
S359	121
S382	132
S383	138
S387	OOS

Answer: The average RB temperature is 124.5°F, which meets SP-300 maximum tolerance.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
029K3.01//2.9/3.1

References:
SP-300

JPM QUESTION #2

Question: In Mode 1, while securing the RB equalization two (2) of the isolation valves (LRV-70 and LRV-71) will not close, what are the Technical Specification actions, if any?

Answer: Isolate the affected penetration flow path by use of at least one closed and de-activated automatic valve, closed manual valve, or blind flange in one hour. (Candidate may include 1 hour requirement in TS 3.6.1, Containment.) And, verify the affected penetration flow path is isolated once per 31 days for isolation devices outside containment and prior to entering Mode 4 from Mode 5 if not performed within the previous 92 days for isolation devices inside containment.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
029K4.03//3.2/3.5

References:
TS 3.6.3
Flow diagram

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: While securing the RB equalization two (2) of the isolation valves (LRV-70 and LRV-71) do not close, what are the Technical Specification actions, if any?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Is the average Reactor Building (RB) temperature acceptable, given the following list of RB temperatures from SP-300?

COMPUTER POINT	TEMPERATURE °F
S358	107
S359	121
S382	132
S383	138
S387	OOS

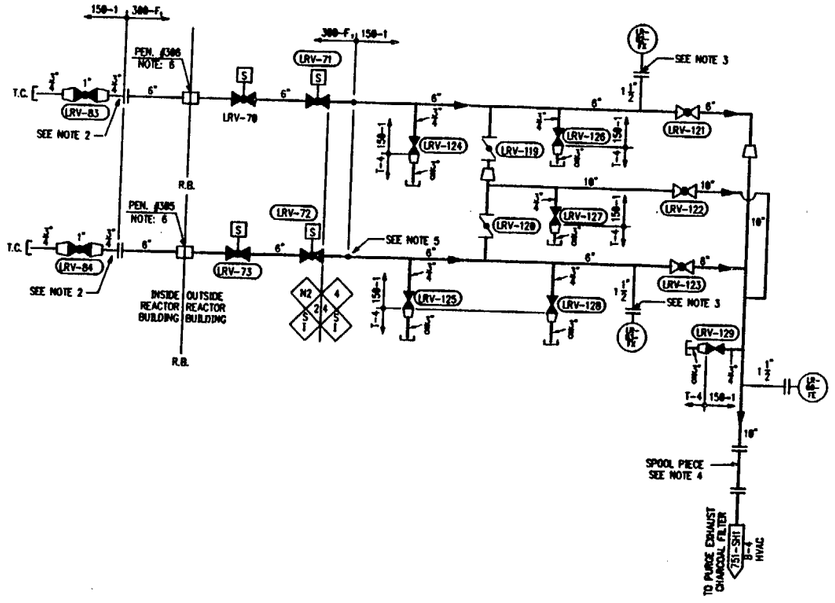
CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
Chemistry has asked that a mini-purge be started in the Reactor Building (RB).
The previous shift has completed OP-417 up to and including step 4.7.14.

INITIATING CUES:

You are requested to finish the start of the RB mini-purge.



KEY #: P000068

NOTES:
1. ALL PIPING ON THIS DWG. IS SIESMIC CLASS I & B31.1ES EXCEPT WHERE NOTED OTHERWISE.
2. INSTALL DURING HYDRO TEST ONLY.
3. FLOW INSTRUMENTATION FE/FT-82/83 ARE TO BE INSTALLED DURING THE HYDROGEN PURGE PROCESS. DURING NORMAL OPERATION, BLIND FLANGES ARE INSTALLED.
4. SPOOL PIECE TO BE REMOVED AND BLIND FLANGES INSTALLED TO ISOLATE PURGE EXHAUST CHARCOAL FILTER DURING HYDROTESTING.
5. A TRANSITION SPOOL PIECE HAS BEEN PROVIDED TO ACCOMMODATE SCHEDULE 80 END CONDITION ON VALVE TO MATCH SCHEDULE 40 PIPE.
6. FOR PENETRATION CONTAINMENT ISOLATION CONFIGURATION SEE REF. DWG'S 315-305, 315-306

12 CAUTION:
302 DRAWINGS MAY NOT REFLECT ACTUAL VALVE POSITIONS IN THE PLANT. VALVE POSITIONS ARE CONTROLLED THROUGH OPERATING PROCEDURES. NOCS (62846)

NO.	REVISIONS	BY	CHECKED	APPROVED	DATE
12	REVISED PER DCN 98-291M	MAD	-MD	CSS	
11	REVISED PER DCN 98-178M	TDF	KLM	CSS	6-13-98
10	REVISED PER DCN 97-842A,B,C,D	MAD	BEC	CSS	6-13-97

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO.3 — 855,000 KW
NUCLEAR PLANT PIPING — L.R. SYSTEM FLOW DIA.
POST-ACCIDENT VENTING SYSTEM
ESI AND ORIGINAL DESIGN BASES CODE CLASSES

REDRAWN ON CAD SYSTEM
DRAWN BY: AC.R. DATE: 03-26-93
CHECKED BY: B.E.K. DATE: 04-06-93
CHECK VERIFIED: B.M.S. DATE: 04-06-93
BAYMONT ENGINEERING COMPANY

SCALE
FD-302-723 12
SHEET 01 OF 01
DRAWING NUMBER REV.

FILE: 302723.DWG

D-9-8

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 4S/SIMULATOR

Ensure Building Spray Actuation

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Sullivan Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-15-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Ensure Building Spray Actuation.

Alternate Path:

With high Reactor Building Pressure, Building Spray does not automatically actuate and the "A" Building Spray Pump (BSP-1A) fails to start in manual.

Facility JPM #:

New

K/A Rating(s)/Task Number/AO, RO, SRO:

026A3.01//4.3/4.5//0260502003//RO, SRO

Task Standard:

Building Spray has failed to actuate on high Reactor Building Pressure, manually start Building Spray using EOP-07, Inadequate Core Cooling.

Preferred Evaluation Method:

Simulator____X____ In-Plant _____

References:

EOP-07

Validation Time: 5 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS:

1. A LOCA is in progress.
2. Reactor Building Pressure is 43 psig.
3. Building Spray (BS) fails to automatically actuate.
4. BSP-1A will not start in manual.
5. The BWST level is > 20 ft.
6. IC #67

Tools/Equipment/Procedures Needed:

EOP-07

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Reactor Operator.
The Shift Supervisor has entered EOP-07.
Reactor Building Pressure is 43 psig.

INITIATING CUES:

You are requested to ensure proper Building Spray actuation using step 3.14 of EOP-07.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of EOP-7. COMMENTS:	_____ SAT _____UNSAT
STEP 2A: IF at any time, RB Pressure ≥ 30 psig, THEN ensure proper BS actuation. Ensure BS pumps and required cooling pumps are operating: BSP-1A, RWP-3A, DCP-1A, BSP-1B, RWP-3B, DCP-1B. EXAMINER'S NOTE: BSP-1A will not start; BSP-1B is not running. All other pumps are running. STANDARD: Operator rotates control handle of each non-running pump (BSP-1A and BSP-1B) to START and verifies red light comes ON and green light goes OFF. COMMENTS:	_____ SAT _____UNSAT

STEP 2B:	Ensure applicable BS suction valves are open: DHV-34, DHV-35, DHV-42, DHV-43. EXAMINER'S NOTE: DHV-34 and DHV-35 are open; DHV-42 and DHV-43 are closed. Operator verifies DHV-34 and DHV-35 are open and red lights are ON. Operator verifies DHV-42 and DHV-43 are closed and green lights are ON.	_____ SAT _____UNSAT
STANDARD:		
COMMENTS:		
STEP 2C:	IF BS suction is from BWST, THEN ensure BS controlled at 1500 gpm (1450 to 1550).	_____ SAT _____UNSAT
STANDARD:	Operator adjusts thumb-wheel on BSV-4 controller to 1500 gpm (1450 to 1550).	
COMMENTS:		

STEP 2D:	IF BS suction is from RB sump, THEN ensure BS discharge valves are selected to 1200 gpm and LOCAL.	_____ SAT
STANDARD:	N/A (suction aligned to BWST)	_____UNSAT
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: What Technical Specification action(s), if any, is(are) required for the loss of AHF-1A and BSV-4? Reactor Building Fan ES selection is as follows:

AHF-1A is NOT ES selected
AHF-1B is ES selected
AHF-1C is ES selected

Answer: Restore reactor building spray train to Operable status within 72 hours.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
026K3.01//3.9/4.1

References:
TS 3.6.6

JPM QUESTION #2

Question: What is the required flow for the control valve for the operating Building Spray pump given the following plant conditions?

Reactor Building pressure is 31 psig.
Reactor Coolant temperature is 500°F.
Reactor Coolant pressure is 900 psig.
Pressurizer level is 30 inches.
The Borated Water Storage Tank level is 8 feet.

Answer: 1200 gpm

CANDIDATE'S RESPONSE

Time:

K/A Rating:
026K4.07//3.8/4.1

References:
EOP-7 (other EOPs)

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What is the required flow for the control valve for the operating Building Spray pump given the following plant conditions?

Reactor Building pressure is 31 psig.
Reactor Coolant temperature is 500°F.
Reactor Coolant pressure is 900 psig.
Pressurizer level is 30 inches.
The Borated Water Storage Tank level is 8 feet.

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What Technical Specification action(s), if any, is(are) required for the loss of AHF-1A and BSV-4? Reactor Building Fan ES selection is as follows:

AHF-1A is NOT ES selected
AHF-1B is ES selected
AHF-1C is ES selected

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

INITIAL CONDITIONS:

Your are the Reactor Operator.
The Shift Supervisor has entered EOP-07.
Reactor Building Pressure is 43 psig.

INITIATING CUES:

You are requested to ensure proper Building Spray actuation using step 3.14 of EOP-07.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 1CR/CONTROL ROOM

Re-energize "X" Non-Nuclear Instrumentation (NNI-X)

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gillian Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12.18.98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12.18.98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Re-energize NNI-X.

Alternate Path:
N/A

Facility JPM #:
New

K/ARating(s)/Task Number/AO, RO, SRO:
062A4.01//3.3/3.1//0160102001//RO, SRO

Task Standard:
Re-energize NNI-X using OP-501, following a power failure.

Preferred Evaluation Method:
Simulator_____ In-Plant _____X_____

References:
OP-501

Validation Time: 7 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-501

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Reactor Operator.
The plant is at 100% full power.
A power failure occurred, de-energizing NNI-X (both AC and DC).
All SASS modules transferred correctly.
AP-581 directs restoration in accordance with OP-501.
Steps 4.3.1 through 4.3.4 of OP-501 are complete.

INITIATING CUES:

You are requested to re-energize NNI-X starting with step 4.3.5.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1:	Obtain a copy of appropriate procedure.	_____ SAT
STANDARD:	Operator obtains a copy of OP-501, Section 4.3.	
COMMENTS:		_____UNSAT
STEP 2:	IF NNI-X DC power is de-energized, THEN Ensure switches S1 and S2 on the NNI-X Power Auctioneer Panel are OFF. Located at the top front of NNI Cab. #2.	_____ SAT
STANDARD:	Operator selects both S1 and S2 switches to OFF.	_____UNSAT
	EXAMINER'S CUE: Both switches are OFF.	
COMMENTS:		

STEP 3:	Ensure the NNI-X power supply Bkrs and the backup power supply Bkr are closed: VBDP-1 Bkr. #8; VBDP-1 Bkr. #11; VBDP-5 Bkr. #7; VBDP-5 Bkr. #25; VBDP-3 Bkr. #38	_____ SAT _____UNSAT
STANDARD:	Operator verifies at each VBDP status panel that the breaker light is ON.	
	EXAMINER'S CUE: All power supply breakers are closed.	
COMMENTS:		
STEP 4:	Ensure the NNI-X cabinet fan breaker is closed and the fans are running. Breaker is located at the top rear of NNI Cab. #3.	_____ SAT _____UNSAT
STANDARD:	Operator verifies fan breaker is ON and fan flow.	
	EXAMINER'S CUE: The fan is running.	
COMMENTS:		

STEP 5:	Ensure the 4 Lambda power supply switches located inside the front door of NNI Cabinet 3 PS1/PS2 top, and PS1/PS2 bottom are ON	_____SAT
STANDARD:	Operator verifies that power light is ON for all 4 Lambda power supplies.	_____UNSAT
	EXAMINER'S CUE: The Power supplies are ON.	
COMMENTS:		
STEP 6:	Simultaneously Select switches S1 and S2 on the NNI-X Power Auctioneer Panel to ON. Located at the top front of NNI Cab #2.	_____ SAT
STANDARD:	Operator selects both S1 and S2 to ON at the same time.	_____UNSAT
	EXAMINER'S CUE: Both switches are ON.	
COMMENTS:		

STEP 7:	Verify all 4 NNI power supply monitor lights are lit. Located inside the front door of NNI CAB. #3, Row 6, Slot 15. IF any one of the lights are not lit, THEN Determine the cause of the failure and rectify before proceeding.	_____ SAT _____UNSAT
STANDARD:	Operator verifies all power supply monitor white lights are ON.	
	EXAMINER'S CUE: All 4 power supply monitor lights are ON.	
COMMENTS:		
STEP 8:	Inspect all NNI-X fuses. Located in NNI Cabinets 1 (front and rear), 2 (rear), 4 (rear), and 5 (rear). Light is lit if fuse is blown. Replace blown fuses in accordance with CP-113A.	_____ SAT _____UNSAT
	EXAMINER'S CUE: No fuse lights are ON.	
STANDARD:	N/A	
COMMENTS:		

STEP 9:	Ensure NNI-X powered SASS Power Supplies are ON (located inside the front door of NNI CAB. #6 front). 6-3-1, NNI-X Supply to SASS; 6-6-1, NNI-X Supply to SASS.	_____ SAT _____UNSAT
STANDARD:	Operator verifies that power supply lights are ON for SASS power in Cab. #6, 6-3-1 and 6-6-1.	
	EXAMINER'S CUE: SASS Power Supplies are ON.	
COMMENTS:		
STEP 10:	Verify the ICS NNI TROUBLE annunciator is cleared. K-02-02.	_____ SAT
STANDARD:	Operator verifies annunciator K-02-02, ICS NNI TROUBLE is not lit.	_____UNSAT
	EXAMINER'S CUE: The alarm has cleared.	
COMMENTS:		

STEP 11:	Ensure NNI-X is energized and stable for a minimum of 30 minutes prior to realignment to normal.	_____ SAT
STANDARD:	Operator has recovered power.	_____UNSAT
COMMENTS:		
	END OF TASK	

STOP TIME: _____

JPM QUESTION #1

Question: While at full power; Nuclear Instrument, NI-6, fails midscale given the readings from the other Nuclear Instruments and that the neutron flux selector switch is selected to NI-5/6; what are the results of this failure?

NI-5 reads 99%.
NI-7 reads 98%.
NI-8 reads 99%.

Answer: NI-5 will be supplying the neutron power signal.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
015K6.01//2.9/3.2

References:
OP-501

JPM QUESTION #2

Question: "A" Loop Turbine header pressure is selected to PT-2; MS-10 is selected to the "A" side for Turbine control; if power is suddenly lost to SP-10-PT2, what will happen to the "A" side Turbine Bypass Valves and Turbine control?

Answer: No change will occur in either Turbine Bypass Valve position or Turbine control.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
016K4.03//2.8/2.9

References:
OP-501

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: "A" Loop Turbine header pressure is selected to PT-2; MS-10 is selected to the "A" side for Turbine control; if power is suddenly lost to SP-10-PT2, what will happen to the "A" side Turbine Bypass Valves and Turbine control?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: While at full power; Nuclear Instrument, NI-6, fails midscale given the readings from the other Nuclear Instruments and that the neutron flux selector switch is selected to NI-5/6; what are the results of this failure?

NI-5 reads 99%.
NI-7 reads 98%.
NI-8 reads 99%.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Reactor Operator.
The plant is at 100% full power.
A power failure occurred, de-energizing NNI-X (both AC and DC).
All SASS modules transferred correctly.
AP-581 directs restoration in accordance with OP-501.
Steps 4.3.1 through 4.3.4 of OP-501 are complete.

INITIATING CUES:

You are requested to re-energize NNI-X starting with step 4.3.5.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 2 CR/CONTROL ROOM

Reset a Reactor Protection System Channel

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Sellers Date/ 12-17-98

VALIDATED BY: * D Pope Date/ 12-17-98

APPROVED BY: T. Wa Lou Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Reset a Reactor Protection System channel.

Alternate Path:
N/A

Facility JPM #:
076

K/ARating(s)/Task Number/AO, RO, SRO:
012A4.04//3.3/3.3//0120102007//RO, SRO

Task Standard:
Reset Reactor Protection System (RPS) channel "B" using OP-507.

Preferred Evaluation Method:
Simulator_____ In-Plant _____X_____

References:
OP-507

Validation Time: 5 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-507
RPS cabinet key

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Reactor Operator.
The plant is at 100% full power.
The "B" RPS has been tripped using the Primary Method.

INITIATING CUES:

You are requested to reset the "B" RPS channel.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-507, Section 4.10. COMMENTS:	_____ SAT _____UNSAT
STEP 2: IF Primary Method was used to trip RPS channel, THEN RESET the Reactor Bldg. High Pressure Contact Monitor. Depress reset toggle on the REACTOR BUILDING HIGH PRESS contact monitor. Verify both REACTOR BUILDING HIGH PRESS contact monitor lights are extinguished. GO TO Step 4.10.4. STANDARD: Operator depresses and then releases the toggle for the REACTOR BUILDING HIGH PRESS contact monitor and verifies that both red lights go OUT. EXAMINER'S CUE: The REACTOR BUILDING HIGH PRESS contact monitor is reset. COMMENTS:	_____ SAT _____UNSAT

STEP 3:	Reset the reactor trip module. Depress subsystem reset toggle on the reactor trip module and Verify the protective subsystem amber indicating lamps on top of each channel cabinet are dim for the "B" channel.	_____ SAT _____UNSAT
STANDARD:	Operator depresses and then releases the subsystem reset toggle on the reactor trip module and verifies that the amber light for the "B" channel on each RPS cabinet dims.	
	EXAMINER'S CUE: As seen; second light from left is dim on all 4 RPS cabinets.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: Given the following set of plant parameters , what should be the condition of the Reactor Protection System (RPS)? (Based on Technical Specification allowable values)

Reactor Coolant (RCS) pressure is 1845 psig.
Reactor power is 89% full power.
RCS outlet temperature is 605°F.
Reactor Building pressure is 2.8 psig.
Main Turbine control oil pressure is 55 psig.
The "A" Main Feedwater Pump control oil pressure is 56 psig.
The "B" Main Feedwater Pump control oil pressure is 60 psig.
3 Reactor Coolant Pumps are operating.

Answer: The Reactor should be tripped on RCS variable low pressure.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
012K4.02//3.9/4.3

References:
TS 3.3.1, Table 3.3.1-1

JPM QUESTION #2

Question: At 60% power, with the "A" Reactor Coolant Pump Power Monitor in bypass and the following set of the Reactor Coolant Pumps' kilowatt usage, what is the condition of the RPS system?

REACTOR COOLANT PUMP	KW
A	1,234
B	13,200
C	8,900
D	14,100

Answer: RPS is normal (no trips are present).

CANDIDATE'S RESPONSE

Time:

K/A Rating:
003K3.04//3.9/4.2

References:
TS 3.3.1, Table 3.3.1-1

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: At 60% power, with the "A" Reactor Coolant Pump Power Monitor in bypass and the following set of the Reactor Coolant Pumps' kilowatt usage, what is the condition of the RPS system?

REACTOR COOLANT PUMP	KW
A	1,234
B	13,200
C	8,900
D	14,100

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Given the following set of plant parameters , what should be the condition of the Reactor Protection System (RPS)? (Based on Technical Specification allowable values)

Reactor Coolant (RCS) pressure is 1845 psig.
Reactor power is 89% full power.
RCS outlet temperature is 605°F.
Reactor Building pressure is 2.8 psig.
Main Turbine control oil pressure is 55 psig.
The "A" Main Feedwater Pump control oil pressure is 56 psig.
The "B" Main Feedwater Pump control oil pressure is 60 psig.
3 Reactor Coolant Pumps are operating.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Reactor Operator.
The plant is at 100% full power.
The "B" RPS has been tripped using the Primary Method.

INITIATING CUES:

You are requested to reset the "B" RPS channel.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 3 CR/CONTROL ROOM

Enable Turbine Lockout Functions prior to Generator Synchronization Startup

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Enable turbine lockout functions prior to Generator synchronization startup.

Alternate Path:

N/A

Facility JPM #:

New

K/ARating(s)/Task Number/AO, RO, SRO:

045A3.04//3.4/3.6//0620102005//RO, SRO

Task Standard:

Enable the turbine lockouts and perform final conditions prior to synchronizing the Generator.

Preferred Evaluation Method:

Simulator_____ In-Plant _____X_____

References:

OP-203

Validation Time: 10 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-203
RPS Cabinet key

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Reactor Operator.
A Turbine Generator startup is in progress.
The Turbine is at 1800 rpm.
Steps 4.3.1 through 4.3.20 are complete.

INITIATING CUES:

You are requested to perform the final conditions prior to synchronizing the Generator to the grid.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-203, Section 4.3.21. COMMENTS:	_____ SAT _____UNSAT
STEP 2A: WHEN Turbine is at 1800 RPM, THEN Perform final conditions prior to synchronizing Generator to grid. STOP TBP-2. STANDARD: Operator rotates control handle for TBP-2 to STOP and verify green light ON, red light OFF. EXAMINER'S CUE: TBP-2 is stopped. COMMENTS:	_____ SAT _____UNSAT
STEP 2B: STOP TBP-8. STANDARD: Operator rotates control handle for TBP-8 to STOP and verify green light ON, red light OFF. EXAMINER'S CUE: TBP-8 is stopped. COMMENTS:	_____ SAT _____UNSAT

STEP 2C: Observe Turbine Supervisory Instrument readings are normal. EXAMINER'S CUE: Turbine Supervisory Instrument readings are as is. STANDARD: Operator verifies that the Instrument readings for the Turbine are normal. (TB-455-SI1/2 through TB-463-SI1/2; TB-469-ZI; TB-467-ZI; TB-465-ZI; TB-466-ZI; TB-359-SI; TB-123-SY-1) (Operator may check more instruments) EXAMINER'S NOTE: Cue if needed: There are no alarms or excessive readings. COMMENTS:	_____ SAT _____UNSAT
STEP 2D: Select TURB 3 Stop Vlvs Lockouts selector switch to ON. STANDARD: Operator rotates control switch for TURB 3 Stop Vlvs Lockouts to ON and verifies that white indicating light ON EXAMINER'S CUE: TURB 3 Stop Vlvs Lockouts are functional. COMMENTS:	_____ SAT _____UNSAT

STEP 2E:	Reset Turbine trip contact monitors with lower test toggle switch on Contact Buffer, in RPS Channels A, B, C, and D.	_____ SAT
STANDARD:	In each RPS cabinet operator depresses lower toggle switch for Turbine Trip contact monitor and verifies each light dims.	_____UNSAT
	EXAMINER'S CUE: The Turbine Trip contact monitor is reset.	
COMMENTS:		
STEP 2F:	Ensure GEN #3 Field Failure Lockouts selector switch is selected to ON.	_____ SAT
STANDARD:	Operator verifies GEN #3 Field Failure Lockouts selector switch is ON and white indicating light is ON.	_____UNSAT
	EXAMINER'S CUE: GEN #3 Field Failure Lockouts are functional.	
COMMENTS:		

STEP 2G: Adjust Turbine LOADING RATE to maximum setting of 15. STANDARD: Operator adjusts LOADING RATE thumb-wheel to ≤ 15. EXAMINER'S CUE: The LOADING RATE is set to ≤ 15. COMMENTS:	_____ SAT _____UNSAT
STEP 2H: Perform Enclosure 2, Close the following valves: EXV-63; EXV-65; EXV-64; EXV-66; EXV-73; EXV-71; EXV-74; EXV-69; EXV-67; EXV-68; EXV-72; EXV-70; MSV-109; MSV-110; MSV-111; MSV-112. EXAMINER'S CUE: Simulate that all these valves are open. STANDARD: Operator rotates control switch for each valve to CLOSE and verify green light ON and red light OFF. EXAMINER'S CUE: TGF valve alignment is complete. The Task is complete. COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

JPM QUESTION #1

Question: After the completion of step 4.3.21, in OP-203, Plant Startup, with the following Condensate Heater (CDHE) levels, what is the condition of the Turbine Stop Valve Lockout (86/TURB-1)?

CDHE-1A has a level at the 127' 1" elevation.
CDHE-1B has a level at the 126' 11"elevation.
CDHE-2A has a level at the 126' 9" elevation.
CDHE-2B has a level at the 126' 7"elevation.

Answer: The Turbine Stop Valve Lockout should be tripped.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
045K4.11//3.6/3.9

References:
AR-602
208 drawings

JPM QUESTION #2

Question: With 423 Megawatts (electric) and Feedwater flow at 8.2 x 10^5 lbm/hr, what is the condition of the Turbine Stop Valve Lockout (86/TURB-1)?

Answer: The Turbine Stop Valve Lockout should be tripped (AMSAC)

CANDIDATE'S RESPONSE

Time:

K/A Rating:
045K1.18//3.6/3.7

References:
AR-603
OP-103A

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: With 423 Megawatts (electric) and Feedwater flow at 8.2 x 10^5 lbm/hr, what is the condition of the Turbine Stop Valve Lockout (86/TURB-1)?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: After the completion of step 4.3.21, in OP-203, Plant Startup, with the following Condensate Heater (CDHE) levels, what is the condition of the Turbine Stop Valve Lockout (86/TURB-1)?

CDHE-1A has a level at the 127' 1" elevation.
CDHE-1B has a level at the 126' 11"elevation.
CDHE-2A has a level at the 126' 9" elevation.
CDHE-2B has a level at the 126' 7"elevation.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

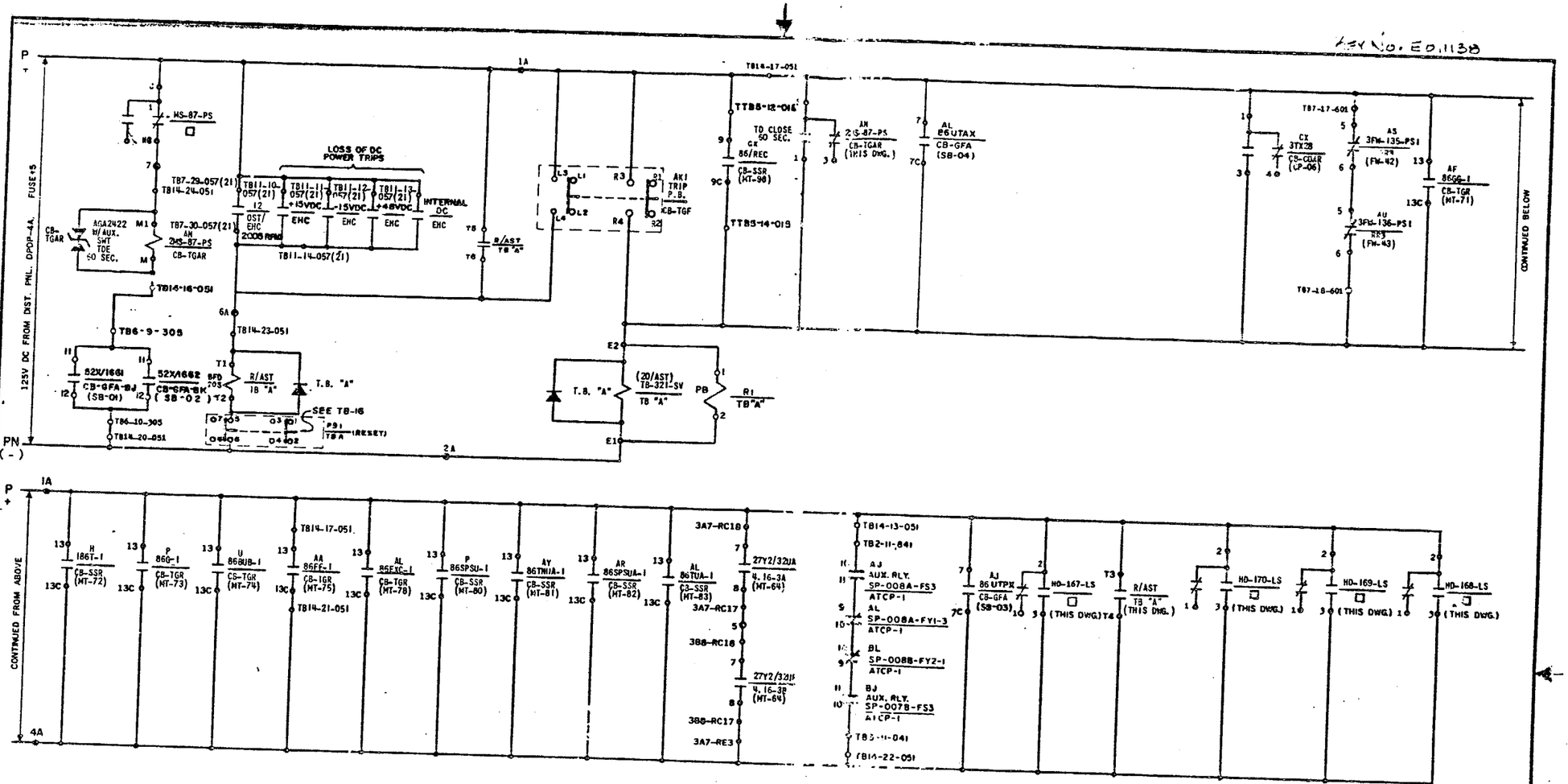
INITIAL CONDITIONS:

Your are the Reactor Operator.
A Turbine Generator startup is in progress.
The Turbine is at 1800 rpm.
Steps 4.3.1 through 4.3.20 are complete.

INITIATING CUES:

You are requested to perform the final conditions prior to synchronizing the Generator to the grid.

Serial No. E01138



NOTES:

1. FOR LOGIC DIAG. SEE DWGS. S-203-057, TB-29 & TB-30.
2. LAST USED WIRE NO. 7, UNUSED WIRE NO'S 2,3
3. DEVICES:
   12/OST - FUNCTIONS ON INC. OF TURB. SPD. AT 2005 RPM.
   HD-167-LS - L.P. HEATER LEVEL 1A HI HI. CONTACT CLOSES ON INC. LEVEL
   HD-168-LS - L.P. HEATER LEVEL 1B HI HI. CONTACT CLOSES ON INC. LEVEL
   HD-169-LS - L.P. HEATER LEVEL 2A HI HI. CONTACT CLOSES ON INC. LEVEL
   HD-170-LS - L.P. HEATER LEVEL 2B HI HI. CONTACT CLOSES ON INC. LEVEL
   MS-87-PS - STEAM FLOW, CONTACT 1 & 2 CLOSE ON DEC. Δ PR
   CONTACT 3 CLOSES ON INC. Δ PR
4. LOCATION SYMBOLS
   □ - NEAR EQUIP.
5. RELAY R1 IS A POTTER & BRUMFIELD MODEL PRD-11DHO-125.

13	AS BUILT PER MAR 93-04-22-01	TDF		SS	4-11-96
12	REVISED PER DCN 92-367	PJ		SAS	7-8-92
10	AS BUILT PER CGWR 96-09-07-01			SS	2/28/96
9	AS BUILT PER CGWR 96-09-07-01 RCA 93-0921			SS	10/29/96
8	AS BUILT PER CGWR 96-09-07-01			SS	10-17-96
	CONSTRUCTION				
	BIDDING PURPOSES ONLY				
DATE	RELEASED FOR			ENGR.	

TB-20

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO. 3 — 855,000 KW

ELEMENTARY DIAGRAM
TURB. 3 AUTO STOP TRIP SOL. TB-321-SV

11-12-71	APPROVED FOR CONCEPT	
4203	B-208-057	10
WORK ORDER	SIZE DRAWING	REV

GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
READING, PENNA.

DRAFTING MADE	CH	APP	ENGINEER APPR.
EGS	MFL	GAT	G. K. Henry
REV CH APP DATE	REV CH APP DATE		
	1-18-71		10-21-71

FPC DRAWING NO.

APPROVED FOR CONSTRUCTION BY FLORIDA POWER CORPORATION
ALG

C-7-12

REV No. E01140

P (+)

125V DC FROM DIST. PNL. DPDP-4B FUSE 14 CONT. FROM DWG. MT-74

CONT. TO DWG. MT-102

BS FU-15A CB-TGR

AS SS CB-TGR

1B

TB14-10-051

MS-87-PS NR. EQUIP. (TB-20)

TB14-11-051

TB-260-PS TB "A"

TB-261-PS TB "A"

33C1/MSV-5 TB "E" (TB-26)

33C1/MSV-6 TB "E" (TB-26)

33C1/MSV-7 TB "D" (TB-25)

33C1/MSV-8 TB "D" (TB-25)

33C1/RHV-1 TB "3A" (TB-24)

33C1/RHV-2 TB "3B" (TB-24)

33C1/RHV-7 TB "3C" (TB-25)

33C1/RHV-8 TB "3D" (TB-25)

AQ CB-TGR

AT CB-TGR

TB14-12-051

AR 86TURB-1 CB-TGR

CA CB-TGR

AU 86TURB-2 CB-TGR

T 27C/86TURB CB-SSAR-3

AS SS CB-TGR

BS FU-15A CB-TGR

PN(-) CONT. TO DWG. MT-102

NOTES:

1. FOR LOGIC DIAGRAM, SEE DWG. S-203-057, TB-31.
2. LAST USED WIRE NO. 12.
   UNUSED WIRE NOS. 4, 6
3. DEVICES:
   MS-87-PS, STEAM FLOW < SET POINT, CONTACT CLOSES ON DEC. FLOW
   (63AST1)15-260-PS, (63AST3)18-261-PS — AUTO. STOP OIL PR. CONTACTS CLOSE ON DEC. OIL PR.

AS SS CB-TGR — OFF / ON — FRONT / BACK — TOP BTM — (F.V.)

G.E. TYPE CR2940
MODEL NO. CR2940YB203A
MAINTAINED CONTACT

1C BKR. 3101 TRIP (MT-01)	2C BKR. 3102 TRIP (MT-02)	3C BKR. 3103 CLOSE (MT-03)	4C BKR. 3104 CLOSE (MT-04)	5C BKR. 3201 TRIP (MT-05)	6C BKR. 3202 TRIP (MT-06)	7C BKR. 3203 CLOSE (MT-07)	8C BKR. 3204 CLOSE (MT-08)
9C BKR. 3207 TRIP (MT-11)	10C BKR. 3208 TRIP (MT-12)	11C 500 KV SUB PRI. TRIP (SS-05)	12C 500 KV SUB ALT. TRIP (SS-05)	13C EXC. REG. BKR. TRIP (TB-09)	14C SPARE	15C SPARE	16C SPARE

AR 86TURB-1 CB-TGR

AU 86TURB-2 CB-TGR

1657K 1C 1657AL AL SYS. PT. 70	2C SPARE	3C SPARE	4C SPARE	5C SPARE	6C BKR. 3208 CLOSE (MT-12)	7C 500 KV SUB. ALT. TRIP RESET (SS-05)	8C 500 KV SUB. PRI. TRIP RESET (SS-05)
9C EXC. REG. BKR. CLOSE (TB-09)	10C BKR. 3101 CLOSE (MT-01)	11C BKR. 3102 CLOSE (MT-02)	12C BKR. 3201 CLOSE (MT-05)	13C BKR. 3202 CLOSE (MT-06)	14C BKR. 3207 CLOSE (MT-11)	15C SPARE	16C SPARE
1674K 1674AL PWR. FAIL. AL. SYS. PT. 87	SPARE						

T 27C/86TURB. CB-SSAR-3

TB-22

7	As-Built Per MAR 93-06-28-01	TO	JS	6/11/96	
6	ASBUILT PER MAR 88-10-20-01	JS	MH	10/28/91	
5	REVISED PER DCN 88-1428	MH	JW	6/1/89	
4	As Built Per Mar 84-08-10-07	RJ	JW	4-19-88	
3	AS BUILT PER MAR 81-5-34-01	BM	JS	3-22-84	

REV 2 - AS INDICATED
REV 1 - REDRAWN & AS INDICATED

11-12-71 APPROVED FOR CONCEPT ALG

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO. 3 — 855,000 KW

ELEMENTARY DIAGRAM
TURBINE TRIP LOCKOUT RELAYS

4203 | B-208-057 | 7 (WORK ORDER | FILE | DRAWING | REV)

GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
READING, PENNA.

DRAFTING: MADE LGT 1-6-70; CH APP LGT 1-6-70
ENGINEER APP'L: C.K. Henry
REV CH APP DATE: 2-18-70

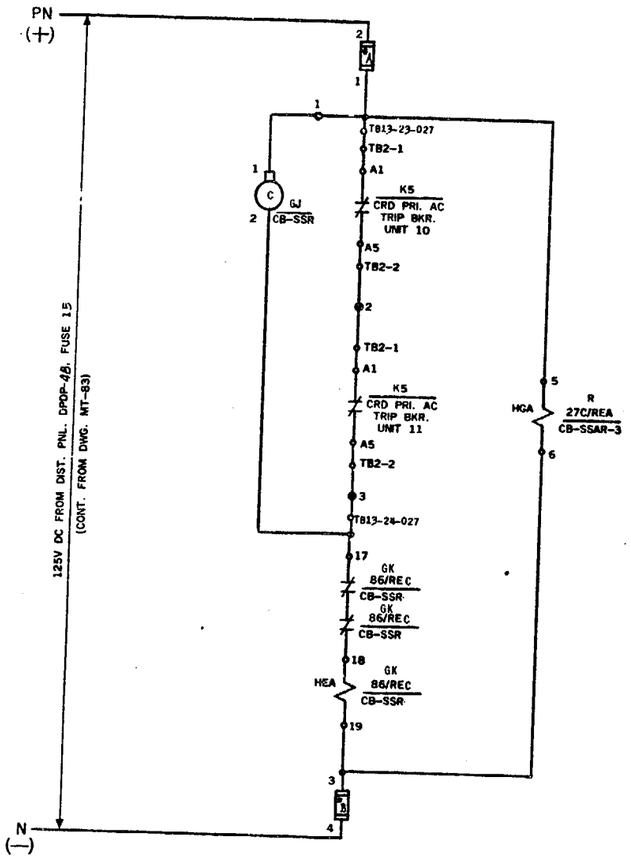
APPROVED FOR CONSTRUCTION BY FLORIDA POWER CORPORATION
ALG

FPC DRAWING NO.

CONSTRUCTION
BIDDING PURPOSES ONLY
DATE RELEASED FOR ENGR.

C-7-12

KEY# E010909



NOTES:

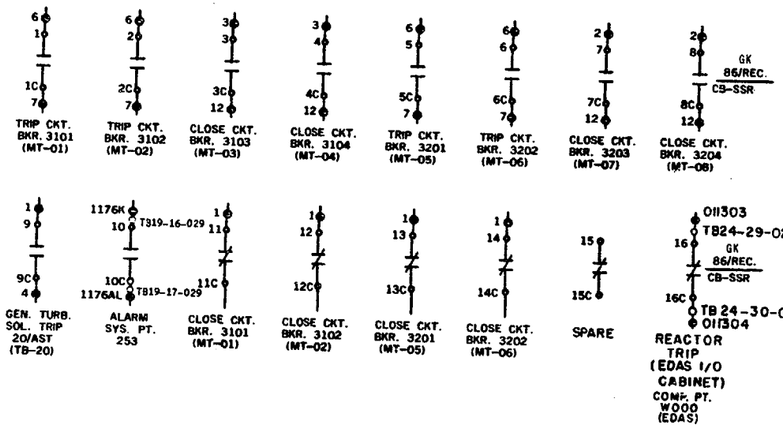
1. FOR LOGIC DIAGRAM, SEE DWG. S-203-040, MT-112
2. LAST USED WIRE NO. 3
3. WIRE MARKS ARE I/O ADDRESS TERMINATION

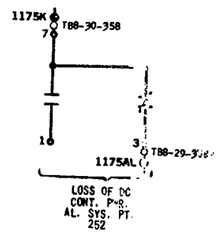
E.G. CO 14 18

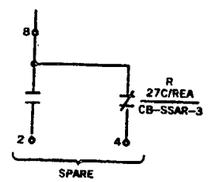
- 18 — TERMINAL NUMBER
- 14 — TERMINAL BLOCK
- CO — RMUX NUMBER

FUSE IDENT	FUSE TAG NO.	LOCATION
#A	SSR-GL-FU-01	CB-SSR
#B	SSR-GL-FU-02	CB-SSR

FOR FUSE SIZE REFER TO DMIS







	CONSTRUCTION		
	BIDDING PURPOSES ONLY		
DATE	RELEASED FOR	ENGR.	

MT-98

5	REVISED PER DCN 93-381B	SC		3/29/94
4	AS BUILT PER MAR 90-02-03-01	WLK		11-23-92
3	AS BUILT PER MAR 88-10-20-01			10/20/88
2	REVISED PER DCN 87-185	GK		7/20/88
1	AS BUILT PER MAR 81-02-72-01			
10-9-72	APPROVED FOR CONCEPT	ALG		

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO. 3 — 855,000 KW

ELEMENTARY DIAGRAM
REACTOR TRIPPED LOCKOUT RELAY

4203	B-208-040	5
WORK ORDER	SIZE DRAWING	REV

GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
READING, PENNA.

DRAFTING: MADE — CH — APP — DATE
ENGINEER APP'L: CH — APP — DATE

FPC DRAWING NO.

APPROVED FOR CONSTRUCTION BY FLORIDA POWER CORPORATION
ALG

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 1P/PLANT

Reactor Coolant System Depressurization using High Pressure Auxiliary Spray

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Dalbin Date/ 12-17-98

VALIDATED BY: * D. Jones Date/ 12-17-98

APPROVED BY: R. VanHoy Date/ 12.18.98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Reactor Coolant System (RCS) depressurization using High Pressure Auxiliary Spray

Alternate Path:

N/A

Facility JPM #:

Licensed Operator Requalification JPM

K/ARating(s)/Task Number/AO, RO, SRO:

010A2.02//3.9/3.9//0040403006//AO, RO, SRO

Task Standard:

During Emergency Operation, depressurize the RCS using High Pressure Auxiliary Spray, EOP-14, Enclosure 13.

Preferred Evaluation Method:

Simulator_____ In-Plant _____X_____

References:

EOP-14

Validation Time: 10 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

EOP-14, Enclosure 13
Simulate ladder usage

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The Plant has tripped.
High Pressure Auxiliary Spray is required to lower the RCS pressure.
DHV-91 is closed.
Another Primary Plant Operator has verified that DHV-92 is open.
RCV-53 and RCV-13 are closed.

INITIATING CUES:

You are requested to perform the actions of the Primary Plant Operator (PPO) to establish High Pressure Auxiliary Spray, EOP-14, Enclosure 13.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of EOP-14, Enclosure 13.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	Isolate Auxiliary spray line Decay Heat (DH) piping. This step complete per initial conditions.	_____ SAT _____UNSAT
STEP 3A: STANDARD: COMMENTS:	Align Makeup (MU) system to supply Auxiliary spray. Close RCV-53. This sub-step completed per initial conditions.	_____ SAT _____UNSAT
STEP 3B: STANDARD: COMMENTS:	Close RCV-13. This sub-step completed per initial conditions.	_____ SAT _____UNSAT

STEP 3C: Notify PPO to perform the following (119 ft. Auxiliary Building, AB, penetration area): Ensure MUV-520 "MU to DH High PRESS. Aux. Spray Drain" is closed. EXAMINER'S CUE: Simulate the use of the ladder. STANDARD: Operator verifies MUV-520 is closed . EXAMINER'S CUE: MUV-520 is closed. COMMENTS:	_____ SAT _____UNSAT
STEP 3D: Open MUV-273. STANDARD: Operator rotates hand-wheel of MUV-273 in the counter-clockwise (CCW) direction until the valve is open. EXAMINER'S CUE: MUV-273 is open COMMENTS:	_____ SAT _____UNSAT
STEP 3E: Open DHV-95. STANDARD: Operator rotates hand-wheel of DHV-95 in the counter-clockwise (CCW) direction until the valve is open. EXAMINER'S CUE: DHV-95 is open COMMENTS:	_____ SAT _____UNSAT

STEP 3F: Throttle DHV-126 approximately 2 turns open. STANDARD: Operator rotates hand-wheel of DHV-126 in the counter-clockwise (CCW) direction until the valve is 2 turns open. EXAMINER'S CUE: DHV-126 is throttled 2 turns open. COMMENTS:	_____ SAT _____UNSAT
STEP 4: Manually control seal injection flow rate. Select MUV-16 to HAND. EXAMINER'S CUE: This step has been performed by the Control Room. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

NOTE: Aux. Spray flow is determined by subtracting individual seal flow from total seal flow. STEP 5: WHEN directed by the controlling procedure, THEN throttle flows as desired. Throttle RCV-53 to maintain continuous high PRESS Aux. spray flow to limit Pressurizer (PZR) thermal cycles. EXAMINER'S CUE: This step has been performed by the Control Room. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 6: Throttle MUV-16 to maintain desired individual seal injection flows. EXAMINER'S CUE: This step has been performed by the Control Room. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 7:	If necessary to obtain additional Aux. Spray flow, THEN notify PPO to throttle DHV-126.	____ SAT
	EXAMINER'S CUE: The Control Room Directs you to throttle open approximately one-half turn more.	____ UNSAT
STANDARD:	Operator rotates hand-wheel of DHV-126 in the counter-clockwise (CCW) direction until the valve is 1/2 turn more open.	
	EXAMINER'S CUE: Auxiliary spray flow is as desired.	
COMMENTS:		
	END OF TASK	

STOP TIME: _____

JPM QUESTION #1

Question: During a cooldown directed in an Emergency Operating Procedure, High Pressure Auxiliary Spray is used to reduce pressure. At 350°F T_{incore}, what is the lowest pressure that can be achieved per the EOP prior to loss of adequate subcooling margin?

Answer: 287 psig (low range) $\pm$ 10 psig.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

010K5.01//3.5/4.0

References:

EOP-14, Figure 2

JPM QUESTION #2

Question: What are the Low Temperature Over Pressure (LTOP) Technical Specification actions, if any, given the following?

RCS pressure is 150 psig.
RCS temperature is 190°F.
All vessel head bolts are fully tensioned.
HPI is deactivated but one Makeup (MU) pump is capable of injecting into the Reactor Coolant System (RCS).
The PORV cannot be selected to low range.
Both Core Flood Tanks are isolated.
Pressurizer level is 138 inches.
Makeup Tank (MUT) level is 75 inches.

Answer: L.C.O. 3.4.11 is not met, the required actions for condition "I" must be performed.

Either restore LTOP System to OPERABLE status in 1 hour; or, depressurize RCS and establish RCS vent of $\geq$ 0.75 square inches in 12 hours.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

010K4.03//3.8/4.1

References:

Technical Specifications

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What are the Low Temperature Over Pressure (LTOP) Technical Specification actions, if any, given the following?

RCS pressure is 150 psig.
RCS temperature is 190°F.
All vessel head bolts are fully tensioned.
HPI is deactivated but one Makeup (MU) pump is capable of injecting into the Reactor Coolant System (RCS).
The PORV cannot be selected to low range.
Both Core Flood Tanks are isolated.
Pressurizer level is 138 inches.
Makeup Tank (MUT) level is 75 inches.

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: During a cooldown directed in an Emergency Operating Procedure, High Pressure Auxiliary Spray is used to reduce pressure. At 350°F T_{incore}, what is the lowest pressure that can be achieved per the EOP prior to loss of adequate subcooling margin?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The Plant has tripped.
High Pressure Auxiliary Spray is required to lower the RCS pressure.
DHV-91 is closed.
Another Primary Plant Operator has verified that DHV-92 is open.
RCV-53 and RCV-13 are closed.

INITIATING CUES:

You are requested to perform the actions of the Primary Plant Operator (PPO) to establish High Pressure Auxiliary Spray, EOP-14, Enclosure 13.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 2P/PLANT

Cross-tie Emergency Feedwater Pumps using EFV-12 and EFV-13

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Sellin Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12.18.98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Cross-tie Emergency Feedwater (EF) Pumps using EFV-12 and EFV-13.

Alternate Path:

N/A

Facility JPM #:

New

K/A Rating(s)/Task Number/AO, RO, SRO:

061A2.04//3.4/3.8//0190103011//AO, RO, SRO

Task Standard:

During Emergency Operation, cross-tie Emergency Feedwater Pump using EFV-12 and EFV-13, EOP-14, Enclosure 11.

Preferred Evaluation Method:

Simulator_____ In-Plant _____X_____

References:

EOP-14

Validation Time: 9 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

EOP-14, Enclosure 11
Key

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The Plant has experienced a loss of off-site power.
The "A" Diesel is supplying the "A" ES 4160V Bus.
The "B" ES 4160V B is not energized.
Both Emergency Feedwater (EF) pumps are running with discharge block valves open.

INITIATING CUES:

You are requested to perform the actions of the Primary Plant Operator (PPO) to load manage the "A" Emergency Diesel Generator, by cross-connecting the EFPs, using EOP-14, Enclosure 11.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of EOP-14, Enclosure 11.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	Verify EFP-1 and EFP-2 are running. N/A, per initial conditions.	_____ SAT _____UNSAT
STEP 3A: STANDARD: COMMENTS:	Ensure EFP-2 normal discharge path is isolated. Depress MANUAL PERMISSIVE push buttons on Emergency Feedwater Initiation and Control (EFIC) channels A and B. EXAMINER'S CUE: The control room has taken MANUAL PERMISSIVE of the EFIC system. N/A	_____ SAT _____UNSAT

STEP 3B: Close EFP-2 discharge block valves: EFV-11 and EFV-32. EXAMINER'S CUE: The control room has closed both EFV-11 and EFV-32. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 3C: Notify PPO to open EFP-2 discharge block valve switches ("A" ES 480V Switchgear Room): DPDP 8C-1 and DPDP-8C-3 STANDARD: Operator positions each switch, DPDP 8C-1 and DPDP-8C-3 to OFF. EXAMINER'S CUE: Motor power for EFV-11 and EFV-32 has been removed. COMMENTS:	_____ SAT _____UNSAT
STEP 4: Ensure level in available steam generators is at or trending toward required level with EFP-1 EXAMINER'S CUE: This step has been performed by the Control Room. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 5A: Notify PPO to cross connect EFW trains. Unlock and close EFW-12 switches ("A" ES 480V Switchgear Room): DPDP 8C-5 and DPDP-8C-6 STANDARD: Operator unlocks and positions each switch, DPDP 8C-5 and DPDP-8C-6 to ON. EXAMINER'S CUE: Motor and control power for EFV-12 has been established. COMMENTS:	_____ SAT _____UNSAT
STEP 5B: Depress the open push button for EFV-12-MST ("A" ES 480V Switchgear Room). STANDARD: Operator depresses EFV-12 open push button until green light is OFF and red light is ON. EXAMINER'S CUE: EFV-12 is open. COMMENTS:	_____ SAT _____UNSAT

STEP 5C: When EFV-12 is open, THEN open and lock EFV-12 switches ("A" ES 480V Switchgear Room): DPDP 8C-5 and DPDP-8C-6 STANDARD: Operator positions each switch, DPDP 8C-5 and DPDP-8C-6 to OFF and then locks the switches in position. EXAMINER'S CUE: Motor and control power for EFV-12 has been removed. COMMENTS:	_____ SAT _____UNSAT
STEP 6: Notify Control Room that EFV-12 is open. STANDARD: Operator uses nearest phone (just outside of the ES 480V Switchgear rooms) to inform the Control Room that EFV-12 is open. EXAMINER'S CUE: The "A" and "B" trains of EFW have been cross connected. COMMENTS: END OF TASK	_____ SAT _____UNSAT

STOP TIME: _____

JPM QUESTION #1

Question: With CDV-103 open, what is the total volume usable to the Emergency Feedwater Pumps if the level in the Condensate Storage Tank is 8.5 feet at CD-67-L12 and the level in the Emergency Feedwater Tank is 7.5 feet on EF-98-LI?

Answer: 56,538.9 gallons (22,145 gallons + 34,393.9 gallons = 56,538.9 gallons)

CANDIDATE'S RESPONSE

Time:

K/A Rating:

061K4.01//4.1/4.2

References:

OP-103F, Figures 3 and 16

JPM QUESTION #2

Question: Given the following plant conditions:

Reactor Coolant temperature is 440F.
Reactor Coolant pressure is 450 psig.
Both Steam Generator (OTSGs) levels are at 50% and slowly decreasing.

If the Emergency Feedwater flow control valves are in manual, what is the required Emergency Feedwater flow rate?

Answer: > 280 gpm in 1 line to each OTSG.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

061A2.08//2.7/2.9

References:

EOP-13, Rule 3
Steam Tables or EOP-14 Figure 2

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Given the following plant conditions:

Reactor Coolant temperature is 440F.
Reactor Coolant pressure is 450 psig.
Both Steam Generator (OTSGs) levels are at 50% and slowly decreasing.

If the Emergency Feedwater flow control valves are in manual, what is the required Emergency Feedwater flow rate?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: With CDV-103 open, what is the total volume usable to the Emergency Feedwater Pumps if the level in the Condensate Storage Tank is 8.5 feet at CD-67-L12 and the level in the Emergency Feedwater Tank is 7.5 feet on EF-98-LI?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The Plant has experienced a loss of off-site power.
The "A" Diesel is supplying the "A" ES 4160V Bus.
The "B" ES 4160V B is not energized.
Both Emergency Feedwater (EF) pumps are running with discharge block valves open.

INITIATING CUES:

You are requested to perform the actions of the Primary Plant Operator (PPO) to load manage the "A" Emergency Diesel Generator, by cross-connecting the EFPs, using EOP-14, Enclosure 11.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 3P/PLANT

Start an Evaporator Condensate Storage Tank (ECST) Release

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallion Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: R. Wes Lon Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Start an Evaporator Condensate Storage Tank (ECST) release.

Alternate Path:
N/A

Facility JPM #:
New

K/A Rating(s)/Task Number/AO, RO, SRO:
068A4.02//3.2/3.1//0680103002//AO, RO, SRO

Task Standard:
Using OP-407A, Operation of the Evaporator Condensate Storage Tanks (ECSTs), startup a release.

Preferred Evaluation Method:
Simulator_____ In-Plant ____X____

References:
OP-407A

Validation Time: 21 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-407A
Key
Calculator

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The previous shift has recirculated the "A" ECST (WDT-10A) in preparation for release.
Raw Water (RW) dilution flow rate is < 9,700 gpm
RWV-150 is in service.
The previous shift has signed the procedure up to and including step 4.3.8.

INITIATING CUES:

You are requested to start the release for the "A" ECST.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-407A, Section 4.3. COMMENTS:	_____ SAT _____UNSAT
STEP 2A: Complete the Release valve alignment. Close WDV-893, Outlet Isolation to SW-RW. STANDARD: Operator rotates hand-wheel of WDV-893 in the clockwise (CW) direction until the valve is closed. EXAMINER'S CUE: WDV-893 is closed. COMMENTS:	_____ SAT _____UNSAT
STEP 2B: Unlock and open SDV-130, RM-L7 Outlet Crosstie. STANDARD: Operator unlocks and rotates hand-wheel of SDV-130 in the counter-clockwise (CCW) direction until the valve is open. EXAMINER'S CUE: SDV-130 is open. COMMENTS:	_____ SAT _____UNSAT

STEP 2C: Unlock and open RWV-110, Release Isolation to the "A" DC-RW Train. STANDARD: Operator unlocks and rotates chained hand-wheel of RWV-110 in the counter-clockwise (CCW) direction until the valve is open. EXAMINER'S CUE: RWV-110 is open. COMMENTS:	____ SAT ____UNSAT
STEP 2D: Signatures. STANDARD: Operator signs "Performed By" space. EXAMINER'S CUE: The examiner signs the "Verified By" space. COMMENTS:	____ SAT ____UNSAT

CAUTION: WD-101-FIT will not count the Release volume if the "Total Inhibit" function is selected. STEP 3A: Make preparations for the Release. Record the Maximum Waste flow rate from the Liquid Release Permit. EXAMINER'S CUE: (No permit will be supplied, examiner must furnish the information.) The Liquid Release Permit Maximum Waste flow rate is 60 gpm. STANDARD: Operator records 60 gpm in the procedure. COMMENTS:	_____ SAT _____UNSAT
STEP 3B: Record the tank level on the Liquid Release Permit. EXAMINER'S CUE: I will record 95% on the Liquid Release Permit. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 3Ca: PERFORM the following for WD-101-FIT at the Radwaste Panel: IF the "TOTAL INHIBIT" light is lit on the Totalizer, THEN depress Key #9 to remove this function and extinguish the light. EXAMINER'S CUE: The TOTAL INHIBIT light is NOT lit. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 3Cb: Depress Key #7 to display total. STANDARD: Operator depresses key #7. EXAMINER'S CUE: The total is displayed. COMMENTS:	_____ SAT _____UNSAT
STEP 3Cc: Depress Key #6 and ensure the Totalizer resets to zero. STANDARD: Operator depresses key #6. EXAMINER'S CUE: The total of 0 is displayed. COMMENTS:	_____ SAT _____UNSAT

STEP 3Cd: Record the Totalizer value on the liquid release Permit INTEGRATOR READING. EXAMINER'S CUE: I will record the Totalizer value on the Liquid Release Permit. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 3Ce: Depress Key #8 to display the flow rate. STANDARD: Operator depresses key #8. EXAMINER'S CUE: The flow rate is displayed. COMMENTS:	_____ SAT _____UNSAT

NOTE: Flow rate is limited to 65 gpm (per WD-101-FR) when WDT-10A is to be released using WDP-14B or WDT-10B is to be released using WDP-10A. NOTE: Flow rate is limited to 80 gpm (per WD-101-FR) when WDT-10A or WDT-10B is to be released using its associated pump and the suction cross tie valves are closed. EXAMINER'S CUE: WDT-10A is being released with its associated pump. STEP 4A: Start the Release to "A" DC-RW. Perform the following at the Radwaste Panel: Open WDV-892, Outlet to the RW System. STANDARD: Operator rotates control switch to WDV-892 to OPEN. EXAMINER'S CUE: WDV-892 is open. COMMENTS:	_____ SAT _____UNSAT
STEP 4B: Rotate WDV-891 pneumatic loader counterclockwise until loose. STANDARD: Operator rotates pneumatic loader counterclockwise until loose. EXAMINER'S CUE: Pneumatic loader is loose. COMMENTS:	_____ SAT _____UNSAT

STEP 4C: Select WDV-891 Control Switch to the OPEN position. STANDARD: Operator rotates control switch to WDV-891 to OPEN. EXAMINER'S CUE: WDV-891's control switch is selected to open. COMMENTS:	_____ SAT _____UNSAT
STEP 4D: Throttle open WDV-891 to achieve ≤ 90% of the Maximum Waste flow rate allowed per the Liquid Release Permit, as indicated on WD-101-FIT. EXAMINER'S CUE: The suction cross connect is CLOSED. STANDARD: Operator rotates pneumatic loader clockwise until a flow of ≤ 54 gpm. EXAMINER'S CUE: Release flow rate is 50 gpm. COMMENTS:	_____ SAT _____UNSAT

STEP 4E:	Record release start time.	_____ SAT
STANDARD:	Operator records the release start time in the space.	_____UNSAT
	EXAMINER'S CUE: The release has been started.	
COMMENTS:		
	END OF TASK	

STOP TIME: _____

JPM QUESTION #1

Question: During a release of ECST-1A, WD-101-FIT becomes inoperable. What are the ODCM requirements, if any, regarding the release?

Answer: The release may continue if the flow rate is estimated at least once per 4 hours during the actual release.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

068K4.01//3.4/4.1

References:

OP-407A
ODCM

JPM QUESTION #2

Question: Complete Enclosure 1, from OP-407A; what are the release rates for the associated time periods?

Answer: See Attached.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

068A4.02//3.2/3.1

References:

OP-407A, Enclosures 1 & 4

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Complete Enclosure 1, from OP-407A; what are the release rates for the associated time periods?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: During a release of ECST-1A, WD-101-FIT becomes inoperable. What are the ODCM requirements, if any, regarding the release?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The previous shift has recirculated the "A" ECST (WDT-10A) in preparation for release.
Raw Water (RW) dilution flow rate is < 9,700 gpm
RWV-150 is in service.
The previous shift has signed the procedure up to and including step 4.3.8.

INITIATING CUES:

You are requested to start the release for the "A" ECST.

MANUAL RELEASE RATE DATA SHEET

(1) TIME*	(2) TANK LEVEL WD-97-LI WD-98-LI (ft)	(3) TANK VOLUME (gal)	(4) Δ VOLUME (gallons) / Δ TIME (minutes)	(5) RELEASE RATE (gpm)
1400	95.0			
1600	67.5			
1500	25.0			
1210	2.5			

*Perform every 2 hours or per NSM, and final reading when release is secured.

Performed by _____ Time _____ Date _____

Reviewed by _____ Time _____ Date _____

MANUAL RELEASE RATE DATA SHEET

(1) TIME*	(2) TANK LEVEL WD-97-LI WD-98-LI (ft)	(3) TANK VOLUME (gal)	(4) Δ VOLUME (gallons) / Δ TIME (minutes)	(5) RELEASE RATE (gpm)
1400	95.0	7,607		
1600	67.5	5,121	2486 / 120	20.7
1800	35.0	2,216	2905 / 120	24.2
2000	2.5	1414	802 / 120	17.3

*Perform every 2 hours or per NSM, and final reading when release is secured.

Performed by [signature] Time [illegible] Date [illegible]

Reviewed by _____ Time _____ Date _____

Individual Walk-through Test Outline

Facility: Crystal River Unit 3 Exam Level: RO/SRO		Date of Examination: 2-8-99 Operating Test No. : 2
System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
Control Rod Drive (CRD)//Recover a Misaligned Rod //001A2.03//3.5/4.2// S, N	1	A. 001K5.07//3.3/4.0//What are the Technical Specification requirements, if any, when given the position of each rod in group 7 (2 rods will not be within the 6.5% group average)? B. 001K5.04//4.3/4.7//What are the Technical Specification requirements, if any, when given the Rod Index and % power (Rod Index will be in the restricted region)?
Makeup (MU)//Restart a MU pump following an Reactor Coolant System leak isolation //004A4.08//3.8/3.4//S, N	2	A. 009EA2.02//3.5/3.8//Prior to leak isolation the Auxiliary Building sump, where all leakage had been directed, had increased from 2.8 to 3.4 feet in 7 minutes, what was the leak rate? B. 002K4.05//3.8/4.2//From leak rate data provided, what are the Technical Specification actions, if any?
Reactor Coolant System (RCS)// Depressurize the RCS using High Pressure Auxiliary Spray //010A2.02//3.9/3.9//S, M, L	3	A. 010K6.03//3.2/3.6//If all the Pressurizer heaters are selected to "AUTO", and Pressurizer temperature is 646°F, what heater banks are on? B. 010K4.03//3.8/4.1//What are the Low Temperature Over Pressure (LTOP) Technical Specification actions, if any, given a list of plant conditions (PORV inoperable for greater than one hour)?

Emergency Diesel Generator (EDG)// Synchronize in Off-Site Power and unload /shutdown EDG-1A //062A4.07//3.1/3.1//S; D	6	A. 064K1.03//3.6/4.0//While performing SP-300, Operating Daily Surveillance Log, on the "A" Emergency Diesel Generator, fuel oil level in the Day Tank is 22.5 inches on the dip stick, what is the usable volume and are any fuel oil transfer pumps operating? B. B. 064A3.01//4.1/4.0//Given a set of plant data (Reactor Coolant pressure, temperature, bus voltage etc.), are the Emergency Diesel Generators running?
Radiation Monitor (RM)//Perform a Functional Test of RM-G29 //072A4.01 //3.0/3.3//CR, A, M	7	A. 072A4.01//3.0/3.3//Following completion of SP-335A, Radiation Monitoring Instrumentation Functional Test RMGs, RM-G29 is declared inoperable, what are the Technical Specification actions, if any? B. B. 072A4.01//3.0/3.3//What indications are present in the Control Room if RM-G29 is reading 3 x 10^8 mR/Hr?
Steam Generator System//Perform Steam Generator Isolation for TRACC Limits// 035A4.06//4.5/4.6//CR, N	4	A. 035A1.01//3.6/3.8//What is the maximum allowable Steam Generator level if Main Steam pressure is 835 psig and temperature is 550°F? B. 059K1.05//3.1/3.2//What is the expected Feedwater temperature at 45% thermal power?
Nuclear Services Closed Cycle Cooling (SW)//Isolate Loads following a Loss of SW//008A4.01//3.3/3.1// CR, D	8	A. 008K4.01//3.1/3.3//Given a set of plant conditions, what is the status of SWP-1A, 1B and 1C? B. 008A1.02//2.9/3.1//Given a UHS temperature and maximum % blockage of the SWHEs determine the action to be taken, if any?

Emergency Feedwater (EFW)//Transfer suction flow path to the EFW pumps//061A1.04 //3.9/3.9// P, D, R	4	A. 061A1.04//3.9/3.9//How many usable gallons are in Emergency Feedwater Tank (EFT-2) when a level of 5.75 feet is reached? B. 061K1.07//3.6/3.8//The Emergency Feedwater Pumps are taking suction from the Hotwell; what is the maximum flow rate if the Hotwell temperature is 102°F?
DC Distribution// Transfer Battery Chargers//063A4.01// 2.8/3.1//P, D	6	A. 063K1.02//2.7/3.2//What is the cause for these indications, given the indicating light status of the "A" Inverter and the status of the "A" Inverter Trouble Annunciator? B. 063K1.03//2.9/3.5//Given the voltage and amperage readings of the "A" side battery chargers, what is the status of each battery charger?
Waste Gas (WG)// Perform a Waste Gas Decay Tank Release to the Containment //071A4.05//2.6/2.6//P, D, R	9	A. 071K1.06//3.1/3.1//The Waste Gas Compressors have been placed in pull-to-lock; Radiation Monitors, RM-A3, RM-A8 and RM-A2, are in alarm; given the pressures of the Waste Gas Decay Tanks, what is the cause of the Radiation Monitor alarms? B. 071A3.02//2.8/2.8//All Waste Gas Decay Tanks (WDT) are full (approximately 80 psig); both Waste Gas Compressors are in pull-to-lock; the Waste Gas Header is at 2.4 psig; WDT-1B's sequencer switch is OFF; the other tanks are ON; what will happen if the "A" Waste Gas Compressor (in lag) control handle is taken to start?

* - Type codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow Power, (P)lant, (R)CA, (T)ime critical

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 5S/SIMULATOR

Recover a Misaligned Rod

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Recover a misaligned rod.

Alternate Path:
N/A

Facility JPM #:
New

K/A Rating(s)/Task Number/AO, RO, SRO:
001A2.03//3.5/4.2//0010402004//RO, SRO

Task Standard:
Recover a misaligned control rod using OP-502, Control Rod Drive System, Section 4.7, Recovery of Misaligned Rod(s).

Preferred Evaluation Method:
Simulator____X____ In-Plant _____

References:
OP-502

Validation Time: 17 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____ / _____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. Reactor power is approximately 45%.
2. Control Rod 7-1 is on the bottom.
3. Group 7 is NOT at its out-limit.
4. OP-502, Steps 4.7.1 through 4.7.30 are complete.
5. IC #68

Tools/Equipment/Procedures Needed:

OP-502

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
Control rod 7-1 has dropped into the core.
The plant is stable at 45% power.
The pre-job briefing has been completed.
The previous shift has completed steps 4.7.1 through 4.7.30.

INITIATING CUES:

You are requested by the Shift Manager to recover the misaligned rod starting with step 4.7.31.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-502, starting with step 4.7.31. EXAMINER'S CUE: For purposes of this JPM assume SRO concurs with each rod manipulation. COMMENTS:	_____ SAT _____UNSAT
STEP 2A: Perform PI Alignment of CRD with misaligned rod. Depress and Hold IN LIMIT (LATCH) BYPASS pushbutton and insert rod for approximately 15 sec. STANDARD: Operator depresses IN LIMIT BYPASS pushbutton and holds it depressed while holding rod control handle in the insert direction for approximately 15 sec. COMMENTS:	_____ SAT _____UNSAT
STEP 2B: Compare Absolute and Relative readings on PI Panel. STANDARD: Operator observes that the API and RPI do not match. COMMENTS:	_____ SAT _____UNSAT

STEP 2C:	Adjust RPI to equal API with PI RESET RAISE/LOWER switch.	_____ SAT
STANDARD:	Operator manipulates PI RESET RAISE/LOWER until RPI and API match.	_____UNSAT
COMMENTS:		
STEP 2D:	Select RUN.	_____ SAT
STANDARD:	Operator rotates RUN/JOG switch to RUN.	_____UNSAT
COMMENTS:		
CAUTION: Power must be maintained less than or equal to 60% RTP while withdrawing rod(s).		_____ SAT
STEP 3A:	Withdraw affected rod to its Group average height. IF power increases to greater than or equal to 60% RTP or; IF Flux Imbalance/Quadrant Power Tilt approaches limits, THEN stop rod withdrawal and continue to next Step.	_____UNSAT
STANDARD:	Operator withdraws rod to group average height. (No Limit or 60% RTP will be exceeded.) (Annunciator J-7-5 clears.)	
COMMENTS:		

STEP 3B:	IF power remains constant AND limits for Flux Imbalance/Quadrant Power Tilt are NOT affected THEN GO TO Step 4.7.37.	_____ SAT
STANDARD:	Operator will GO TO Step 4.7.37.	_____UNSAT
COMMENTS:		
STEP 4A:	Compare API and RPI for the affected rod with the rest of its group. Depress FAULT RESET pushbutton.	_____ SAT
STANDARD:	Operator depresses the FAULT RESET pushbutton and verifies light goes out.	_____UNSAT
COMMENTS:		
STEP 4B:	Compare using POSITION SELECT switch on PI Panel.	_____ SAT
STANDARD:	Operator compares rod position with group position using the POSITION SELECT switch.	_____UNSAT
	EXAMINER'S NOTE: Position should match.	
COMMENTS:		

STEP 4C: Adjust rod position, as required. STANDARD: N/A (no adjustment should be required) COMMENTS:	_____ SAT _____UNSAT
STEP 4D: Select POSITION SELECT switch to ABSOL position. STANDARD: Operator selects POSITION SELECT switch to ABSOL position. COMMENTS:	_____ SAT _____UNSAT
STEP 5: Transfer affected rod from Auxiliary Power Supply to Normal Power Supply. Refer to Section 4.17 of this procedure. STANDARD: Operator will GO TO step 4.17.1. COMMENTS:	_____ SAT _____UNSAT
CAUTION: Tave control could go to Feedwater regulation. STEP 6: Place Reactor Demand control station in HAND if not in Mini Track. STANDARD: Operator verifies that Reactor Demand is in Mini Track by observing red and white lights on. COMMENTS:	_____ SAT _____UNSAT

STEP 7: STANDARD: COMMENTS:	Place Reactor Diamond in MANUAL. Operator verifies Reactor Diamond is in MANUAL by observing MANUAL light ON and AUTO light OFF .	_____ SAT _____UNSAT
STEP 8: STANDARD: COMMENTS:	Select GROUP SELECT Switch to desired group. Operator verifies that GROUP SELECT Switch is selected to Group 7.	_____ SAT _____UNSAT
STEP 9: STANDARD: COMMENTS:	Select ALL or desired rod. Use SINGLE SELECT Switch. Operator verifies that SINGLE SELECT Switch is selected to 1.	_____ SAT _____UNSAT
STEP 10: STANDARD: COMMENTS:	Select SEQ OR. Verify SEQ OR light on, SEQ light ON. Operator depresses the SEQ/SEQ OR pushbutton and verifies both lights ON.	_____ SAT _____UNSAT

STEP 11: STANDARD: COMMENTS:	Select AUXIL. Operator depresses the AUXIL/GROUP pushbutton and verify AUXIL light ON and GROUP light OFF.	_____ SAT _____UNSAT
STEP 12: STANDARD: COMMENTS:	Place SPEED SELECTOR switch in JOG. Operator rotates RUN/JOG switch to JOG and verifies SY light ON.	_____ SAT _____UNSAT
STEP 13: STANDARD: COMMENTS:	Select CLAMP. Operator depresses CLAMP/CLAMP RELEASE pushbutton and verifies CLAMP light ON and CLAMP REL light OFF.	_____ SAT _____UNSAT

CAUTION: If ANY Amber control on lights for any rod(s) or group(s) is on, STOP, and notify SSOD. (If needed cue candidate: The SROs have discussed the misplacement of this caution and direct you to continue on with the procedure.) STEP 14: Depress MAN TRANS. STANDARD: Operator depresses MAN TRANS pushbutton and verifies TR CF light OFF. The operator will also verify the amber CONTROL ON light for rod 7-1 is OFF. COMMENTS:	_____ SAT _____UNSAT
STEP 15: Select CLAMP REL. STANDARD: Operator depresses CLAMP/CLAMP RELEASE pushbutton and verifies CLAMP REL light ON and CLAMP light OFF. COMMENTS:	_____ SAT _____UNSAT
STEP 16: Select GROUP. STANDARD: Operator depresses GROUP/AUXIL pushbutton and verifies GROUP light ON and AUXIL light OFF. The operator will also verify the SY light OFF. COMMENTS:	_____ SAT _____UNSAT

EXAMINER'S NOTE: If the annunciator for Pressurizer high level alarms or any other annunciator alarms related to an increase in Reactor Coolant pressure or the spray valve opens, cue the Operator that another operator is responding to these indications. STEP 17: Select TRANS RESET. Verify TRANS RESET light ON. STANDARD: Operator depresses TRANS RESET pushbutton and verifies light ON. COMMENTS:	_____ SAT _____UNSAT
STEP 18: Place SPEED SELECTOR switch in RUN. STANDARD: Operator rotates RUN/JOG switch to RUN. COMMENTS:	_____ SAT _____UNSAT
STEP 19: IF another Group/Rod is to be placed on the Auxiliary Power Supply, THEN GO TO Step 4.16.1 of this procedure. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 20:	Restore SINGLE SELECT Switch. Place SINGLE SELECT Switch to OFF.	_____ SAT
STANDARD:	Operator rotates SINGLE SELECT Switch to OFF.	_____UNSAT
COMMENTS:		
STEP 21:	Restore GROUP SELECT Switch. Place GROUP SELECT Switch to OFF.	_____ SAT
STANDARD:	Operator rotates GROUP SELECT switch to OFF.	_____UNSAT
COMMENTS:		
STEP 22:	Select SEQ. Verify SEQ light ON and SEQ OR light OFF.	_____ SAT
STANDARD:	Operator depresses SEQ/SEQ OR pushbutton and verifies SEQ light ON and SEQ OR light OFF.	_____UNSAT
	EXAMINER'S CUE: You have recovered the misaligned rod; the JPM is complete.	
COMMENTS:		
	END OF TASK	

STOP TIME: _____

JPM QUESTION #1

Question: What are the Technical Specification requirements, if any, when given the following positions of each rod in group 7?

ROD	POSITION (% Withdrawn)
7-1	98
7-2	99
7-3	73
7-4	97
7-5	98
7-6	42
7-7	99
7-8	98

Answer: Verify SDM is $\geq$ 1% Δk/k OR initiate boration to restore SDM within limit in one hour. And, be in Mode 3 within 6 hours.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
001K5.07//3.3/4.0

References:
TS 3.1.4

JPM QUESTION #2

Question: What are the Technical Specification requirements, if any, when the Rod Index is 150 and the plant is at 80% and 320 EFPD?

Answer: Initiate boration to restore SDM to $\geq$ 1%Δk/k in 15 minutes AND within 2 hours either restore regulating rod groups to within restricted operating region OR reduce thermal power to less that or equal to the thermal power allowed by the regulating rod group insertion limits.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
001K5.04//4.3/4.7

References:
COLR
TS 3.2.1

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What are the Technical Specification requirements, if any, when the Rod Index is 150 and the plant is at 80% and 320 EFPD?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What are the Technical Specification requirements, if any, when given the following positions of each rod in group 7?

ROD	POSITION (% Withdrawn)
7-1	98
7-2	99
7-3	73
7-4	97
7-5	98
7-6	42
7-7	99
7-8	98

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
Control rod 7-1 has dropped into the core.
The plant is stable at 45% power.
The pre-job briefing has been completed.
The previous shift has completed steps 4.7.1 through 4.7.30.

INITIATING CUES:

You are requested by the Shift Manager to recover the misaligned rod starting with step 4.7.31.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 6S/SIMULATOR

Restart a Makeup Pump following a Reactor Coolant System Leak Isolation

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallen Date/ 12-17-98

VALIDATED BY: * D Pajon Date/ 12-17-98

APPROVED BY: R. Warden Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** [signature] Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Restart a Makeup Pump (MUP) following a Reactor Coolant System leak Isolation.

Alternate Path:

N/A

Facility JPM #:

New

K/A Rating(s)/Task Number/AO, RO, SRO:

004A4.08//3.8/3.4//0020402013//RO, SRO

Task Standard:

Restart the "A" Makeup Pump (MUP-1A) following a Reactor Coolant System leak Isolation using AP-520, Loss of Coolant or Pressure.

Preferred Evaluation Method:

Simulator____X____ In-Plant _____

References:

AP-520

Validation Time: 6 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. AP-520 was entered when a small leak was found in the MU system.
2. The reactor was tripped.
3. The plant is now in stable Mode 3 conditions.
4. All MUPs had to be stopped to repair the leak.
5. The leak has now been repaired.
6. SWP-1C and RWP-1 are running.
7. MUV-53, MUV-257. MUV-58 and MUV-69 are open; MUV-73 and MUV-62 are closed.
8. MUP-2A and MUP-4A are running.
9. MUP-1B is ES selected.
10. IC #69.

Tools/Equipment/Procedures Needed:

AP-520
calculator

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
AP-520 was entered when a small leak was found in the MU system.
The reactor was tripped.
The plant is now in stable Mode 3 conditions.
All MUPs had to be stopped to repair the leak.
The leak has now been repaired.

INITIATING CUES:

You are requested to restart MUP-1B starting with step 3.54 in AP-520.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of OP-520, starting with step 3.54.	_____ SAT _____UNSAT
STEP 2A: STANDARD: COMMENTS:	WHEN affected component is isolated OR repaired, THEN prepare MUP for restart. IF EDG is supplying power to ES 4160V bus, THEN ensure adequate EDG margin exists for MUP and required cooling water pumps. Operator observes that the EDG is not supplying the bus.	_____ SAT _____UNSAT

STEP 2B:	Ensure MU control valves are closed: MUV-16 and MUV-31.	_____ SAT
STANDARD:	Operator selects control station for MUV-31 to HAND by depressing pushbutton and verifying HAND white light ON and AUTO white light OFF; OR, Operator may use toggle to lower demand to 0 ensuring valve is closed. (MUV-31 may be left in AUTO and dial rotated to 0). Operator verfies MUV-16 in HAND by HAND light ON and AUTO light OFF.	_____UNSAT
COMMENTS:		
STEP 2C:	Establish MUP cooling water supply.	_____ SAT
STANDARD:	Operator verifies red light ON and green light OFF for SWP-1C and RWP-1.	
COMMENTS:		_____UNSAT
STEP 2D:	Ensure MUP recirc. to MUT valves are open: MUV-53 and MUV-257.	_____ SAT
STANDARD:	For each valve operator verifies red light ON and green light OFF.	
COMMENTS:		_____UNSAT

STEP 2E: STANDARD: COMMENTS:	Ensure MUP main lube oil pump is running: MUP-2B Operator verifies MUP-2B red light ON and green light OFF.	_____ SAT _____UNSAT
STEP 2F: STANDARD: COMMENTS:	Ensure MUP main gear oil pump is running: MUP-4B Operator rotates control handle for MUP-4B to start and verifies red light ON and green light OFF.	_____ SAT _____UNSAT
STEP 3A: STANDARD: COMMENTS:	IF "A" Train MUP will be started, THEN ensure suction alignment to MUT. IF MUP-1C is NOT ES selected, THEN notify PPO to select PUMP 3C on 4160V ES BUS 3B-5 Operator verifies ES select light for MUP-1C is ON.	_____ SAT _____UNSAT

STEP 3B: STANDARD: COMMENTS:	Ensure the following are closed: MUV-73 and MUV-62. For both valves, operator verifies green light ON and red light OFF.	_____ SAT _____UNSAT
STEP 3C: STANDARD: COMMENTS:	Ensure the following are open: MUV-58 and MUV-69. For both valves, operator verifies red light ON and green light OFF.	_____ SAT _____UNSAT
STEP 4: STANDARD: COMMENTS:	IF "B" Train MUP will be started, THEN ensure suction alignment to MUT. N/A, "A" Train pump being started.	_____ SAT _____UNSAT

STEP 5:	Start selected MUP.	
STANDARD:	Operator rotates MUP-1A to start and verifies red light ON and green light OFF. Operator should also verify amps increase.	_____ SAT _____UNSAT
	EXAMINER'S CUE: MUP-1A is running; the task is complete.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: Prior to the leak isolation in the JPM the Auxiliary Building sump, where all leakage had been directed, had increased from 2.8 to 3.4 feet in 7 minutes, what was the leak rate in gpm?

Answer: 44.85 gpm.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
009EA2.02//3.5/3.8

References:
AP-520

JPM QUESTION #2

Question: From the provided leak rate data, what are the Technical Specification actions, if any?

Combined component identified leakage and RCP seal leakage into the RCDT is 10.0 gpm.
OTSG tube leakage is 145 gpd.
Unidentified leakage is 0.2 gpm.
There is NO pressure boundary leakage.

Answer: Identified Leakage has been exceeded; reduce leakage to within limits in 4 hours.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
002K4.05//3.8/4.2

References:
TS 3.4.12

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: From the provided leak rate data, what are the Technical Specification actions, if any?

Combined component identified leakage and RCP seal leakage into the RCDT is 10.0 gpm.
OTSG tube leakage is 145 gpd.
Unidentified leakage is 0.2 gpm.
There is NO pressure boundary leakage.

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Prior to the leak isolation in the JPM the Auxiliary Building sump, where all leakage had been directed, had increased from 2.8 to 3.4 feet in 7 minutes, what was the leak rate in gpm?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
AP-520 was entered when a small leak was found in the MU system.
The reactor was tripped.
The plant is now in stable Mode 3 conditions.
All MUPs had to be stopped to repair the leak.
The leak has now been repaired.

INITIATING CUES:

You are requested to restart MUP-1B starting with step 3.54 in AP-520.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 7S/SIMULATOR

Depressurize the Reactor Coolant System using High Pressure Auxiliary Spray

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Charles DeLeon Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Depressurize the Reactor Coolant System using High Pressure Auxiliary Spray.

Alternate Path:

N/A

Facility JPM #:

Modified 102

K/A Rating(s)/Task Number/AO, RO, SRO:

010A2.02//3.9/3.9//1150502012//RO, SRO

Task Standard:

Depressurize the Reactor Coolant System with High Pressure Auxiliary Spray using EOP-14, Enclosure 13.

Preferred Evaluation Method:

Simulator____X____ In-Plant _____

References:

EOP-14
Steam Tables

Validation Time: 13 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS:

1. A Loss of Off-Site Power has occurred.
2. The plant is in Mode 3 following a reactor trip.
3. Procedure requires RCS pressure to be lowered to 1900 psig.
4. The normal pressurizer spray is not operable.
5. IC #70; (this IC will support ventilation startup, EOP-14, Enclosure 17)

Tools/Equipment/Procedures Needed:

EOP-14, Enclosure 13
Steam Table

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
The Plant has tripped following a LOOP.
Stable natural circulation has been established.
The Shift Manager has directed to start a cooldown.

INITIATING CUES:

You are requested to establish High Pressure Auxiliary Spray using Enclosure 13 of EOP-14.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of EOP-14, Enclosure 13.	_____ SAT _____UNSAT
STEP 2A: STANDARD: COMMENTS:	Isolate Auxiliary spray line Decay Heat (DH) piping. Ensure DHV-91 closed. Operator verifies green light ON and red light OFF.	_____ SAT _____UNSAT
STEP 2B: STANDARD: COMMENTS:	Notify PPO to ensure DHV-92 is open. Operator calls PPO to ensure DHV-92 us open.	_____ SAT _____UNSAT

STEP 3A: STANDARD: COMMENTS:	Align Makeup (MU) system to supply Auxiliary spray. Close RCV-53. Operator verifies green light ON and red light OFF.	_____ SAT _____UNSAT
STEP 3B: STANDARD: COMMENTS:	Close RCV-13. Operator rotates control switch for RCV-13 to close and verifies green light ON and red light OFF.	_____ SAT _____UNSAT
STEP 3C: STANDARD: COMMENTS:	Notify PPO to perform the following (119 ft. Auxiliary Building, AB, penetration area): Ensure MUV-520 is closed; MUV-273 and DHV-95 are open; and DHV-126 is throttled approximately 2 turns open. Operator calls PPO to complete step 13.2 detail 3.	_____ SAT _____UNSAT

STEP 4:	Manually control seal injection flow rate. Select MUV-16 to HAND.	_____ SAT
STANDARD:	Operator depresses HAND pushbutton on MUV-16 control station and verifies HAND light ON and AUTO light OFF	_____UNSAT
COMMENTS:		
NOTE: Aux. Spray flow is determined by subtracting individual seal flow from total seal flow.		_____ SAT
STEP 5A:	WHEN directed by the controlling procedure, THEN throttle flows as desired. Throttle RCV-53 to maintain continuous high PRESS Aux. spray flow to limit Pressurizer (PZR) thermal cycles. (C-3-11)	_____UNSAT
	EXAMINER'S CUE: Initiate High Pressure Auxiliary Spray at 4-6 gpm.	
STANDARD:	Operator rotates control switch for RCV-53 in the open direction until 10 gpm High Pressure Auxiliary Spray is established. (H-5-7 may alarm)	
COMMENTS:		

STEP 5B:	Throttle MUV-16 to maintain desired individual seal injection flows.	_____ SAT
STANDARD:	Operator uses toggle to adjust individual seal injection flows so there is no annunciator alarms.	_____UNSAT
	EXAMINER'S CUE: High Pressure Auxiliary Spray has been established.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: Following a pressure decrease to 2125 psig all the Pressurizer heaters were verified to be in "AUTO". Pressurizer temperature is now 646°F, what heater banks are on, if any?

Answer: Pressurizer Banks "A", "B" and "C" are ON.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
010K6.03//3.2/3.6

References:
OP-204
Steam Tables

JPM QUESTION #2

Question: What are the Low Temperature Over Pressure (LTOP) Technical Specification actions, if any, given the following list of plant conditions which have been stable (the same) for 70 minutes?

Reactor Coolant temperature is 210°F.
The Core Flood Tanks are isolated.
The Makeup and Purification System is in its OP-209 configuration.
Pressurizer level is 125 inches.
RCV-11 is open.
RCV-10 is set at 500 psig (lift setpoint).
The Makeup Tank level is 90 inches.

Answer: The PORV is inoperable, and has been so, for greater than 1 hour. The required actions are to reduce the Makeup Tank level to $\leq$ 88 inches AND deactivate the low low makeup tank level interlock to the Borated Water Storage Tank (BWST) suction valves within 12 hours.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
010K4.03//3.8/4.1

References:
TS 3.4.11

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What are the Low Temperature Over Pressure (LTOP) Technical Specification actions, if any, given the following list of plant conditions which have been stable (the same) for 70 minutes?

Reactor Coolant temperature is 210°F.
The Core Flood Tanks are isolated.
The Makeup and Purification System is in its OP-209 configuration.
Pressurizer level is 125 inches.
RCV-11 is open.
RCV-10 is set at 500 psig (lift setpoint).
The Makeup Tank level is 90 inches.

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Following a pressure decrease to 2125 psig all the Pressurizer heaters were verified to be in "AUTO". Pressurizer temperature is now 646°F, what heater banks are on, if any?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The Plant has tripped following a LOOP.
Stable natural circulation has been established.
The Shift Manager has directed to start a cooldown.

INITIATING CUES:

You are requested to establish High Pressure Auxiliary Spray using Enclosure 13 of EOP-14.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 8S/SIMULATOR

Synchronize in Off-Site Power and Unload/Shutdown EDG-1A

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallin Date/ 12-17-98

VALIDATED BY: * D Jan Date/ 12-17-98

APPROVED BY: R. Wa Jan Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Synchronize in Off-Site Power and unload/shutdown EDG-1A.

Alternate Path:
N/A

Facility JPM #:
048
K/A Rating(s)/Task Number/AO, RO, SRO:
062A4.07//3.1/3.1//0620402001//RO, SRO

Task Standard:
Synchronize in Off-Site Power and unload/shutdown EDG-1A using AP-770.

Preferred Evaluation Method:
Simulator_____X____ In-Plant _____

References:
AP-770

Validation Time: 18 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. The plant is in Mode 3 following a loss of Off-Site Power.
2. Both Diesels are running and tied to their respective ES bus.
3. Off-Site power is available to the "A" ES bus.
4. IC #62

Tools/Equipment/Procedures Needed:

AP-770, Steps 3.43 and 3.44

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is stable in Mode 3 following a loss of Off-Site Power.
Both Diesels are running and tied to their respective ES bus.
AP-770 is complete up to Off-Site power availability.

INITIATING CUES:

"A" Off-Site power is now available, you are requested to sync in Off-Site power to the "A" ES 4160V bus and then unload and shutdown EDG-1A.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1:	Obtain a copy of appropriate procedure.	_____ SAT
STANDARD:	Operator obtains a copy of AP-770 step 3.43.	
	EXAMINER'S CUE: All preceding steps are complete.	_____UNSAT
COMMENTS:		
STEP 2A:	IF "A" ES 4160V BUS is supplied from EDG-1A, THEN sync in Off-Site power supply. Ensure plant conditions are stable.	_____ SAT
STANDARD:	N/A, the initial cue indicated stability. (Operator may verify.)	_____UNSAT
COMMENTS:		
STEP 2B:	Ensure HPI is bypassed or reset.	_____ SAT
STANDARD:	Operator verifies both "A" and "B" ES status panel that the Channel Function Enabled green light is ON and the Bypass Reset green light is ON.	_____UNSAT
COMMENTS:		

STEP 2C: STANDARD: COMMENTS:	Depress 4160V ES "A" UV RESET pushbutton. Operator depresses pushbutton for 4160V UV RESET and verifies that both reset/normal lights are ON.	_____ SAT _____UNSAT
STEP 2D: STANDARD: COMMENTS:	Notify PPO to obtain key 94 from Control Room. Operator notifies PPO to obtain key 94.	_____ SAT _____UNSAT
STEP 2E: STANDARD: COMMENTS:	While maintaining frequency, notify PPO to select EDG-1A SPEED DROOP to 60 in increments of 10. Operator notifies PPO to adjust SPEED DROOP to 60 in increments of 10. Operator will raise EDG "A" speed to maintain frequency.	_____ SAT _____UNSAT

STEP 2F: STANDARD: COMMENTS:	Select EDG "A" EXC VOLT ADJ SELECT to CONT RM. Operator rotates EDG "A" EXC VOLT ADJ SELECT switch to CONT RM. (Q-2-5)	_____ SAT _____UNSAT
STEP 2G: STANDARD: COMMENTS:	Notify PPO to select "A" EDG Unit-Parallel Switch to PAR. Operator notifies PPO to select PAR on the "A" EDG Unit-Parallel Switch.	_____ SAT _____UNSAT
STEP 2H: STANDARD: COMMENTS:	Adjust EDG "A" EXC VOLT ADJUST to maintain EDG "A" voltage 4150 to 4250 volts. Operator rotates EDG "A" EXC VOLT ADJUST knob to keep the voltage between 4150 and 4250 volts.	_____ SAT _____UNSAT

STEP 2I: STANDARD: COMMENTS:	Select synchroscope for Bkr to be paralleled to ON. Operator rotates synchroscope for Breaker 3211 to ON and verifies sync lights ON.	_____ SAT _____UNSAT
STEP 2J: STANDARD: COMMENTS:	Adjust EDG "A" EXC VOLT ADJUST to match incoming and running voltages. Operator rotates EDG "A" EXC VOLT ADJUST knob so that the incoming voltage and running voltage are approximately the same.	_____ SAT _____UNSAT
STEP 2K: STANDARD: COMMENTS:	Adjust EDG "A" SPEED to establish synchroscope moving slow in the FAST direction. Operator rotates EDG "A" SPEED control handle until the needle on the synchroscope is rotating slowly in the FAST direction.	_____ SAT _____UNSAT

STEP 2L: STANDARD: COMMENTS:	Close oncoming Bkr at approximately 11 o'clock. Operator rotates breaker 3211 to close when the synchroscope is at approximately the 11 o'clock position. (Q-5-4 and Q-1-10)	_____ SAT _____UNSAT
STEP 2M: STANDARD: COMMENTS:	Select synchroscope to OFF. Operator rotates the synchroscope control handle for breaker 3211 to OFF and verifies sync lights OFF.	_____ SAT _____UNSAT
STEP 3A: STANDARD: COMMENTS:	IF EDG-1A is running in parallel with Off-Site power, THEN unload and shutdown EDG-1A. Maintain –1.5 to +1.5 MVAR by adjusting EDG "A" EXC VOLT ADJUST Operator rotates EDG "A" EXC VOLT ADJUST knob to maintain MVARs between –1.5 and +1.5 if needed.	_____ SAT _____UNSAT

STEP 3B:	IF EDG-1A load is > 1200 KW, THEN adjust EDG "A" SPEED to reduce load to approximately 1200 KW.	_____ SAT
STANDARD:	Operator rotates EDG "A" SPEED control handle and reduces load to approximately 1200 KW.	_____UNSAT
COMMENTS:		
STEP 3C:	WHEN load has been reduced to approximately KW for 3 to 5 minutes, THEN adjust EDG "A" SPEED to reduce EDG-1A load to approximately 200 KW.	_____ SAT
	EXAMINER'S CUE: 4 minutes have passed.	_____UNSAT
STANDARD:	Operator rotates EDG "A" SPEED knob and reduces load to approximately 200 KW.	
COMMENTS:		
STEP 3D:	Open Bkr 3209	_____ SAT
STANDARD:	Operator rotates Breaker 3209 control handle to open and verifies green light ON and red light OFF. (Q-5-4 and Q-1-10 clear)	_____UNSAT
COMMENTS:		

STEP 3E:	Depress EDG-1A STOP pushbutton.	_____ SAT
STANDARD:	Operator EDG-1A STOP pushbutton and verifies generator meters decrease to 0.	
COMMENTS:		_____UNSAT
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: While performing SP-300, Operating Daily Surveillance Log, on the "A" Emergency Diesel Generator, fuel oil level in the Day Tank is 22.5 inches on the dip stick, what is the usable volume and should any fuel oil transfer pumps operating?

Answer: 321.0 gallons; the DC fuel oil transfer pump should be running.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
064K1.03//3.6/4.0

References:
OP-103F

JPM QUESTION #2

Question: Given a set of plant data (Reactor Coolant pressure, temperature, bus voltage etc.), should the Emergency Diesel Generators be running? (Explain)

Reactor Coolant temperature is 560°F.
Reactor Coolant pressure is 1450 psig.
Reactor Building pressure is 4.2 psig.
"A" 4160V ES Bus voltage is 3980.
"B" 4160V ES Bus voltage is 4100.

Answer: The High Pressure Injection (HPI) signal will start both Emergency Diesel Generators.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
064A3.01//4.1/4.0

References:
TS 3.3.8

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Given a set of plant data (Reactor Coolant pressure, temperature, bus voltage etc.), should the Emergency Diesel Generators be running? (Explain)

Reactor Coolant temperature is 560°F.
Reactor Coolant pressure is 1450 psig.
Reactor Building pressure is 4.2 psig.
"A" 4160V ES Bus voltage is 3980.
"B" 4160V ES Bus voltage is 4100.

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: While performing SP-300, Operating Daily Surveillance Log, on the "A" Emergency Diesel Generator, fuel oil level in the Day Tank is 22.5 inches on the dip stick, what is the usable volume and should any fuel oil transfer pumps operating?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is stable in Mode 3 following a loss of Off-Site Power.
Both Diesels are running and tied to their respective ES bus.
AP-770 is complete up to Off-Site power availability.

INITIATING CUES:

"A" Off-Site power is now available, you are requested to sync in Off-Site power to the "A" ES 4160V bus and then unload and shutdown EDG-1A.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 4CR/CONTROL ROOM

Perform a Functional Test of RM-G29

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallin Date/ 12-17-98

VALIDATED BY: * D Jones Date/ 12-17-98

APPROVED BY: R. Wes Jones Date/ 12.18.98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Perform a Functional Test of RM-G29

Alternate Path:
An indicating light will fail to illuminate.

Facility JPM #:
Modified 118

K/ARating(s)/Task Number/AO, RO, SRO:
072A4.01//3.0/3.3//0720202001//RO, SRO

Task Standard:
Perform a Functional Test of RM-G29 using SP-335A.

Preferred Evaluation Method:
Simulator_____ In-Plant ____X____

References:
SP-335A

Validation Time: 5 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

SP-335A

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is at 100% full power.
SP-335A is successfully completed except for RM-G29.

INITIATING CUES:

You are requested to perform a functional test of RM-G29.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of SP-335A, Section 4.23. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Record the RM-G29 background reading below. EXAMINER'S CUE: RM-G29 is reading as is. STANDARD: Operator observes RM-G29 meter and records background reading. COMMENTS:	_____ SAT _____UNSAT

STEP 3:	Turn the "Check-Operate-Trip Adj. Selector switch on RM-G29 to the CHECK position and hold for 1 minute or until the meter indication increase ceases. Record the local meter indication and the reading on RM-G29-RIR below.	_____SAT _____UNSAT
STANDARD:	Operator rotates Check-Operate-Trip Adj. Selector switch to the CHECK position and holds in that position for 1 minute. Operator records meter and chart recorder readings.	
	EXAMINER'S CUE: Indicate that the meter and the chart recorder are reading 2 x 10^5 R/hr.	
	Operator records readings.	
COMMENTS:		
STEP 4:	Return the selector switch to the Operate position and observe the meter and recorder indication. Record in procedure if the indications decrease to appproximately the background reading recorded in Step 4.23.1	_____ SAT _____UNSAT
	EXAMINER'S CUE: RM-G29 is reading as is.	
STANDARD:	Operator observes RM-G29 meter and recorder have decreased to background reading.	
COMMENTS:		

STEP 5: Observe that the Trip 1 (Low Alarm) and Trip 2 (High Alarm) indicator lamps illuminated (at panel) and that their respective annunciator alarms have been actuated. Record in procedure. EXAMINER'S CUE: Trip 1 is illuminated; Trip 2 is NOT illuminated. Annunciator H-01-01 and H-01-02 are in alarm. STANDARD: Operator records results in procedure. COMMENTS:	_____ SAT _____UNSAT
STEP 6A: Depress the Trip 1 and Trip 2 pushbuttons (lights). Verify Trip1, Trip 2, and annunciator alarms have cleared. Record in procedure. EXAMINER'S CUE: All lights and annunciators clear. STANDARD: Operator records results in procedure. COMMENTS:	_____ SAT _____UNSAT

STEP 6B:	Operator signs Completed By and Date portion of procedure.	_____ SAT
STANDARD:	Operator signs and dates procedure. Operator enters the Follow-up Actions (5.0).	_____UNSAT
	EXAMINER'S NOTE: Operator should indicate that at a minimum a work request should be written and SRO notification for Trip 2 not illuminating.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: With the plant in Mode 1, RM-G29 fails its Channel Check, what are the Technical Specification actions, if any?

Answer: Restore required channel to Operable status within 30 days.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
072A4.01//3.0/3.3

References:
TS 3.3.17

JPM QUESTION #2

Question: What indications associated with RM-G29 and/or alarms, if any, are present in the Control Room if RM-G29 is reading 3×10^8 mR/Hr?

Answer: Both GAMMA MONITOR WARNING and GAMMA RADIATION HIGH annunciators will be in alarm. The indicator lamps: trip (Trip 2) and warning (Trip 1) on RM-G29 will be in alarm also.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
072A4.01//3.0/3.3

References:
AR-403
SP-335A

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What indications associated with RM-G29 and/or alarms, if any, are present in the Control Room if RM-G29 is reading 3×10^8 mR/Hr?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: With the plant in Mode 1, RM-G29 fails its Channel Check, what are the Technical Specification actions, if any?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is at 100% full power.
SP-335A is successfully completed except for RM-G29.

INITIATING CUES:

You are requested to perform a functional test of RM-G29.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 5CR/CONTROL ROOM

Perform Steam Generator Isolation for TRACC Limits

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Dalton Date/ 12-17-98

VALIDATED BY: * D. Jones Date/ 12-17-98

APPROVED BY: R. Woolums Date/ 12.18.98
(Operations Training Manager)

CONCURRED: ** [signature] Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Perform Steam Generator Isolation for TRACC limits.

Alternate Path:
N/A

Facility JPM #:
New

K/ARating(s)/Task Number/AO, RO, SRO:
035A4.06//4.5/4.6//1150502012//RO, SRO

Task Standard:
Perform Steam Generator Isolation for TRACC limits using EOP-14, Enclosure 12.

Preferred Evaluation Method:
Simulator_____ In-Plant ____X____

References:
EOP-14, Enclosure 12

Validation Time: 23 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

EOP-14, Enclosure 12

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

EOP-6 has been entered for a large tube leak in the "A" Steam Generator (OTSG).
The "A" OTSG level is 91% and increasing.
"A" OTSG blowdown is 500 gpm (The blowdown valves are full open).
"A" OTSG pressure is 900 psi.
Adequate Subcooling Margin exists and HPI has already been bypassed.
Reactor Coolant (RCS) temperature is 430°F.
RCS pressure is 800 psig.
EFIC was actuated.
MSDT-22 and MSDT-23 have been isolated.

INITIATING CUES:

You are directed by the Procedure Director to isolate the "A" OTSG.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of EOP-14, Enclosure 12. COMMENTS:	_____ SAT _____UNSAT
NOTE: The following criteria is to be used during isolation determination: High OTSG level (Isolate any OTSG that can not be maintained ≤ 90% due to tube rupture.); Low BWST level (Isolate any OTSG with tube rupture.); Atmospheric steaming time limit (Isolate the OTSG with the largest primary to secondary leak rate.) STEP 2: IF blowdown is available, THEN maintain OTSG level ≤ 90% using OTSG blowdown lines. STANDARD: N/A, blowdown at maximum – see cue. COMMENTS:	_____ SAT _____UNSAT
STEP 3: IF either OTSG PRESS < 725 psig, THEN bypass EFIC isolation actuations. STANDARD: N/A, "A" OTSG > 725 psig – see cue. COMMENTS:	_____ SAT _____UNSAT

STEP 4: IF adequate SCM exists, AND HPI bypass permits exist, THEN bypass HPI. STANDARD: N/A, HPI bypassed – see cue. COMMENTS:	_____ SAT _____UNSAT
NOTE: Emergency cooldown limits apply when RCS TEMP is > 500°F. STEP 5: IF RCS TEMP is > 480°F, THEN establish RCS cooldown. STANDARD: N/A, RCS Temp < 480°F – see cue. COMMENTS:	_____ SAT _____UNSAT
STEP 6: Isolate MSDTs on affected OTSGs. STANDARD: N/A, MSDT-22 and MSDT-23 have already been isolated – see cue. COMMENTS:	_____ SAT _____UNSAT

STEP 7:	WHEN RCS TEMP ≤ 480°F, THEN ensure RCS PRESS ≤ 950 psig.	_____ SAT
STANDARD:	N/A, these conditions already exist – see cue	_____UNSAT
COMMENTS:		
STEP 8:	IF EFIC is actuated, THEN depress MANUAL PERMISSIVE pushbuttons on EFIC channels "A" and "B".	_____ SAT
STANDARD:	Operator depresses MANUAL PERMISSIVE pushbuttons on both "A" and "B" channels and verifies MANUAL PERMISSIVE lights ON.	_____UNSAT
	EXAMINER'S CUE: The EFIC channels are in MANUAL PERMISSIVE.	
COMMENTS:		

EXAMINER'S NOTE: Steps 9A, 9B, and 9C may be done in any order. STEP 9A: Isolate all sources to affected OTSG. Close the following valves on affected OTSG: FWV-216, EFV-14, EFV-11, FWV-35, FWV-31, FWV-30, FWV-36 STANDARD: Operator verifies FWV-216 closed by 0 flow indication and/or green light ON and red light OFF. EXAMINER'S CUE: FWV-216 is closed. COMMENTS:	_____ SAT _____UNSAT
STEP 9B: Isolate all sources to affected OTSG. Close the following valves on affected OTSG: FWV-216, EFV-14, EFV-11, FWV-35, FWV-31, FWV-30, FWV-36 STANDARD: Operator rotates EFV-14 and EFV-11 control switches to closed positions and for each valve verifies green light ON and red light OFF and/or 0 flow indication. EXAMINER'S CUE: EFV-14 and EFV-11 are closed. COMMENTS:	_____ SAT _____UNSAT

STEP 9C: Isolate all sources to affected OTSG. Close the following valves on affected OTSG: FWV-216, EFV-14, EFV-11, FWV-35, FWV-31, FWV-30, FWV-36 STANDARD: Operator rotates control switches for FWV-35, FWV-31, FWV-30 and FWV-36 to closed positions and verifies for each valve green light ON and red light OFF. (Operator may select FWV-30 to MAN.) EXAMINER'S CUE: FWV-35, FWV-31, FWV-30 and FWV-36 are closed. COMMENTS:	_____ SAT _____UNSAT
STEP 10: Close MS supply valve to EFP-2 affected OTSG: MSV-55. STANDARD: Operator rotates MSV-55 control switch to closed position and verifies green light ON and red light OFF. EXAMINER'S CUE: MSV-55 is closed. COMMENTS:	_____ SAT _____UNSAT

STEP 11A: WHEN RCS PRESS controlled ≤ 950 psig, THEN complete isolating affected OTSG. Close MSIVs on affected OTSG: MSV-412 and MSV-411. STANDARD: Operator rotates control switch for MSV-412 and MSV-411 to closed and verifies green light ON and red light OFF. EXAMINER'S CUE: MSV-412 and MSV-411 are closed. COMMENTS:	_____ SAT _____UNSAT
STEP 11B: Select ADV to HAND and closed on affected OTSG: MSV-25. STANDARD: Operator depresses HAND pushbutton for MSV-25 and verifies HAND light ON and AUTO light OFF. Operator depresses closed arrow pushbutton until meter reads 0. EXAMINER'S CUE: MSV-25 is in HAND and closed. COMMENTS:	_____ SAT _____UNSAT

STEP 12:	Close blowdown line isolation on affected OTSG: MSV-130.	_____ SAT
STANDARD:	Operator rotates control switch for MSV-130 to close and verifies green light ON and red light OFF.	_____ UNSAT
	EXAMINER'S CUE: MSV-130 is closed.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: What is the maximum allowable Steam Generator level if Main Steam pressure is 835 psig and temperature is 550°F?

Answer: 78% ± 2% on the operating level.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
035A1.01//3.6/3.8

References:
OP-103A Curve 15

JPM QUESTION #2

Question: What is the expected Feedwater temperature at 45% thermal power?

Answer: 370°F ± 10°F

CANDIDATE'S RESPONSE

Time:

K/A Rating:
059K1.05//3.1/3.2

References:
OP-103A Curve 17

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What is the expected Feedwater temperature at 45% thermal power?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What is the maximum allowable Steam Generator level if Main Steam pressure is 835 psig and temperature is 550°F?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

EOP-6 has been entered for a large tube leak in the "A" Steam Generator (OTSG).
The "A" OTSG level is 91% and increasing.
"A" OTSG blowdown is 500 gpm (The blowdown valves are full open).
"A" OTSG pressure is 900 psi.
Adequate Subcooling Margin exists and HPI has already been bypassed.
Reactor Coolant (RCS) temperature is 430°F.
RCS pressure is 800 psig.
EFIC was actuated.
MSDT-22 and MSDT-23 have been isolated.

INITIATING CUES:

You are directed by the Procedure Director to isolate the "A" OTSG.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 6CR/CONTROL ROOM

Isolate Loads following a Loss of Nuclear Services Closed Cycle Cooling (SW)

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

Isolate Loads following a Loss of Nuclear Services Closed Cycle Cooling (SW).

Alternate Path:

N/A

Facility JPM #:

Requal JPM

K/ARating(s)/Task Number/AO, RO, SRO:

008A4.01//3.3/3.1//0080402012//RO, SRO

Task Standard:

Isolate Loads following a Loss of Nuclear Services Closed Cycle Cooling (SW) using AP-330, Loss of SW, Enclosure 3.

Preferred Evaluation Method:

Simulator_____ In-Plant _____X_____

References:

AP-330 Enclosure 3

Validation Time: 14 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

AP-330

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant was at 100% full power when entry was required into AP-330.
The reactor has not been tripped.
Power has been reduced to 75%.
Control Rod Drive temperatures are high and slowly rising but not greater than 180°F.
All component temperatures cooled by SW are high and slowly rising.
SW Heat Exchangers have adequate cooling (the most fouled SWHE has been removed from service and the spare SWHE placed in service).
SWP-1A is running.
SWP-2-PI reads 135 psig.
No SWP has its discharge valve closed.
The Reactor Building (RB) Fans are on SW cooling.

INITIATING CUES:

You are requested to perform Enclosure 3 of AP-330.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of AP-330, Enclosure 3.	_____ SAT _____UNSAT
STEP 2A: STANDARD: COMMENTS:	Stop EFP-1. Ensure one of the following feedwater sources are in service. Operator checks MFWP and MFWBP (cue plant at 75%)	_____ SAT _____UNSAT
STEP 2B: STANDARD: COMMENTS:	Select EFP-1 to PULL TO LOCK. Operator rotates EFP-1 control handle and pull our to place in PULL TO LOCK. EXAMINER'S CUE: EFP-1 is in PULL TO LOCK.	_____ SAT _____UNSAT

STEP 3A: Isolate letdown. Close MUV-49. STANDARD: Operator rotates MUV-49 control switch to close and verifies green light ON and red light OFF. EXAMINER'S CUE: MUV-49 is closed. COMMENTS:	_____ SAT _____UNSAT
STEP 3B: Adjust MUV-16 to establish 3 to 5 gpm seal injection flow to each RCP. STANDARD: Operator depresses HAND pushbutton on MUV-16 controller and uses toggle to adjust 3 to 5 gpm on gage. Or, Operator may rotate knob on MUV-16 controller to control seal injection. EXAMINER'S CUE: Seal injection flow to each RCP is 4 gpm. COMMENTS:	_____ SAT _____UNSAT

STEP 3C: Adjust MUV-31 to control PZR level. STANDARD: Operator rotates knob on MUV-31 controller to control PZR level. Or, Operator may depresses HAND pushbutton on MUV-31 controller and uses toggle to adjust pressurizer level. EXAMINER'S CUE: Pressurizer level is 220 inches. COMMENTS:	_____ SAT _____UNSAT
STEP 4: Consider plant cooldown to control PZR level. EXAMINER'S CUE: Continue on in procedure. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
NOTE: SW leakage may have partially drained the cooling line to the RB fans. STEP 5A: Ensure RB cooling unit aligned to the CI system. SW valves to RB ccoling units closed: SWV-353 and SWV-354. STANDARD: For each valve, operator rotates valve control switch to CLOSE and verifies green light ON and red light OFF. EXAMINER'S CUE: SWV-353 and SWV-354 are closed. COMMENTS:	_____ SAT _____UNSAT

STEP 5B: CI valves to RB cooling unit open: SWV-151, SWV-152, SWV-355. STANDARD: For each valve, operator rotates valve control switch to OPEN and verifies red light ON and green light OFF. EXAMINER'S CUE: SWV-151, SWV-152, and SWV-355 are open. COMMENTS:	_____ SAT _____UNSAT
STEP 6: Close all sample isolation valves. CAV-4, CAV-5, CAV-1, CAV-3, CAV-126, CAV-431, CAV-432, CAV-6, CAV-7 and CAV-2. EXAMINER'S CUE: Indicate each Chemical Addition Valve is closed as they are observed. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 7: Stop the running CC Chiller. EXAMINER'S CUE: The running chiller is as is. STANDARD: Operator selects running CCHE control switch to STOP/RESET and verifies green light ON and red light OFF. Or, Operator may call the PPO to turn off chiller locally. EXAMINER'S CUE: The running chiller is shutdown. COMMENTS:	_____ SAT _____UNSAT
STEP 8: Stop penetration cooling fans. STANDARD: Operator rotates control handle for AHF-9A or AHF-9B to stop and verifies green light ON and red light OFF. EXAMINER'S CUE: Both penetration cooling fans are shutdown. COMMENTS:	_____ SAT _____UNSAT

STEP 9: IF SW system is supplying secondary plant loads, THEN stop secondary plant equipment. EXAMINER'S CUE: SC is supplying secondary loads. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 10: Perform the appropriate actions for the remainder of the SW system loads. EXAMINER'S CUE: Another operator is performing this step. STANDARD: N/A COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

JPM QUESTION #1, NO PROCEDURE ALLOWED

Question: With the following set of plant conditions, what is the status of SWP-1A, 1B and 1C?

Reactor Coolant pressure is 1800 psig.
Reactor Coolant temperature is 570°F.
Reactor Building pressure is 4.3 psig.
Nuclear Services Closed Cycle Cooling (SW) pressure is 120 psig.

Answer: SWP-1A and SWP-1B are running; SWP-1C is NOT running.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
008K4.01//3.1/3.3

References:
None

JPM QUESTION #2

Question: The UHS temperature is 90°F and the maximum % tube blockage of the SWHE being cleaned is 50%. Determine the action to be taken, if any.

Answer: Within 72 hours: immediately pick and clean affected heat exchanger and return it to service; contact NPTS to start their evaluation: inspect and pick clean the next dirtiest SW Heat Exchanger as determined by NPTS; and obtain acceptable results from Engineering Evaluation, indicating the design basis heat removal is met and that no common cause exists to tube sheet blockage that could adversely affect in-service heat exchangers.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
008A1.02//2.9/3.1

References:
OP-103B Curve 15

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: The UHS temperature is 90°F and the maximum % tube blockage of the SWHE being cleaned is 50%. Determine the action to be taken, if any.

JPM QUESTION #1, NO PROCEDURE ALLOWED
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: With the following set of plant conditions, what is the status of SWP-1A, 1B and 1C?

Reactor Coolant pressure is 1800 psig.
Reactor Coolant temperature is 570°F.
Reactor Building pressure is 4.3 psig.
Nuclear Services Closed Cycle Cooling (SW) pressure is 120 psig.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant was at 100% full power when entry was required into AP-330.
The reactor has not been tripped.
Power has been reduced to 75%.
Control Rod Drive temperatures are high and slowly rising but not greater than 180°F.
All component temperatures cooled by SW are high and slowly rising.
SW Heat Exchangers have adequate cooling (the most fouled SWHE has been removed from service and the spare SWHE placed in service).
SWP-1A is running.
SWP-2-PI reads 135 psig.
No SWP has its discharge valve closed.
The Reactor Building (RB) Fans are on SW cooling.

INITIATING CUES:

You are requested to perform Enclosure 3 of AP-330.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 4P/PLANT

Transfer Suction Flow Path to the Emergency Feedwater Pumps

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12.18.98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Transfer suction flow path to the Emergency Feedwater (EF) pumps.

Alternate Path:
N/A

Facility JPM #:
010

K/A Rating(s)/Task Number/AO, RO, SRO:
061A1.04//3.9/3.9//0190503001//AO, RO, SRO

Task Standard:
Using EOP-14, Enclosure 22, transfer the suction flow path from the Emergency Feedwater Tank to the Hotwell.

Preferred Evaluation Method:
Simulator_____ In-Plant _____X_____

References:
EOP-14, Enclosure 22

Validation Time: 15 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

EOP-14, Enclosure 22
Key
Calculator

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The Reactor is tripped.
A lengthy cooldown is in progress.
The Emergency Feedwater Tank, EFT-2, is at 6 ft.
The Condensate Storage Tank, CDT-1, is at 9 ft.
The Hotwell is at atmospheric pressure.
The Hotwell temperature is 100°F.
Hotwell level is 6 ft.

INITIATING CUES:

You are requested to transfer the suctions of the Emergency Feedwater Pumps from EFT-2 to the Hotwell using EOP-14, Enclosure 22 starting with step 22.6.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1:	Obtain a copy of appropriate procedure.	_____ SAT
STANDARD:	Operator obtains a copy of EOP-14, Enclosure 22.	
COMMENTS:		_____UNSAT
STEP 2A:	IF at any time, EFT-2 level $\leq$ 6 ft., THEN align the Emergency Feedwater pump suctions from hotwell. Verify hotwell at atmospheric pressure.	_____ SAT
STANDARD:	This step complete per initial conditions.	_____UNSAT
COMMENTS:		
STEP 2B:	Notify SPO to ensure EFV-36 is open (95 ft. Turbine Building between "C" & "D" inlet waterboxes.	_____ SAT
STANDARD:	Operator rotates hand-wheel of EFV-36 in the counter-clockwise (CCW) direction until the valve is open.	_____UNSAT
	EXAMINER'S CUE: EFV-36 is open.	
COMMENTS:		

STEP 2Ca	When EFV-36 is open, THEN notify PPO to align EFP-1 suction from hotwell in the following order: Open EFV-2 (95ft Intermediate by EFP-1)	_____ SAT
STANDARD:	Operator unlocks hand-wheel. Operator then disengages motor and rotates hand-wheel of EFV-2 in the counter-clockwise (CCW) direction until the valve is open.	_____UNSAT
	EXAMINER'S CUE: EFV-2 is open.	
COMMENTS:		
STEP 2Cb:	Close EFV-3 (95 ft. Intermediate Building by EFP-1)	_____ SAT
STANDARD:	Operator unlocks hand-wheel. Operator then disengages motor and rotates hand-wheel of EFV-3 in the clockwise (CW) direction until the valve is closed.	_____UNSAT
	EXAMINER'S CUE: EFV-3 is closed.	
COMMENTS:		

STEP 2Da: WHEN EFP-1 suction is aligned, THEN notify PPO to align EFP-2 suction from hotwell in the following order: Open EFV-1 (95 ft. Intermediate Building by EFP-2). STANDARD: Operator unlocks hand-wheel. Operator then disengages motor and rotates hand-wheel of EFV-1 in the counter-clockwise (CCW) direction until the valve is open. EXAMINER'S CUE: EFV-1 is open. COMMENTS:	_____ SAT _____UNSAT
STEP 2Db: Close EFV-4 (95 ft. Intermediate Building by EFP-2) STANDARD: Operator unlocks hand-wheel. Operator then disengages motor and rotates hand-wheel of EFV-4 in the clockwise (CW) direction until the valve is closed. EXAMINER'S CUE: EFV-4 is closed. COMMENTS:	_____ SAT _____UNSAT

STEP 2E:	IF either EFWP is running, THEN maintain total EFW flowrate ≤ maximum flow rate based on hotwell TEMP., See Figure 3.	_____ SAT
	EXAMINER'S CUE: This will be completed by the control room.	_____UNSAT
STANDARD:	N/A	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: How many usable gallons are in the Emergency Feedwater Tank (EFT-2) when a level of 5.75 feet on EF-98-LI is reached?

Answer: 26,365.4 gallons

CANDIDATE'S RESPONSE

Time:

K/A Rating:

061A1.04//3.9/3.9

References:

OP-103F, Figure 16

JPM QUESTION #2

Question: The Emergency Feedwater Pumps are taking suction from the Hotwell. What is the maximum total Feedwater flow rate if the Hotwell temperature is 102°F?

Answer: 578 gpm ± 5 gpm

CANDIDATE'S RESPONSE

Time:

K/A Rating:

061K1.07//3.6/3.8

References:

EOP-14, Figure 3

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: The Emergency Feedwater Pumps are taking suction from the Hotwell. What is the maximum total Feedwater flow rate if the Hotwell temperature is 102°F?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: How many usable gallons are in the Emergency Feedwater Tank (EFT-2) when a level of 5.75 feet on EF-98-LI is reached?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The Reactor is tripped.
A lengthy cooldown is in progress.
The Emergency Feedwater Tank, EFT-2, is at 6 ft.
The Condensate Storage Tank, CDT-1, is at 9 ft.
The Hotwell is at atmospheric pressure.
The Hotwell temperature is 100°F.
Hotwell level is 6 ft.

INITIATING CUES:

You are requested to transfer the suctions of the Emergency Feedwater Pumps from EFT-2 to the Hotwell using EOP-14, Enclosure 22 starting with step 22.6.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 5P/PLANT

Transfer Battery Chargers

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallin Date/ 12-17-98

APPROVED ~~VALIDATED~~ BY: R. Wadley* Date/ 12-18-98
(RWW 12-18-98) (RWW 12-18-98)

VALIDATED ~~APPROVED~~ BY: D. Jones* Date/ 12-17-98
(RWW 12-18-98) ~~(Operations Training Manager)~~ (RWW 12-18-98)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Transfer Battery Chargers.

Alternate Path:
N/A

Facility JPM #:
094

K/A Rating(s)/Task Number/AO, RO, SRO:
063A4.01//2.8/3.1//0630103001//AO, RO, SRO

Task Standard:
Using OP-705 place the "F" Battery Charger in service for the "B" Battery Charger.

Preferred Evaluation Method:
Simulator_____ In-Plant _____X_____

References:
OP-705

Validation Time: 14 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-705

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The Electricians need to work on the "B" Battery Charger.

INITIATING CUES:

You are requested to place the "F" Battery Charger in service for the "B" Battery Charger.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-705, Section 4.2.3. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Ensure AC Supply to Battery Charger "F" CLOSED. EXAMINER'S CUE: ES MCC 3B2 Unit 3BL is closed. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
NOTE: Only one switch for Battery Charger "F" can be in the ON position at any time due to a mechanical interlock. STEP 3: Ensure P, PN Feeder from "F" Battery Charger OFF, DPDP-1B switch #9. STANDARD: Operator verifies DPDP-1B switch #9 is OFF. EXAMINER'S CUE: DPDP-1B switch #9 is OFF. COMMENTS:	_____ SAT _____UNSAT

STEP 4: Close PN, N Feeder from "F" Battery Charger, DPDP-1B switch #10. STANDARD: Operator rotates DPDP-1B switch #10 to ON. EXAMINER'S CUE: DPDP-1B switch #10 is ON. COMMENTS:	_____ SAT _____UNSAT
STEP 5: Ensure DC switch for Battery Charger "F" ON, located on Battery Charger "F" upper panel. STANDARD: Operator verifies DC switch on "F" Battery Charger is ON EXAMINER'S CUE: DC switch on "F Battery Charger is ON. COMMENTS:	_____ SAT _____UNSAT
STEP 6: Ensure AC switch for Battery Charger "F" ON, located on Battery Charger "F" upper panel. STANDARD: Operator verifies AC switch on "F" Battery Charger is ON EXAMINER'S CUE: AC switch on "F Battery Charger is ON. COMMENTS:	_____ SAT _____UNSAT

STEP 7:	Verify Battery Charger "F" indications are normal. 125 – 137 VDC/ < 200 amps (normally < 50 amps); power indicating lamp ON (amber)	_____ SAT _____UNSAT
STANDARD:	Operator verifies Battery Charger "F" voltage is between 125-137 volts, amperage is < 200 amps, and the power indicating lamp is ON.	
	EXAMINER'S CUE: Indicate Battery Charger "F" voltage is 131 volts, amperage is 2 amps, and the power indicating lamp is ON.	
COMMENTS:		
STEP 8:	Verify Battery Charger "D" indications are normal. DPDP-1B switch #11 is ON; 125 – 137 VDC/ < 200 amps (normally < 50 amps); power indicating lamp ON (amber)	_____ SAT _____UNSAT
STANDARD:	Operator verifies Battery Charger "D" DPDP-1B switch #11 is ON; voltage is between 125-137 volts, amperage is < 200 amps, and the power indicating lamp is ON.	
	EXAMINER'S CUE: Indicate Battery Charger "D" DPDP-1B switch #11 is ON; voltage is 129 volts, amperage is 8 amps, and the power indicating lamp is ON.	
COMMENTS:		

STEP 9:	Verify voltmeters and ammeters for Battery Chargers "F" and "B" are indicating within the normal range, 125 – 137 VDC/ < 200 amps (normally < 50 amps).	_____ SAT _____UNSAT
STANDARD:	Operator verifies both Battery Chargers "F" and "B" have voltage between 125-137 volts and amperage < 200 amps.	
	EXAMINER'S CUE: Indicate Battery Charger "F" voltage is 131 volts and amperage is 2 amps. Battery Charger "B" indicates 132 volts and 9 amps.	
COMMENTS:		
STEP 10:	OPEN Feeder from "B" Battery Charger AND verify ammeter lowers to zero; DPDP-1B switch #17 OFF.	_____ SAT _____UNSAT
STANDARD:	Operator rotates DPDP-1B switch #17 to OFF and verifies ammeter lowers to zero	
	EXAMINER'S CUE: DPDP-1B switch #17 is OFF; "B" Battery Charger amperage is 0.	
COMMENTS:		

STEP 11:	Verify Battery Charger "F" is supplying load by observing an increase in amps. 125-137 VDC; amps increase; < 200 amps (normally < 50 amps).	_____ SAT _____UNSAT
STANDARD:	Operator verifies Battery Charger "F" voltage is between 125-137 volts and amperage increased but is < 200 amps.	
	EXAMINER'S CUE: Indicate Battery Charger "F" voltage is 131 volts and amperage is 10 amps.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: While taking SP-300 readings on the "A" Inverter, VBIT-1A, the following indications were noted:

Amber precharge light is ON.
Green in sync light is ON.
Red battery supplying load light is ON.
All other lights are OFF.

The Control Room reports that the "A" Inverter Trouble Annunciator is in alarm. What is the cause of these indications?

Answer: The battery source is available to the inverter and the normal AC source voltage is low.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

063K1.02//2.7/3.2

References:

AR-701

JPM QUESTION #2

Question: The following readings are taken on the "A" train Battery Chargers:

"A" Battery Charger voltage is 146 volts.
"A" Battery Charger amperage 10 amps.
"C" Battery Charger voltage is 130 volts.
"C" Battery Charger amperage is 7amps.
"E" Battery Charger voltage is 129 volts.
"E" Battery Charger amperage is 0 amps.

What is the status of each battery charger?

Answer: The "A" Battery Charger should have shutdown on high voltage, but is in service.
The "C" Battery Charger is in service.
The "E" Battery Charger is NOT in service.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

063K1.03//2.9/3.5

References:

AR-701
SP-300

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: The following readings are taken on the "A" train Battery Chargers:

"A" Battery Charger voltage is 146 volts.
"A" Battery Charger amperage 10 amps.
"C" Battery Charger voltage is 130 volts.
"C" Battery Charger amperage is 7amps.
"E" Battery Charger voltage is 129 volts.
"E" Battery Charger amperage is 0 amps.

What is the status of each battery charger?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: While taking SP-300 readings on the "A" Inverter, VBIT-1A, the following indications were noted:

Amber precharge light is ON.
Green in sync light is ON.
Red battery supplying load light is ON.
All other lights are OFF.

The Control Room reports that the "A" Inverter Trouble Annunciator is in alarm. What is the cause of these indications?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The Electricians need to work on the "B" Battery Charger.

INITIATING CUES:

You are requested to place the "F" Battery Charger in service for the "B" Battery Charger.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 6P/PLANT

Perform a Waste Gas Decay Tank Release to the Containment

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Perform a Waste Gas Decay Tank release to the Containment.

Alternate Path:
N/A

Facility JPM #:
098

K/A Rating(s)/Task Number/AO, RO, SRO:
071A4.05//2.6/2.6//0710403012//AO, RO, SRO

Task Standard:
Using OP-412A, Waste Gas Disposal System, release the "A" Waste Gas Decay Tank, WDT-1A, to containment.

Preferred Evaluation Method:
Simulator_____ In-Plant ____X____

References:
OP-412A

Validation Time: 15 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-412A
Key

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
Space is needed in the "A" Waste Gas Decay Tank, following an accident.
Containment integrity exists.

INITIATING CUES:

You are requested to release the "A" Waste Gas Decay Tank, WDT-1A, to the Containment Building by the Technical Support Center. Vent until 10 psig is in the tank.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-412A, Section 4.4. COMMENTS:	_____ SAT _____UNSAT
NOTE: This section will be performed following an accident, as directed by the TSC. NOTE: Addition of a full (80 psig) WGDT to the Containment Building should result in a building pressure increase of less than 0.1 psig. STEP 2: Contact the SSOD to ensure that containment integrity exists STANDARD: This step complete per initial conditions. COMMENTS:	_____ SAT _____UNSAT
STEP 3: Verify a WGDT is to be discharged to Containment Building. EXAMINER'S CUE: The Shift Supervisor confirms that WDT-1A is to be released. STANDARD: Procedure has already been signed off. COMMENTS:	_____ SAT _____UNSAT

STEP 4: Verify Containment Building pressure is less than 10 psig/ record WGDT pressure; record WGDT to be vented; Record containment pressure. EXAMINER'S CUE: Containment pressure is 1 psig. STANDARD: Operator records "as is" pressure of WDT-1A, tank to be vented ("A") and containment pressure. COMMENTS:	_____ SAT _____UNSAT
STEP 5: Ensure Waste Gas Header isolated inside Containment Building. Close the following: WDV-60, WDV-61, CFV-15, CFV-16, CFV-29. EXAMINER'S CUE: The Control Room has closed WDV-60, WDV-61, CFV-15, CFV-16, CFV-29. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 6A: Ensure WGDT to be discharged is isolated. Trip RM-A11. Reset RM-A11. Close WDV-405 and WDV-406. EXAMINER'S CUE: The Control Room has tripped and reset RM-A11 and closed WDV-405 and WDV-406. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 6Ba: Close the following valves (at the Remote Waste Gas Panel): WDV-393 STANDARD: Operator verifies control switch for WDV-393 is selected to NORMAL AFTER CLOSE and the green light is ON. EXAMINER'S CUE: WDV-393 is CLOSED. COMMENTS:	_____ SAT _____UNSAT

STEP 6Bb: Close the following valves (at the Remote Waste Gas Panel): WDV-394 STANDARD: Operator verifies control switch for WDV-394 is selected to NORMAL AFTER CLOSE and the green light is ON. EXAMINER'S CUE: WDV-394 is CLOSED. COMMENTS:	_____ SAT _____UNSAT
STEP 6Bc: Close the following valves (at the Remote Waste Gas Panel): WDV-395 STANDARD: Operator verifies control switch for WDV-395 is selected to NORMAL AFTER CLOSE and the green light is ON. EXAMINER'S CUE: WDV-395 is CLOSED. COMMENTS:	_____ SAT _____UNSAT

STEP 6Bd:	Close the following valves (at the Remote Waste Gas Panel): WDV-436	_____ SAT
STANDARD:	Operator verifies control switch for WDV-436 is selected to NORMAL AFTER CLOSE and the green light is ON.	_____UNSAT
	EXAMINER'S CUE: WDV-436 is CLOSED.	
COMMENTS:		
STEP 6Be:	Close the following valves (at the Remote Waste Gas Panel): WDV-437	_____ SAT
STANDARD:	Operator verifies control switch for WDV-437 is selected to NORMAL AFTER CLOSE and the green light is ON.	_____UNSAT
	EXAMINER'S CUE: WDV-437 is CLOSED.	
COMMENTS:		

STEP 6Bf:	Close the following valves (at the Remote Waste Gas Panel): WDV-438	_____ SAT
STANDARD:	Operator verifies control switch for WDV-438 is selected to NORMAL AFTER CLOSE and the green light is ON.	_____UNSAT
	EXAMINER'S CUE: WDV-438 is CLOSED.	
COMMENTS:		
STEP 6Bg:	Close the following valves (at the Remote Waste Gas Panel): WDV-1018	_____ SAT
STANDARD:	Operator rotates control switch for WDV-1018 to CLOSE and verifies red light OFF, green light ON.	_____UNSAT
	EXAMINER'S CUE: WDV-1018 is CLOSED.	
COMMENTS:		

STEP 6Bh:	Close the following valves (at the Remote Waste Gas Panel): WDV-1022.	_____ SAT
STANDARD:	Operator verifies control switch for WDV-1022 is selected to CLOSE and the green light is ON.	_____UNSAT
	EXAMINER'S CUE: WDV-1022 is CLOSED.	
COMMENTS:		
STEP 6Bi:	Close the following valves (at the Remote Waste Gas Panel): WDV-1017	_____ SAT
STANDARD:	Operator rotates control switch for WDV-1017 to CLOSE and verifies red light OFF, green light ON.	_____UNSAT
	EXAMINER'S CUE: WDV-1017 is CLOSED.	
COMMENTS:		

STEP 7A: Align Waste Gas System to Containment Building. Open the following valves (at the Remote Waste Gas Panel): WDV-1019. STANDARD: Operator rotates control switch for WDV-1019 to OPEN and verifies green light OFF, red light ON. EXAMINER'S CUE: WDV-1019 is OPEN. COMMENTS:	_____ SAT _____UNSAT
STEP 7B: Align Waste Gas System to Containment Building. Open the following valves (at the Remote Waste Gas Panel): WDV-1022. STANDARD: Operator rotates control switch for WDV-1022 to OPEN and verifies green light OFF, red light ON. EXAMINER'S CUE: WDV-1022 is OPEN. COMMENTS:	_____ SAT _____UNSAT

STEP 8: Open Waste Gas outlet to header, depending on WGDT to be discharged. STANDARD: Operator rotates control switch for WDV-393 to OPEN and verifies green light OFF, red light ON. EXAMINER'S CUE: WDV-393 is OPEN. COMMENTS:	_____ SAT _____UNSAT
STEP 9: Vent selected WGDT to Containment Building. Open the following valves on the Main Control Board, WDV-405 and WDV-406. Record Date and time of vent start. EXAMINER'S CUE: The Control Room has opened WDV-405 and WDV-406. Record present time and date. STANDARD: Operator records present time and date. COMMENTS:	_____ SAT _____UNSAT

STEP 10: When desired pressure in WGDT is reached, THEN stop venting process; Close WDV-1022 and record WGDT final pressure. EXAMINER'S CUE: WDT-1A is at 10 psig. STANDARD: Operator rotates control switch for WDV-1022 to CLOSED and verifies red light OFF, green light ON. Operator records 10 psig. EXAMINER'S CUE: WDV-1022 is CLOSED. COMMENTS:	_____ SAT _____UNSAT
STEP 11Aa: Restore Waste Gas System to Stand-By operation. Close the following valves at the Remote Waste Gas Panel: WDV-393. STANDARD: Operator selects control switch for WDV-393 is selected to CLOSE and verifies red light OFF, green light ON. EXAMINER'S CUE: WDV-393 is CLOSED. COMMENTS:	_____ SAT _____UNSAT

STEP 11Ab: Close the following valves at the Remote Waste Gas Panel: WDV-394. STANDARD: Operator verifies control switch for WDV-394 is selected to CLOSE and the green light is ON. EXAMINER'S CUE: WDV-394 is CLOSED. COMMENTS:	_____ SAT _____UNSAT
STEP 11Ac: Close the following valves at the Remote Waste Gas Panel: WDV-395. STANDARD: Operator verifies control switch for WDV-395is selected to CLOSE and the green light is ON. EXAMINER'S CUE: WDV-395 is CLOSED. COMMENTS:	_____ SAT _____UNSAT

STEP 11B: Open WDV-1018. STANDARD: Operator selects control switch for WDV-1018 is selected to OPEN and verifies green light OFF, red light ON. EXAMINER'S CUE: WDV-1018 is OPEN. COMMENTS:	_____ SAT _____UNSAT
STEP 11C: Close WDV-1019. STANDARD: Operator selects control switch for WDV-1019 is selected to CLOSE and verifies red light OFF, green light ON. EXAMINER'S CUE: WDV-1019 is CLOSED. COMMENTS:	_____ SAT _____UNSAT

STEP 11D: Open or Close, as required by Plant Conditions, WDV-405 and WDV-406. EXAMINER'S CUE: The Control Room has closed WDV-405 and WDV-406 STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 11E: Open WDV-1017. STANDARD: Operator selects control switch for WDV-1017 is selected to OPEN and verifies green light OFF, red light ON. EXAMINER'S CUE: WDV-1017 is OPEN. COMMENTS:	_____ SAT _____UNSAT
STEP 12: Notify Shift Supervisor of discharge completion. STANDARD: Operator contacts Shift Supervisor that WDT-1A has been released to Containment. COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

JPM QUESTION #1

Question: Waste Gas Compressors have been placed in pull-to-lock; RM-A8 and RM-A2 are in high alarm; the Waste Gas Tanks have the following pressures:

WDT-1A	119 psig
WDT-1B	80 psig
WDT-1C	15 psig
WDT-2	31 psig

What is the cause of the Radiation Monitor alarms?

Answer: The Waste Gas Surge Tank's, WDT-2, relief valve has lifted.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

071K1.06//3.1/3.1

References:

OP-412A
Flow diagram 302-691

JPM QUESTION #2

Question: The following Waste Gas conditions exist:

All the Waste Gas Decay Tanks are full (82 psig each).
Both Waste Gas Compressors have been placed in pull-to-lock.
The Waste Gas Header is at 2.4 psig.
WDT-1B's sequencer switch is OFF.
The other Waste Gas Decay Tanks' sequencer switches are ON.

What will happen if the "A" Waste Gas Compressor (selected to lag) has its control handle taken to start? And why?

Answer: The compressor will not start because there is high pressure in all of the Waste Gas Decay Tanks.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

071A3.02//2.8/2.8

References:

OP-412A
Electrical diagram 208-060 & Calibration Data Sheets

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question:

The following Waste Gas conditions exist:

All the Waste Gas Decay Tanks are full (82 psig each).
Both Waste Gas Compressors have been placed in pull-to-lock.
The Waste Gas Header is at 2.4 psig.
WDT-1B's sequencer switch is OFF.
The other Waste Gas Decay Tanks' sequencer switches are ON.

What will happen if the "A" Waste Gas Compressor (selected to lag) has its control handle taken to start? And why?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Waste Gas Compressors have been placed in pull-to-lock; RM-A8 and RM-A2 are in high alarm; the Waste Gas Tanks have the following pressures:

WDT-1A	119 psig
WDT-1B	80 psig
WDT-1C	15 psig
WDT-2	31 psig

What is the cause of the Radiation Monitor alarms?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
Space is needed in the "A" Waste Gas Decay Tank, following an accident.
Containment integrity exists.

INITIATING CUES:

You are requested to release the "A" Waste Gas Decay Tank, WDT-1A, to the Containment Building by the Technical Support Center.
Vent until 10 psig is in the tank.

DESCRIPTION WASTE GAS DECAY TANK 3A TAG NO. WD-204-PS1

SPECIFICATION DATA BY _____ DATE _____ REV. _____

SYSTEM CONDITIONS:
MAX. TEMP. (°F) 150
MAX. PRESS. (PSIG) 125 OPER. PRESS. 80 (PSIG)
PROCESS FLUID WASTE GAS

SWITCH DATA:
PRESSURE ☒ VACUUM ☐ DIFF.PRESS. ☐ (MAX. ΔP _____ PSID)
TYPE ELEMENT TEFLON DIAPHRAGM
DIFF. PRESS. INSTRUMENT ☐ MAX.DIFF.PRESS. (PSID) _____
ADJUSTABLE RANGE 0 TO 100 (PSIG)
SENSITIVITY .25-.75 PSIG FIXED ☒ ADJUSTABLE ☐
DUAL SET POINT ☐ A & B
NO. OF SWITCHES 1 TYPE SPDT (A)
1 TYPE SPDT (B)
CONTACT RATING 15 Amps @ 125/250 VAC
INDICATING ☐ SCALE _____ TO _____ ( )
ENCLOSURE: NEMA 4 CONDUIT CONN. SIZE (IN.) ½" NPT
MOUNTING LOCAL

ACCESSORIES: N/A
3 WAY MANIFOLD ☐ TIME DELAY ☐
PULSATION DAMPENER ☐ DIAPHRAGM SEAL ☐
VACUUM PROTECTION ☐ SYPHON ☐
OVER PRESS.PROTECTION ☐

REMARKS: _____

ENGINEERING DATA BY _____ DATE _____ REV. _____

	SERVICE	ACTION	SET POINT	CABLE NO.	ELECT.DWG.NO.
(1)	AUX RELAY (A&B)	COI	80 PSIG	WDC-92	20X-060 WD-05,06

(2) (A) PERMISSIVE LIGHT ON COMPRESSOR GOES OUT IF ALL TANKS
(3) ABOVE 80 PSIG (B) CLOSES WDV-390 (C) ACTUATES STEP SWITCH
(4) (D) IF ALL TANKS FULL - CLOSE WDV-384 & WDV-386

FLOW DIAGRAM NO. 302-691 SH.2
INSTRUMENT DIAGRAM NO. 308-128, 308-628
REMARKS COMPRESSORS 1A or 1B SHUT OFF VIA KS ON WDV-384 or WDV-385
REF. DWG # 209-060 WD-01
REF. PO-3127

MATERIAL DATA BY _____ DATE _____ REV. _____

MANUFACTURER UNITED ELEC. DWG.NO. B-10330
MODEL NO. 555 TYPE J 302
VENDOR TYPE TEMP CO P.O. NO. PR3-6333 ITEM _____
ACCOUNT NO. 102F417708 322-M14 COST _____
REMARKS _____

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PENNSYLVANIA JOB NO. 4203	FLORIDA POWER CORPORATION ST. PETERSBURG, FLORIDA CRYSTAL RIVER UNIT 3	INSTRUMENT DATA PRESSURE SWITCH	REV SHEET NUMBER 5

5 REVISED PER DCN 80-148A 2/5/74 2/5/74

DESCRIPTION WASTE GAS DECAY TANK 3B TAG NO. WD-205-PS1

SPECIFICATION DATA BY _____ DATE _____ REV. _____

SYSTEM CONDITIONS:
MAX. TEMP. (°F) 150
MAX. PRESS. (PSIG) 125 OPER. PRESS. 80 (PSIG)
PROCESS FLUID WASTE GAS

SWITCH DATA:
PRESSURE ☒ VACUUM ☐ DIFF. PRESS. ☐ (MAX. ΔP _____ PSID)
TYPE ELEMENT TEFLON DIAPHRAGM
DIFF. PRESS. INSTRUMENT ☐ MAX. DIFF. PRESS. (PSID) _____
ADJUSTABLE RANGE 0 TO 100 (PSIG)
SENSITIVITY .25 - .75 PSIG FIXED ☒ ADJUSTABLE ☐
DUAL SET POINT ☐ A & B
NO. OF SWITCHES 1 TYPE SPDT (A)
1 TYPE SPDT (B)
CONTACT RATING 15 AMPS @ 125/250 VAC
INDICATING ☐ SCALE _____ TO _____ ( )
ENCLOSURE: NEMA 4 CONDUIT CONN. SIZE (IN.) ½" NPT
MOUNTING LOCAL

ACCESSORIES: N/A
3 WAY MANIFOLD ☐ TIME DELAY ☐
PULSATION DAMPENER ☐ DIAPHRAGM SEAL ☐
VACUUM PROTECTION ☐ SYPHON ☐
OVER PRESS. PROTECTION ☐

REMARKS: _____

ENGINEERING DATA BY _____ DATE _____ REV. _____

	SERVICE	ACTION	SET POINT	CABLE NO.	ELECT. DWG. NO.
(1)	AUX. RELAY (A&B)	CO1	80 PSIG	WDC-93	208-060 WD-05,06

(2) (A) PERMISSIVE LIGHT ON COMPRESSOR GOES OUT IF ALL TANKS ABOVE 80
(3) PS104 (B) CLOSES WDV-391 (C) ACTUATES STEP SWITCH (B) IF ALL TANKS
(4) FULL - CLOSE WDV-384 or WDV-385
FLOW DIAGRAM NO. 302-691 SH. 2
INSTRUMENT DIAGRAM NO. 308-128, 308-628
REMARKS COMPRESSORS 1A-1B SHUT OFF VIA KS ON WDV-384 or WDV-385
REF. DWG. # 209-060 WD-01
REF. RD-3127

MATERIAL DATA BY _____ DATE _____ REV. _____

MANUFACTURER UNITED ELEC DWG. NO. B-10330
MODEL NO. 555 TYPE J302
VENDOR PRE TEMP CO P.O. NO. PR3- 6333 ITEM _____
ACCOUNT NO. 102F417708 322-M14 COST _____
REMARKS _____

5 REVISED PER DCN 88-148A 2/8 MM 2/16 AM

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PENNSYLVANIA	FLORIDA POWER CORPORATION ST. PETERSBURG, FLORIDA CRYSTAL RIVER UNIT 3	INSTRUMENT DATA PRESSURE SWITCH	~~SHEET~~ REV NUMBER 5
JOB NO. 4203			

DESCRIPTION WASTE GAS DECAY TANK 3C TAG NO. WD-206-PS1

SPECIFICATION DATA BY _____ DATE _____ REV. _____

SYSTEN CONDITIONS:
MAX. TEMP. (°F) 150
MAX. PRESS. (PSIG) 125 OPER. PRESS. 80 (PSIG)
PROCESS FLUID WASTE GAS

SWITCH DATA:
PRESSURE ☒ VACUUM ☐ DIFF.PRESS. ☐ (MAX. ΔP _____ PSID)
TYPE ELEMENT TEFLON DIAPHRAGM
DIFF. PRESS. INSTRUMENT ☐ MAX.DIFF.PRESS. (PSID) _____
ADJUSTABLE RANGE 0 TO 100 (PSIG)
SENSITIVITY 25-75 PSIG FIXED ☒ ADJUSTABLE ☐
DUAL SET POINT ☐ A & B
NO. OF SWITCHES 1 TYPE SPDT (A)
1 TYPE SPDT (B)
CONTACT RATING 15 AMPS @ 125/250 VAC
INDICATING ☐ SCALE _____ TO _____ ( )
ENCLOSURE: NEMA 4 CONDUIT CONN. SIZE (IN.) ½" NPT
MOUNTING LOCAL

ACCESSORIES: N/A
3 WAY MANIFOLD ☐ TIME DELAY ☐
PULSATION DAMPENER ☐ DIAPHRAGM SEAL ☐
VACUUM PROTECTION ☐ SYPHON ☐
OVER PRESS.PROTECTION ☐

REMARKS: _____

ENGINEERING DATA BY _____ DATE _____ REV. _____

	SERVICE	ACTION	SET POINT	CABLE NO.	ELECT.DWG.NO.
(1)	AUX. RELAY (A&B)	CO1	80 PSIG	WDC94	209-060 WD-0506

(2) (A) PERMISSIVE LIGHT ON COMPRESSOR GOES OUT IF ALL TANKS ABOVE 80 PSIG (B) CLOSES WDV-392 (C) ACTUATES STEP SWITCH (D) IF ALL TANKS FULL — CLOSE WDV-384 OR WDV-385

FLOW DIAGRAM NO. 302-691 SH.-2
INSTRUMENT DIAGRAM NO. 308-128, 308-628
REMARKS COMPRESSORS 1A or 1B SHUT OFF VIA KS ON WDV-384 or WDV-385
REF DWG #209-060 WD-01
REF RO-3127

MATERIAL DATA BY _____ DATE _____ REV. _____

MANUFACTURER UNITED ELEC. DWG.NO. B-10330
MODEL NO. 535 TYPE J302
VENDOR PRE TEMP CO P.O. NO. PR3- 6393 ITEM _____
ACCOUNT NO. 102F417708 322-M14 COST _____
REMARKS _____

5 REVISED PER DCN 88-148A 03 7/88 AWW

GILBERT ASSOCIATES, INC. ENGINEERS AND CONSULTANTS READING, PENNSYLVANIA JOB NO. 4203	FLORIDA POWER CORPORATION ST. PETERSBURG, FLORIDA CRYSTAL RIVER UNIT 3	INSTRUMENT DATA PRESSURE SWITCH	REV SHEET NUMBER 5

KEY #: P001569
10

NOTE:
1. FOR GENERAL NOTES SEE DRAWING FD-302-691-SHEET 2

PRESSURIZER VENT 651-SH1 A-1
PRIMARY VENT FROM STM GEN 3A 651-SH1 C-2
REACTOR COOLANT PUMP 3B2 VENT 651-SH2 C-2
PRIMARY VENT FROM STM GEN 3B 651-SH1 A-9
REACTOR COOLANT PUMP 3B1 VENT 651-SH2 C-2
CORE FLOODING TANK VENT 782-SH1 A-5
REACTOR COOLANT PUMP 3A1 VENT 651-SH2 C-2
REACTOR COOLANT PUMP 3A2 VENT 651-SH2 C-2
1500-3 1500-2
DRAIN
8010
8011
MDT-5 681-SH3 C-3
WDV-372
WDV-407
WDV-406
WDV-405
PEN #354 NOTE: 2 C.S.
3650
WDV-371
DRAIN & TEST
R.B.
VENT
WDV-1022
WDV-557
WDV-274
WDV-1017
WDV-1023
FROM WASTE GAS DECAY TANK 691-SH2 F-1
FROM WASTE GAS DECAY TANK 691-SH2 F-1
OC-115 692-SH1 A-8
SAMPLE
1500-3 150-2
WDV-852
4266
RCP-1C VENT & DRAIN 651-SH2 D-2
RCSG-1B VENT & DRAIN 651-SH1 A-1B
RCP-1D VENT & DRAIN 651-SH2 D-2
RCSG-1A VENT & DRAIN 651-SH1 C-2
RCP-1B VENT & DRAIN 651-SH2 D-2
RCP-1A VENT & DRAIN 651-SH2 D-2
8083
WDV-949
TO R.C. DRAIN TANK 681-SH2 B-2
FROM CROM VENT TOOL READER 651-SH2 F-2
SFFL-1A FILTER 621-SH2 D-4
SFFL-1B FILTER 621-SH2 D-7
SFHE-1A SPENT FUEL COOLER 3A 621-SH1 C-6
SFHE-1B SPENT FUEL COOLER 3B 621-SH1 E-6
SFP-2 PUMP 621-SH1 H-3
SFDM-1 DEMIN. 621-SH2 D-2
SFP-1A PUMP 621-SH1 C-4
SFP-1B PUMP 621-SH1 E-3
DECAY HEAT PUMPS VENT 641-SH1 H-5
3658
3615
661-SH1 MAKE-UP & PURIFICATION PREFILTER 3A & 3B A-1B
661-SH2 MAKE-UP & PURIFICATION FILTER-3A C-5
661-SH2 MAKE-UP & PURIFICATION FILTER-3B C-6
RELIEF
661-SH2 MAKE-UP TANK MUT-1 F-6
601-SH4 SEAL RETURN COOLER-3A D-2
661-SH2 SEAL RETURN COOLER-3A E-2
661-SH2 SEAL RETURN COOLER-3B C-2
601-SH4 SEAL RETURN COOLER-3B D-3
150-2 150-1
MOV-486
MOV-485
DECAY HEAT C.C. SURGE TANK 3A VENT 631-SH1 A-3
3681
3629
MOV-487
DECAY HEAT C.C. SURGE TANK 3B VENT 631-SH2 A-2
3682
MOV-488
150-150-2
VENT FROM NUCLEAR SERVICES C.C. SURGE TANK 601-SH3 A-7
MOV-490
3821
3630
MOV-489
SEOP MOV-851
3987
MDT-6 681-SH5 C-3
MOV-925
MOV-926
MOV-927
MOV-928
TO WASTE GAS SURGE TANK 691-SH2 B-2
SAMPLE 692-SH1 A-9
OC-109 692-SH1 A-3
OC-110 692-SH1 A-3
OC-111 692-SH1 A-4
SEOP MOV-377
SEOP MOV-378
SEOP MOV-379
3405
3484
3486
3387
MOV-464
MOV-463
MOV-462
T-4 150-2
MOV-411
3445
MOV-408
MOV-409
MOV-410
MDT-5A 681-SH4 B-6
MDT-3A 681-SH4 B-7
MDT-3B 681-SH4 B-8
MDT-5B 681-SH4 B-9
3447
MOV-912
MOV-913
CLEAR PVC
MOV-907
MOV-914
MOV-911
MOV-910
MOV-479
MOV-909
MOV-453
MOV-449
PX
3407
3446
3433
MOV-908
3612
MOV-454
MDT-9 681-SH1 C-3
SEOP MOV-412
MDT-7A 681-SH2 C-5
4234
MOV-337
SEOP MOV-415
SEOP MOV-416
SEOP MOV-417
MOV-440
MOV-441
673-SHT C-4
MDT-7B 681-SH2 C-7
MDT-8A 681-SH3 A-7
MDT-8B 681-SH3 A-9
3406
3483
3484
3387
MOV-921
3613
3614
MOV-929
MOV-923
SURGE TANK
LIS
MDV-1-1 681-SH4 C-3
MOV-915
MOV-917
FLOOR DRAIN
MAKE UP & PURIFICATION DEMIN.
DEBORATING DEMIN.
EVAP.CDSTE RESIN TRAP
3654
3653
3652
3651
MOV-423
MOV-422
MOV-421
MOV-420
MOV-472
MOV-419
MOV-418
MOV-467
3664
3646
3647
3649
3648
4931
4932
MOV-376
MOV-468
CE-106 692-SH1 SAMPLE A-2
MDDM-1A 681-SH3 D-5
MDDM-1B 681-SH3 D-5
MDDM-2A 681-SH2 D-9
MDDM-3A 681-SH2 B-7
MDDM-3B 681-SH2 B-8
MDDM-2B 681-SH4 C-2
MDDM-2B 681-SH4 C-4
MDT-2 681-SH2 D-9
681-SH1 B-7
681-SH1 C-7
WDT-4
NUCLEAR SERVICES CC COOLING SURGE TANK RELIEF VALVE VENT
681-SH3 A-8
3630
MOV-491
752-SH1 E-5
RELIEF VALVE VENT MOR AHEAD OF CHARCOAL FILTERS IN AUX. BLDG. VENTILATION SYSTEM
FROM DECAY HT CLOSED CYCLE SURGE TANK 3A 631-SH1 A-3
FROM DECAY HT CLOSED CYCLE SURGE TANK 3B 631-SH2 A-2
3388
MOV-855
MOV-854
MOV-856
FROM EVAP CNDS STORAGE TANKS 3A,3B 681-SH2 A-3
FROM P.S.V. WDV-386 691-SH2 A-5
FROM P.S.V. MOV-447 691-SH2 E-2
FROM WASTE GAS DECAY TANK P.S.V. 691-SH2 D-5

65 CAUTION:
302 DRAWINGS MAY NOT REFLECT ACTUAL VALVE POSITIONS IN THE PLANT. VALVE POSITIONS ARE CONTROLLED THROUGH OPERATING PROCEDURES. NOCS (62846)

NO.	REVISIONS	BY	CHECKED	APPROVED	DATE
65	REVISED PER DCN 98-2011L	MAD			
64	REVISED PER DCN 98-1781	TDF	NLM	CSS	8-13-98
63	REVISED PER DCN 97-0515	TDF	DAW	CSS	7-15-98

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO.3
NUCLEAR PIPING 825,000 KW
FLOW DIAGRAM W.D. SYSTEM
GAS WASTE DISPOSAL

1ST AND ORIGINAL DESIGN BASIS CODE CLASSES
FSAR FIG. 11-3(10F3)
REDRAWN ON CAD SYSTEM
DRAWN BY: AFO DATE: 07-21-93
CHECKED BY: BJK DATE: 09-02-93
CHECK VERIFIED: BJK DATE: 09-06-93
BAYMONT ENGINEERING COMPANY
FD-302-691 65
SHEET 01 OF 03
SCALE DRAWING NUMBER REV
FILE: 3226911.DWG
D-9-8

KEY #: P002365

NOTES:
1) PIPE LINE SPEC.150-2 EXCEPT WHERE OTHERWISE NOTED. 'SI'/SIII' CATEGORY BREAK FLAGS OCCUR AT TANK PENETRATIONS EXCEPT WHERE NOTED ALL TANKS ARE SI.
2. FOR PENETRATION CONTAINMENT ISOLATION CONFIGURATION SEE REF. DWG. 315-354

WASTE GAS SURGE TANK
MDT-2
EL. 95'-6"

WASTE GAS DECAY TANK 3A
MDT-1A
EL.95'-6"

WASTE GAS DECAY TANK 3B
MDT-1B
EL.95'-6"

WASTE GAS DECAY TANK 3C
MDT-1C
EL.95'-6"

DRAIN POT
MDT-12

WASTE GAS COMPRESSOR 3A
MDP-1A
GLASS GAUGE

WASTE GAS COMPRESSOR 3B
MDP-1B
GLASS GAUGE

DRAIN POT

HEAT EXCHANGER

HEAT EXCHANGER

GAS UNLOADER LINE

GAS UNLOADER LINE

VENT GAS WASTE DISPOSAL 691-SH1 A-9

VENT FROM WASTE DRUMMING AREA 682-SH1 A-5

TO PSV VENT LINE 691-SH1 H-7

RETURN FROM WASTE GAS SAMPLING 692-SH1 G-1

VENT

DRAIN

FAB. DETAIL 3603

692-SH1 E-2

DRAIN TO AUX. BLDG. SUMP 683-SH1 G-3

TO PSV VENT LINE 691-SH1 H-6

TO VENT 691-SH1 B-4

SAMPLE

TO AUX. BLDG SUMP 683-SH1 G-3

TO AUX. BLDG SUMP

DRAIN TO AUX.BLDG.SUMP

3683 FAB. DETAIL

TO AUX. VENTILATION FILTER UNITS 752-SH1 E-6

TEST CALIBRATION CONN.S

NITROGEN GAS SAMPLER PURGE 692-SH1 G-7

#6 SAMPLE 692-SH1 C-7

LOCL

MUT-1 VENT 661-SH2 F-7

(MAKE-UP) DEMIN.WATER 182-SH1 F-7

INSTRUMENT AIR SUPPLY

NITROGEN 100 P.S.I.G. 673-SH1 C-5

300-1

681 SH. 4 C-7

681 SH. 4 D-7

CAUTION:
302 DRAWINGS MAY NOT REFLECT ACTUAL VALVE POSITIONS IN THE PLANT. VALVE POSITIONS ARE CONTROLLED THROUGH OPERATING PROCEDURES. NOCS (62846)

72	REVISED PER DCN 98-2811	MAD	THD		4-11-98
71	REVISED PER DCN 98-1781	TDF	KLM	CSS	4-11-98
70	REVISED PER DCN 97-0515	TDF	DAH	CSS	5-29-97
NO.	REVISIONS	BY	CHECKED	APPROVED	DATE

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO.3 — 855,000 KW
NUCLEAR PIPING — FLOW DIAGRAM W.D. SYSTEM
GAS WASTE DISPOSAL
ISI AND ORIGINAL DESIGN BASIS CODE CLASSES — FSAR FIG. 11-3(20F3)
REDRAWN ON CAD SYSTEM
DRAWN BY: J.E.Q. — DATE: 12-21-93
CHECKED BY: B.A.K. — DATE: 05-28-98
CHECK VERIFIED: R.P.B. — DATE: 05-28-98
BAYMONT ENGINEERING COMPANY
SCALE
FD-302-691 SHEET 02 OF 03
DRAWING NUMBER
72
REV.
FILE: 3926912.DWG
D-9-8

480 VAC FROM REACTOR MCC 3A2, UNIT 4D

28 VAC FROM RAD WASTE DIST. PNL SHT. WD-147 FU199-5

CONT. TRANSF

VALVE SHOWN FULL CLOSED

CONT. TO WD-06

NOTES:

1. DEVICES WITHOUT LOCATION SYMBOL ARE LOCATED IN MCC
2. FOR LOGIC DIAG SEE DWG 5-203-060-WD-19
3. LAST USED WIRE NO. 22
4. LOCATION SYMBOLS
   - □-MOUNTED LOCALLY
   - *-MOUNTED ON RAD WASTE PNL
   - NC-NASH COMPR. CONTROL CAB. - NASH ENG. CO. DWG. 613-3852
5. DEVICES
   - HPC(WD-148-LS)-HIGH LEVEL FLOAT CONTROL ON SEPARATOR TANK (WATER) SW1 CLOSES AT HIGH LEVEL - SW2 CLOSES AT HIGH LEVEL
   - LPC(WD-149-LS)-LOW LEVEL FLOAT CONTROL ON SEPARATOR TANK (WATER) SW1 CLOSES AT LOW LEVEL - SW2 CLOSES AT LOW LEVEL
   - UPS-UNLOADER PRESSURE SWITCH (GAS)
   - DSV-TANK DRAIN VALVE SOLENOID (WATER)
   - USV-UNLOADER VALVE SOLENOID (GAS)
   - MSV-MAKEUP VALVE SOLENOID (WATER)
   - (M)-PERMISSIVE LIGHTS-DRAKE MODEL DR5160-458-604W

SW-2 WD-203-PS1 = OPENS WHEN WASTE GAS SURGE TANK SUCTION PRESSURE IS LOW
SW-1 WD-203-PS2 = CLOSES WHEN WASTE GAS SURGE TANK SUCTION PRESSURE IS HIGH
SW-1 WD-204-PS1 = CLOSES WHEN WASTE GAS DECAY TANK 3A PRESSURE IS HIGH
SW-1 WD-205-PS1 = CLOSES WHEN WASTE GAS DECAY TANK 3B PRESSURE IS HIGH
SW-1 WD-206-PS1 = CLOSES WHEN WASTE GAS DECAY TANK 3C PRESSURE IS HIGH
WD-204-PS2 = WASTE GAS DECAY TANK 3A HIGH PRESSURE CLOSES CONTACT
WD-205-PS2 = WASTE GAS DECAY TANK 3B HIGH PRESSURE CLOSES CONTACT
WD-206-PS2 = WASTE GAS DECAY TANK 3C HIGH PRESSURE CLOSES CONTACT

CS/D
G.E. TYPE SBM
MODEL NO. _____
HANDLE PISTOL GRIP
☒ SPRING RETURN TO NORMAL AFTER POSITION FROM BOTH DIRECTIONS
☐ MAINTAINED

CONTACTS HANDLE END			POSITION (R.V.)			
ODD	EVEN		START	NORMAL AFTER START	STOP	PULL TO LOCK
1 1C	2C 2	1				
		2				
3 3C	4C 4	3				
		4				
5 5C	6C 6	5				
		6				
7 7C	8C 8	7				
		8				
9 9C	10C 10	9				
		10				
11 11C	12C 12	11				
		12				
13 13C	14C 14	13				
		14				

RWP-AU4
STOP START
PULL TO LOCK
(F.V.)

RT RT 4255
GE TYPE CR104
MODEL NO. CR104B121
MAINTAIN CONTACT
RWP-221
PUMP "A" PUMP "B"
(F.V.)

NO.	REVISION	BY	CH	APP	DATE
10	REVISED PER DCN91-202	AJ	RMN	EJ	6/14/91
9	REVISED PER DCN 89 324	GGN	LDL	FSS	6/12/90
8	REVISED PER DCN88-148A	EB	TPH	AJR	4/1/88
7	REVISED PER ECN-2288	MGH	JBH	TJP	7-27-75
6	REV. PER F.C. 75-614 (REF. FCR 404)	DJTM	JBH	TJP	7/28/75

EMG APPROVED FOR CONCEPT 5/27/72

CONSTRUCTION
BIDDING PURPOSES ONLY
DATE RELEASED FOR ENGR.

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO. 3 — 857,000 KW

ELEMENTARY DIAGRAM
WASTE GAS COMPRESSOR A (WDV-384) SUCTION VLV (WDV-384)
REACTOR MCC 3A2, UNIT 4D

4203	3-208-060	10	
WORK ORDER	SIZE DRAWING	REV	FPC DRAWING NO.

GILBERT ASSOCIATES, INC.
ENGINEERS AND CONSULTANTS
READING, PENNA.

DRAFTING			ENGINEER APP'L	
MADE	CH	APP		
RCS			EJM 7 71	
REV 6	DATE		REV 7 DATE 4-27-73	

APPROVED FOR CONSTRUCTION BY FLORIDA POWER CORPORATION
ALG

WD-05

C-7-12

Individual Walk-through Test Outline

Facility: Crystal River Unit 3		Date of Examination: 2-8-99
Exam Level: RO/SRO		Operating Test No. : 3
System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G // Importance // Description
Control Rod Drive (CRD)//Latch and Position Indication align a Safety Group //001A4.03//4.0/3.7//S, D	1	A. 2.2.22//3.4/4.1//What are the Technical Specification requirements, if any when given the position of each rod in group 2 (two rods will not be fully withdrawn)? B. 001K5.05//3.5/3.9//At 350 Effective Full Power Days, what is the worth of the Safety Rods?
Engineered Safeguards (ES)//Manually actuate Low Pressure Injection//006A4.07//4.4 /4.4//S, N, L, A	2	A. 006K4.05//4.3/4.4//Given a set of plant conditions, what is the status of the Decay Heat Pumps (4 psig Reactor Building pressure with a Loss of Off-Site Power)? B. 056AA2.07//4.2/4.3//Given a set of plant conditions, what is the status of the Emergency Feedwater Pumps (High Pressure Injection signal, Low Pressure Injection signal, and Loss of Off-Site Power)?
Reactor Coolant (RCS) //Take Actions Required for Loss of RCS Pressure //010A1.04 //3.6/3.8//S, L, N, A	3	A. 010K1.02//3.9/4.1//If the bubble in the Pressurizer is established at 580°F, what is the condition of the Engineered Safeguards system? B. 010K6.03//3.2/3.6//What are the Technical Specification actions, if any if pressurizer level is 280 inches and Pressurizer heater bank "B" is the only available heater bank?

Reactor Coolant (RCS) //Lower water level in the Reactor Coolant Drain Tank //007A1.01 //2.9/3.1 S, A, D	5	A. 007A1.01//2.9/3.1//The Reactor Coolant Drain Tank (RCDT) high level annunciator has just come into alarm, how many gallons will have to be pumped out to clear the high level alarm and bring the low level annunciator into alarm? B. 007A4.10//3.6/3.8//At full reactor power the pressure in the RCDT is increasing due to a weeping code safety, if RCDT pressure is currently 4 psig (assume no other line losses), what would the temperature and condition be of the steam space in the RCDT (prior to the cooling)?
Radiation Monitors (RM)//Perform a Functional Test of RM-A4//072A4.01// 3.0/3.3//CR, N	7	A. 072A4.01//3.0/3.3//Radiation Monitor, RM-A4, is reading 625 cpm, what is the status of Auxiliary Building Ventilation? B. 072A3.01//2.9/3.1//Several Radiation Monitors have come into alarm in a given order, what is the most probable source of the leak and what is the status of Auxiliary Building Ventilation?
Reactor Building (RB)// While RB Purge is in progress respond to Radiation Monitor, RM-A1, actuation //029A3.01//3.8/4.0//CR, D	8	A. 073A1.01//3.2/3.5//Radiation Monitor, RM-A1, is reading 3.0 x 10^2 mR/hr, what scale of the monitor would this be read from if the Low-Medium-High Valve Controller is in automatic? B. 073A4.02//3.7/3.7//If RM-A1 count rate drops to 4820 cpm particulate and 780,000 cpm iodine, can the atmospheric radiation high alarm be cleared (the gas channel is in warning)?
Reactor Coolant System (RCS)//Startup Fourth Reactor Coolant Pump (RCP) at Power //003A4.02//2.9/2.9//CR, D	7	A. 003K1.01//2.6/2.8//Given a set of RCP conditions, Can an RCP be started? B. 003A4.06//2.9/2.9//Given vibration data for an RCP, what action, if any, should be taken?

Post Accident Hydrogen Sampling //Place the "A" Hydrogen Analyzer in Service//028A4.03//3.1/ 3.3//P, D	5	A. 028A4.03//3.1/3.3//DC Distribution Panel, DPDP-1A, is de-energized and WSV-38 is failed in the closed position, what is the flow path for both Hydrogen Analyzers? B. 028A4.03//3.1/3.3//With the "A" Hydrogen Analyzer placed in service given the status of the valves associated with the analyzer and the hydrogen concentration, what is the flow path and the status of the "A" Hydrogen Analyzer?
Waste Gas (WG)// Release a Waste Gas Decay Tank to Plant Ventilation //071A4.26 //3.1/3.9//P, D, R	9	A. 071K1.06//3.1/3.1//During a release of the "A" Waste Gas Decay Tank (WDT-1A), Radiation Monitor, RM-A2, gas channel becomes inoperable; what are the requirements, if any, regarding the release? B. 071K4.06//2.7/3.5//Given a partially filled out Enclosure 1 from OP-412B, WGDT Release to Ventilation, what is the release rate for the associated time periods?
Instrument and Station Air (IA/SA)// Start Station Air Compressor, SAP-1E, //065AA1.04//3.5/3.4//P, N	8	A. 078K1.02//2.7/2.7//Station Air Compressor, SAP-1C is supplying the Instrument and Station Air Systems, when a large air leak develops; what will the status of the air systems be if the leak is located between IAV-7 and IAV-11? B. 078A3.01//3.1/3.2//What action, if any is required, given a set of daily surveillance readings on the Instrument Air system (high differential pressure across the dryer along with low Instrument Air pressure)?

* - Type codes: (D)irect from bank, (M)odified from bank, (N)ew, (A)lternate path, (C)ontrol room, (S)imulator, (L)ow Power, (P)lant, (R)CA, (T)ime critical

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 9S/SIMULATOR

Latch and Position Indication align a Safety Group

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Sullivan Date/ 12-17-98

VALIDATED BY: * J DeJean Date/ 12-17-98

APPROVED BY: R. Wes Lam Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Latch and Position Indication align a Safety Group.

Alternate Path:
N/A

Facility JPM #:
027

K/A Rating(s)/Task Number/AO, RO, SRO:
001A4.03//4.0/3.7//0010102009//RO, SRO

Task Standard:
Latch and Position Indication (PI) align a Safety Group using OP-502, Control Rod Drive System.

Preferred Evaluation Method:
Simulator____X____ In-Plant _____

References:
OP-502, Section 4.2

Validation Time: 6 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. The plant is in Mode 3.
2. A Plant Startup is in Progress.
3. Control Rod Drive Group 4, Group 3, and Group 2 have already been latched and PI aligned.
4. Group 1's API and RPI will be in agreement.
5. IC #65

Tools/Equipment/Procedures Needed:

OP-502, Section 4.2

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is stable in Mode 3.
A plant Startup is in progress.
Control Rod Drive Groups 4, 3 and 2 have already been latched and PI aligned.

INITIATING CUES:

You are requested to latch and PI align Control Rod Drive Group 1.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-502, Section 4.2. EXAMINER'S CUE: For purposes of this JPM assume SRO concurs with each rod manipulation. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Repeat 4.2.2 through 4.2.4 as necessary to complete latching all Safety Groups. STANDARD: Operator will begin at step 4.2.2. EXAMINER'S CUE (If Needed): Step 4.2.2 is complete. COMMENTS:	_____ SAT _____UNSAT
NOTE: The Safety Groups may be latched and aligned in any order. However, the preferred sequence is Group 4, Group 3, Group 2, and Group 1. STEP 3: Transfer the desired Safety Group/Rod to the Auxiliary Power Supply per Steps 4.16.1 through 4.16.12 – Group 1. STANDARD: Operator goes to 4.16.1 in OP-502. COMMENTS:	_____ SAT _____UNSAT

CAUTION: Tave control may go to Feedwater regulation.		
STEP 4:	Place Reactor Demand control station in HAND if not in Mini Track.	_____ SAT
STANDARD:	Operator verifies the red and white lights on the Reactor Demand control station are ON.	_____UNSAT
COMMENTS:		
STEP 5:	Place Reactor Diamond in MANUAL.	_____ SAT
STANDARD:	Operator verifies that Reactor Diamond MANUAL light ON and AUTO light is OFF	_____UNSAT
COMMENTS:		
STEP 6:	Select GROUP SELECT Switch to desired group.	_____ SAT
STANDARD:	Operator rotates GROUP SELECT Switch to Group 1.	_____UNSAT
COMMENTS:		

STEP 7: STANDARD: COMMENTS:	Select ALL or desired rod. Operator rotates SINGLE SELECT Switch to ALL.	_____ SAT _____UNSAT
STEP 8: STANDARD: COMMENTS:	Select SEQ OR. Operator depresses SEQ/SEQ OR pushbutton and verifies SEQ OR light ON and SEQ light ON.	_____ SAT _____UNSAT
STEP 9: STANDARD: COMMENTS:	Select AUXIL. Operator depresses GROUP/AUXIL pushbutton and verifies AUXIL light ON and GROUP light OFF. The operator will also verify the CONTROL ON white light for group 5 is ON.	_____ SAT _____UNSAT

STEP 10: Place SPEED SELECTOR switch in JOG. STANDARD: Operator rotates RUN/JOG switch to JOG and verifies that the SY light ON. COMMENTS:	_____ SAT _____UNSAT
STEP 11: Select CLAMP. STANDARD: Operator depresses CLAMP/CLAMP RELEASE pushbutton and verifies CLAMP light ON and CLAMP REL light OFF. COMMENTS:	_____ SAT _____UNSAT
CAUTION: If Amber control on lights for more than one group is on, STOP, and notify SSOD. STEP 12: Depress MAN TRANS STANDARD: Operator depresses MAN TRANS pushbutton and verifies TR CF light ON. The operator will also verify the amber CONTROL ON lights for Group1 are ON. COMMENTS:	_____ SAT _____UNSAT

STEP 13: STANDARD: COMMENTS:	Select CLAMP REL. Operator depresses CLAMP/CLAMP RELEASE pushbutton and verifies CLAMP REL light ON and CLAMP light OFF.	_____ SAT _____UNSAT
STEP 14: STANDARD: COMMENTS:	Select GROUP. Operator depresses GROUP/AUXIL pushbutton and verifies GROUP light ON and AUXIL light OFF. The operator will also verify the SY light OFF.	_____ SAT _____UNSAT
STEP 15: STANDARD: COMMENTS:	If latching Safety Rods in accordance with Section 4.2, return to Section 4.2.3 after completion of this step. Operator returns to step 4.2.3.	_____ SAT _____UNSAT

NOTE: Groups 1 through 7 IN-LIMIT lamps should be OUT while IN-LIMIT (LATCH) BYPASS pushbutton is depressed. NOTE: Source Range NI indication should be greater than 2 cps prior to rod withdrawal. STEP 16A: Perform Latch and PI Alignment. Select JOG. STANDARD: Operator verifies RUN/JOG switch to JOG. COMMENTS:	_____ SAT _____UNSAT
STEP 16B: Depress and Hold "IN-LIMIT (LATCH) BYPASS" pushbutton and insert rods for 15 sec. STANDARD: Operator depresses the IN-LIMIT BYPASS pushbutton and holds while inserting rods for 15 sec. COMMENTS:	_____ SAT _____UNSAT
STEP 16C: Withdraw group until all PI panel ZONE REF 0% lamps of selected group are OFF. STANDARD: Operator withdraws group 1 until all GREEN ZONE REF 0% lamps are OFF. COMMENTS:	_____ SAT _____UNSAT

STEP 16D: STANDARD: COMMENTS:	Insert group until the GROUP IN-LIMIT lamp comes ON. Operator inserts Group 1 until the green GROUP IN-LIMIT lamp is ON.	_____ SAT _____UNSAT
STEP 16E: STANDARD: COMMENTS:	Compare absolute and relative readings on PI panel. Operator uses toggle to compare API and RPI readings for Group 1.	_____ SAT _____UNSAT
STEP 16F: STANDARD: COMMENTS:	IF reset of RPI is required, THEN rotate SINGLE SELECT switch to desired CRD, AND Restore using POSITION RESET RAISE/LOWER switch. N/A (RPI and API match)	_____ SAT _____UNSAT

STEP 17:	Transfer the Safety Group/Rod from the Auxiliary Power Supply to the DC Hold Bus per Section 4.17 of OP-501.	_____ SAT
	EXAMINER'S CUE: Group 1 has been Latched and PI aligned.	_____UNSAT
STANDARD:	N/A	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: What are the Technical Specification requirements, if any, for the following actual Control Rod Drive Group 2 positions?

ROD	POSITION
2-1	100%
2-2	100%
2-3	98%
2-4	100%
2-5	100%
2-6	99%
2-7	100%
2-8	100%

Answer: With more than one safety rod not fully withdrawn verify Shutdown Margin is $\geq$ 1% $\Delta k/k$ OR initiate boration to restore Shutdown Margin to within limit in one hour AND, be in Mode 3 in 6 hours.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

2.2.22//3.4/4.1

References:

TS 3.1.5

JPM QUESTION #2

Question: At 350 Effective Full Power Days (EFPD) what is the worth of the Safety Rods?

Answer: -4.67 %Δk/k (± 0.2 %Δk/k if read from graph)

CANDIDATE'S RESPONSE

Time:

K/A Rating:

001K5.05//3.5/3.9

References:

OP-103C Curve 7

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: At 350 Effective Full Power Days (EFPD) what is the worth of the Safety Rods?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What are the Technical Specification requirements, if any, for the following actual Control Rod Drive Group 2 positions?

ROD	POSITION
2-1	100%
2-2	100%
2-3	98%
2-4	100%
2-5	100%
2-6	99%
2-7	100%
2-8	100%

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
The plant is stable in Mode 3.
A plant Startup is in progress.
Control Rod Drive Groups 4, 3 and 2 have already been latched and PI aligned.

INITIATING CUES:

You are requested to latch and PI align Control Rod Drive Group 1.

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 10S/SIMULATOR

QAW 12-18-98

~~During a Normal Cooldown~~ Manually Actuate Low Pressure Injection

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Sellers Date/ 12-17-98

VALIDATED BY: * [signature] Date/ 12-17-98

APPROVED BY: R. Wes Lowe Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** [signature] Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Manually actuate Low Pressure Injection.

Alternate Path:
LPI does not automatically actuate.

Facility JPM #:
NEW

K/A Rating(s)/Task Number/AO, RO, SRO:
006A4.07//4.4/4.4//0130502009//RO, SRO

Task Standard:
Manually actuate Low Pressure Injection using EOP-03.

Preferred Evaluation Method:
Simulator____X____ In-Plant _____

References:
EOP-03

Validation Time: 9 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

SIMULATOR OPERATOR INSTRUCTIONS:

1. While in Mode 3 a LOCA causes a loss of subcooling margin.
2. LPI fails to actuate.
3. IC #63

Tools/Equipment/Procedures Needed:

EOP-03

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

You are the Reactor Operator.
While in Mode 3 a LOCA causes a loss of subcooling margin.

INITIATING CUES:

You are requested to ensure that applicable ES (Engineered Safeguards) equipment is properly aligned.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of EOP-03, step 3.10. EXAMINER'S NOTE: Operator may verify actions in steps 3.1 through 3.9. EXAMINER'S NOTE: Operator may use EOP-13, Rule 1. COMMENTS:	_____ SAT _____UNSAT

EXAMINER'S NOTE: All parts of step 2 can be performed in any sequence. STEP 2A: IF at any time, ES systems have, OR should have actuated, THEN ensure ES equipment is properly aligned. Ensure applicable ES actuations: HPI. STANDARD: Operator verifies HPI actuation ES status lights are green (excluding 1 HPI pump and 2 RB fans). COMMENTS:	_____ SAT _____UNSAT

STEP 2B:	LPI	_____SAT
STANDARD:	Operator verifies LPI actuation ES status lights are green. Operator finds that the LPI actuation ES status lights for LPI pumps are yellow. Operator may either rotate control handles for both DHP-1A and DHP-1B to start OR depress the LPI MANUAL ACTUATION pushbutton. Operator verifies LPI actuation ES status lights are green. (A-2-4 and D-2-4 will alarm with their respective pump and then clear)	_____UNSAT
COMMENTS:		
STEP 2C:	RBIC	_____SAT
STANDARD:	Operator verifies RBIC actuation ES status lights are green.	_____UNSAT
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: What is the status of the Decay Heat Pumps given the following set of plant conditions? (assume nothing has been bypassed or manually actuated)

Reactor Coolant pressure is 770 psig.
Reactor Building pressure is 4.3 psig.
There is a Loss of Off-Site Power (LOOP).

Answer: The Decay Heat Pumps will not be running.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
006K4.05//4.3/4.4

References:
ROT-4-13

JPM QUESTION #2

Question: What is the status of the Emergency Feedwater Pumps (EFPs) given the following set of plant conditions? (assume nothing has been bypassed or manually actuated)

Reactor Coolant pressure is 470 psig.
Reactor Building pressure is 2.3 psig.
There is a Loss of Off-Site Power (LOOP).

Answer: EFP-1 will not be running.
EFP-2 will not be running.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
056AA2.07//4.2/4.3

References:
ROT-4-13

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What is the status of the Emergency Feedwater Pumps given the following set of plant conditions? (assume nothing has been bypassed or manually actuated)

Reactor Coolant pressure is 470 psig.
Reactor Building pressure is 2.3 psig.
There is a Loss of Off-Site Power (LOOP).

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What is the status of the Decay Heat Pumps given the following set of plant conditions? (assume nothing has been bypassed or manually actuated)

Reactor Coolant pressure is 770 psig.
Reactor Building pressure is 4.3 psig.
There is a Loss of Off-Site Power (LOOP).

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

You are the Reactor Operator.
While in Mode 3 a LOCA causes a loss of subcooling margin.

INITIATING CUES:

You are requested to ensure that applicable ES (Engineered Safeguards) equipment is properly aligned.

channels.

MAR 97-08-12-01 again modified the LPI actuation circuits. From the above modifications, the actuation relay (group two relay) for Decay Heat pump start within the LPI actuation circuits was energize to actuate. Given the concurrent conditions of a LOCA, and a LOOP (with loss of the A battery), a standing trip signal from their respective RCS pressure transmitters would exist due to the loss of cabinet power. Within the "A" train, this is not significant since a loss of power also exist to the control power for the components. However, on the "B" train, the channel 1 actuation must be bypassed (allowed by another part of this modification) to regain control of "B" train components (this removes one of two trip signals). While a standing trip signal will still exist on channel 2, this would not provide one of the two required signals for decay heat pump start with and energize to actuate relay, since the power loss also affects the "B" train actuation and relay cabinets. Therefore, even if RCS pressure decreased below the LPI actuation setpoint (500 psig) and provided a trip signal from the "B" train channel 3 group two relay (DHP), a second actuation signal would not exist (channel 1 is bypassed and the channel two relay would have no power). Modifying the channel 2 relay to be in the tripped state when de-energized, will provides the second trip signal and therefore allow actuation of the DHP by the channel 3 relay. This modification was not needed on the "A" train since a loss of the "B" battery does not create the same conditions on the "A" train.

Changes to the LPI actuation logic have also been incorporated to help protect the diesels from overloading during ES conditions. During a Loss of Off-site Power (LOOP) the following conditions are incorporated:

1. With a LOOP, a manual or automatic (500# not 4#) actuation of LPI will trip EFP-1 (A train only).

2. If a LOOP occurs after an HPI actuation, the EFP-1 will be tripped until block 3 of HPI actuates. Then 5 seconds later the EFW Pump will restart (A train only).

The bypass and reset functions are basically the same as HPI. The actuation matrix design for HPI is used for LPI. The testing logic is the same with separate controls for LPI. Note that all of the LPI Manual Test Group switches are spring return to "OFF", and therefore must be held in the "test" position until LP INJ MAN ACT pushbutton has been released to avoid inadvertent actuations. A list of LPI equipment by group and ES positions is given in Table IV.

2.3.12 RBIC ACTUATION

RBIC actuation circuits are similar to the HPI and LPI circuits except that pressure switches are used instead of bistables for automatic circuit actuation. RBIC has six test groups: five for testing of the various equipment and the sixth for bypass testing (discussed below). Note that the valves associated with HPI diverse containment isolation can be actuated by HPI via relay contacts 63Y3/-H. A list of RBIC equipment by group and ES position is given in Table V.

Case 3 - LOSS OF OFFSITE POWER WITH HPI SIGNAL

Prior to the actuation,

- o contact 62-2/AV is closed,
- o contact 63Z1B/AH is open because its relay (Block 1) is energized.
- o contact 52XA1/BS is closed because the Breaker alignment shows that offsite power is supplying the bus.
- o Relay 62-6/CH (EF Block) is energized

UPON LOSS OF OFF-SITE POWER WITH HPI SIGNAL

- o contact 63Z1B/AH will close when the Block 1 relays de-energize.
- o contact 62-2/AV will remain closed until block 3 times out in 10 seconds.
- o this will keep 62-6/CH energized until block 3 times out. 62-6/CH has a 5 second time delay.
- o At 5 seconds after block 3, the EFW Pump will receive its start signal from the HPI System.

2.3.11 LPI ACTUATION

LPI utilizes the same bistable actuation scheme as HPI. The actuating bistable is set at 500 psig, and the bypass bistable is set at 900 psig. LPI is divided into three groups. Group one relays control the LPI valves (DHV-5 & DHV-34), Group two controls the LPI Pump, and Group three controls the EFW Pump trip. LPI also can be initiated from RBIC actuation via relay 63Y/RB*W.

Any RBIC signal will actuate the valves (group one), however, groups two (pump) and three (EFP-1 trip) will depend upon the status of off site power. Group two will always be actuated by a 500 psig or a manual actuation, but will only be actuated by a cascade from RBIC if off site power is available (note that this in an energize to actuate circuit). Group three will only be actuated if a loss of off site power exist and then only for a 500 psig or a manual actuation. Note that the lights associated with the LPI groups will only be lit if that circuit is actuated. Thus, the groups two and three lamp status will vary depending upon the status of off site power.A contact from relay 63Y2/-N in the LPI circuitry is also provided to de-energize the HPI actuation relays, causing a channel trip in HPI, if for some reason it has not already tripped. Note that an automatic LPI actuation (not a manual) will cause an HPI actuation but will not cause an HPI diverse containment isolation actuation.

MAR 88-05-24-01 has been incorporated which places the DHP start into the LPI logic scheme. The DH Pump no longer starts on HPI. The DH pump start is still dependent upon HPI, however. A HPI Seal-In is required to allow the pump to start. The HPI Seal-In is in series with the LPI Pump matrix. The HPI Seal-In is indicated by a indicating light on the ES Section of the MCB as soon as the Block 4 relay is de-energized on 2 out of 3

2.3.10 EFP BLOCK ACTUATION

Automatic starting of EFP-1 is normally a function of the EFIC System. However, when ES actuations occur, additional consideration must be given to the timing of EFP-1 start signals due to diesel loading considerations. Therefore, the following guidelines apply to automatic starts of EFP-1:

a. Any EFIC actuation will start EFP-1 immediately unless a loss of off site power exist (see c below).

b. Any actuation of both A and B trains of ES HPI will actuate EFIC which will in turn start EFP-1 (again if no LOOP exist).

c. During a LOOP the EFIC start of EFP-1 is blocked (all other EFIC functions will operate normally). For this circuit a LOOP is detected by breaker position rather than bus voltage -- if breakers 3205, 3207, and 3211 are open then the EFIC start of EFP-1 is blocked. In addition, if bus voltage is low, the normal breaker undervoltage protection circuit will generate a trip signal to the pump until voltage is recovered.

d. Actuation of A train of ES will generate a start signal to EFP-1 five seconds after block 3 (this will normally occur simultaneously with block four, but EFP-1 is technically not a block four load since this same circuit is used to start EFP-1 during a LOOP -- see e below).

e. During a LOOP (with no ES), EFP-1 will receive a start signal five seconds after the diesel breaker closes from the EF block in the A ES train.

f. During a simultaneous LOOP, and ES actuation of both HPI and LPI, several events occur: first, the EFIC start of EFP-1 is blocked due to the LOOP, second, the EF block (in the A train ES HPI circuit) will generate a start signal five seconds after block three (the pump will start if LPI has not actuated), and third, the combination of an LPI actuation (either automatic or manual) with a LOOP will generate a trip signal to EFP-1 (this is in addition to the normal undervoltage protection circuits) and thereby either trip EFP-1 (if already started) or prevent any start.

g. Any time a simultaneous start and stop signal are sent to the pump breaker, the anti-pump feature will open the breaker and lock out all start signals until all start and stop signals are removed from the breaker. With the combination of start and stop signals possible for EFP-1, it is very probable that this will occur. Using condition f above as an example, if a LOOP exist (normal 4160V breakers open) and the diesel is feeding the bus, EFP-1 will receive a start signal from the EF block five seconds after block three is loaded. EFP-1 should start since the undervoltage condition is cleared. Now assume that RCS pressure continues to decrease. When LPI actuates, an EFP-1 trip signal will be generated. However, the start signal from the EF block will also still be present. The anti-pump feature will open the breaker and lock out all start signals. In order to re-start the pump, all start and stop signals must be removed from the breaker. In this case, this would involve the following actions

1. Bypassing or resetting the LPI actuation to remove the trip signal and
2. Resetting or bypassing HPI, restoring normal power to the 4160V switchgear, and resetting or bypassing EFIC to remove the start signal. (Note that an option to this is to place the control for EFP-1 in the PULL-TO-LOCK position. This will remove all start signals from the breaker for a long as the switch is maintained in this position. However, if any of the start signals remain, the pump will start if the switch is returned to the NORMAL-AFTER-STOP position.

It should be noted that this system design is based on the assumption that if core cooling is by LPI, then we will not be feeding the OTSG's and therefore will not need EFP-1. This is true for a large break LOCA which rapidly de-pressurizes the system. However, for a smaller break, RCS pressure could hold somewhere below the LPI setpoint of 500 psig but above the maximum DH pump discharge pressure of ≈200 psig. In that case, it would be necessary to re-start EFP-1 to feed the OTSG's. For this reason, the operator should have a good understanding of the actions required to recover EFP-1.

The various start logic circuits for EFP-1 are as follows:

Case 1 - HPI WITH OFFSITE POWER

Prior to the actuation,

- o contact 62-2/AV is closed,
- o contact 63Z1B/AH is open because its relay (Block 1) is energized.
- o contact 52XA1/BS is closed because the Breaker alignment shows that offsite power is supplying the bus.
- o Relay 62-6/CH (EF Block) is energized

At HPI actuation

- o contact 63Z1B/AH will close when the Block 1 relays de-energize.
- o contact 62-2/AV will remain closed until block 3 times out
- o this will keep 62-6/CH energized until block 3 times out. 62-6/CH has a 5 second time delay.
- o At 5 seconds after block 3, the EFW Pump will receive its start signal from the HPI System

Case 2 - LOSS OF OFFSITE POWER WITH NO HPI SIGNAL

Prior to the actuation,

- o contact 62-2/AV is closed,
- o contact 63Z1B/AH is open because Block 1 is energized.
- o contact 52XA1/BS is closed because the Breaker alignment shows that offsite power is supplying the bus.
- o Relay 62-6/CH (EF Block) is energized

UPON LOSS OF OFF-SITE POWER

- o contact 62-2/AV is closed,
- o contact 63Z1B/AH is open because its relay (Block 1) is energized.
- o contact 52XA1/BS opens because the Breaker alignment shows that the EDG is supplying the bus.
- o At 5 seconds after EDG breaker closes, the EFW Pump will receive its start signal from the HPI System

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 11S/SIMULATOR

Take Actions Required for Loss of Reactor Coolant System Pressure

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: /Melissa Mallon/ Date/ 12-17-98

VALIDATED BY: * /D. Jones/ Date/ 12-17-98

APPROVED BY: /R. Wadsworth/ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** /[illegible]/ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Take Actions Required for Loss of Reactor Coolant System Pressure.

Alternate Path:
RCV-14 and RCV-13 will not close.

Facility JPM #:
NEW

K/A Rating(s)/Task Number/AO, RO, SRO:
010A1.04//3.6/3.8//0020402013//RO, SRO

Task Standard:
Take actions required for a loss of Reactor Coolant System (RCS) pressure using AP-520.

Preferred Evaluation Method:
Simulator____X____ In-Plant _____

References:
AP-520

Validation Time: 7 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____ / _____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. Plant is at 60% full power.
2. RCV-13 and RCV-14 will not close (failures) (0.2 setting).
3. IC #61

Tools/Equipment/Procedures Needed:

AP-520
Steam Tables

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Reactor Operator.
The plant is at 60% full power.
RCS pressure is decreasing slowly.

INITIATING CUES:

You are requested to perform required actions.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of AP-520. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Notify personnel of plant conditions. STA, Plant operators, NSM. STANDARD: Operator calls or radios the STA, Plant operators, and NSM. COMMENTS:	_____ SAT _____UNSAT
STEP 3: IF RB is occupied, THEN evacuate RB. EXAMINER'S CUE: No one is in the RB. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 4:	Verify OTSG tube leakage has not increased. Notify Chemistry to sample OTSGs. Observe radiation monitors and recorder traces for the following: RM-A12, RM-G26-RI; RM-G27-RI; RM-G25-RI; and RM-G28-RI.	_____ SAT _____UNSAT
STANDARD:	Operator contacts chemistry to sample OTSGs. Operator verifies that there are no alarms and RM-A12, RM-G26-RI; RM-G27-RI; RM-G25-RI; and RM-G28-RI by verifying that there is no increasing trend.	
COMMENTS:		
STEP 5:	IF a significant rise in RCS leakage exists, THEN GO TO Step 3.11 in this procedure.	_____ SAT
STANDARD:	Operator will verify from tank levels and sump levels and radiation monitors that RCS leakage does not exist and continues on in the procedure.	_____UNSAT
COMMENTS:		

STATUS: RCS pressure is lowering.		
STEP 6:	Verify proper operation of PZR heaters. PZR HEATER CONTROL; PZR Htr Banks; RC-203-JI and RC-204-JI.	_____ SAT
STANDARD:	Operator verifies that red light for each energized heater is ON and RC-203-JI and RC-204-JI reads > 400 kW.	_____UNSAT
COMMENTS:		
STEP 7:	IF RCS pressure continues to lower, THEN isolate possible sources of RCS pressure reduction. Close the following valves: DHV-91, RCV-53, RCV-11, PORV, RCV-13, and RCV-14.	_____ SAT
STANDARD:	Operator rotates control switch for DHV-91, RCV-53, RCV-11, PORV, RCV-13, and RCV-14 to close and verifies for each valve green light ON and red light OFF. (I-5-2 and I-6-2)	_____UNSAT
	EXAMINER'S NOTE: RCV-13 and RCV-14 will not close.	
COMMENTS:		

STEP 8A:	IF RCS pressure continues to lower, AND RCV-13 is NOT closed, THEN stop RCP-1B. If Rx power is > 75% THEN concurrently perform AP-510 beginning with Step 3.1.	_____ SAT _____UNSAT
STANDARD:	N/A, Rx power is at 60%.	
COMMENTS:		
STEP 8B:	WHEN Rx power is < 75%, THEN stop RCP-1B.	_____ SAT
STANDARD:	Operator rotates control handle for RCP-1B to the stop position and verifies green light ON and red light OFF. (Operator may turn on lift oil pumps for RCP-1B) (I-5-2, P-8-6; J-3-3)	_____UNSAT
	EXAMINER'S CUE: RCS pressure has stopped decreasing.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: Reactor coolant pressure is lowered until a bubble in the Pressurizer is established at 580°F. What is the condition of the Engineered Safeguards system? (assume that no function of ES is bypassed)

Answer: High Pressure Injection (HPI) has actuated.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
010K1.02//3.9/4.1

References:
Steam Tables

JPM QUESTION #2

Question: What are the Technical Specification actions, if any, if Pressurizer level is 280 inches and Pressurizer Heater Bank "B" is the only available heater bank.

Answer: Restore pressurizer heater capability within 72 hours. (The "B" Bank is only rated for 126 kW)

CANDIDATE'S RESPONSE

Time:

K/A Rating:
010K6.03//3.2/3.6

References:
TS 3.4.8

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: What are the Technical Specification actions, if any, if Pressurizer level is 280 inches and Pressurizer Heater Bank "B" is the only available heater bank.

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Reactor coolant pressure is lowered until a bubble in the Pressurizer is established at 580°F. What is the condition of the Engineered Safeguards system? (assume that no function of ES is bypassed)

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Reactor Operator.
The plant is at 60% full power.
RCS pressure is decreasing slowly.

INITIATING CUES:

You are requested to perform required actions.

Heater banks "D" and "E", when in automatic, will be either full on or off at setpoint. These two banks can be selected to be energized at all times (subject to level interlock) by placing the control switch in ON. Any bank of heaters may be selected to remain off by placing the control switch to OFF. The control switches for banks "A","B", and "C" are two position (OFF/AUTO) switches with red and green indicating lights to display when the heaters are either energized or off respectively. The control switches for banks "D" and "E" are three position (ON/OFF/AUTO) switches with green, white and red indicating lights to indicate when the heaters are de-energized (green), heaters are energized (red), and if the low pressurizer level heater cutout will permit heater operation (white).
If pressurizer level drops to 40 inches or less the heaters will be automatically cutout. Additionally, the heater control station will revert to manual with a zero demand. The 480 VAC pressurizer heater MCCs A and B are fed from the 480 VAC Reactor Aux Bus 3A and 3B respectively.

PRESSURIZER HEATER DATA

Total number of elements	117
Element rating	14 KW
Element length	9.245 ft.
Number of assemblies	3
Elements per assembly	39
Assembly rating	546 KW
Overall rating	1638 KW

BANK	GROUP	NO. ELEMENTS	RATING IN KW	FULL ON	OFF
A	1	9	126	2147	2155
B	2	9	126	2147	2155
C	3 - 6	36	504	2135	2155
D	7 - 9	27	378	2120	2140
E	10 - 13	36	504	2105	2125

When transfer of control functions is made to the Remote Shutdown Panel, Groups 7 through 13 can be operated from the RSP via an OFF/ON control switch. Each group has its own control switch and red/green indicating lights to show the condition of the heater group. Pressurizer heater power for groups 7 through 13 have indicating lights on the Remote Shutdown Panel. The lights indicate power is available for these heaters.

During plant operation, any dissolved gasses that are in the RCS tend to collect in the pressurizer steam space because it is the only part of the RCS that is not filled with water, it is the hottest place in the RCS, and the 1.5 gpm spray line bypass flow into the steam space tends to give up any dissolved gasses that

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 12S/SIMULATOR

Lower Water Level in the Reactor Coolant Drain Tank

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Virginia Gallin Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Lower water level in the Reactor Coolant Drain Tank.

Alternate Path:
WDP-8 will not start.

Facility JPM #:
170

K/A Rating(s)/Task Number/AO, RO, SRO:
007A1.01//2.9/3.1//0680102002//RO, SRO

Task Standard:
Lower water level in the Reactor Coolant Drain Tank using OP-407J, Operation of the Reactor Coolant Drain Tank, WDT-5.

Preferred Evaluation Method:
Simulator____X____ In-Plant _____

References:
OP-407J

Validation Time: 8 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

1. Plant is in Mode 5.
2. The RCDT high level alarm is in.
3. WDP-8 does not start.
4. IC #64

Tools/Equipment/Procedures Needed:

OP-407J
Calculator

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All control room steps shall be performed for this JPM, including any required communications. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Reactor Operator.
The plant is in Mode 1.
The RCDT (WDT-5) is in high level alarm.

INITIATING CUES:

You are requested to start lowering RCDT level by pumping it to the MWST (Miscellaneous Waste Storage Tank).

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of OP-507J section 4.1.1.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	IF using WDP-7 (RC Drain Pump) to lower WDT-5 (RCDT) level, THEN GO TO 4.6.1. N/A, Operator believes WDP-8 is operable.	_____ SAT _____UNSAT
STEP 3: STANDARD: COMMENTS:	Determine the flow path from WDT-5 (RCDT), in order to lower WDT-5 (RCDT) level using WDP-8 (RCDT pump). IF RCDT effluent to MWST, THEN GO to Step 4.1.5. Operator goes to step 4.1.5 (MWST mentioned in cue).	_____ SAT _____UNSAT

STEP 4A: STANDARD: COMMENTS:	Perform valve alignment for transfer of WDT-5 (RCDT) to WDT-4 (MWST). Close the following: WDV-247. Operator rotates WDV-247 switch to close and verifies green light ON and red light OFF.	_____ SAT _____UNSAT
STEP 4B: STANDARD: COMMENTS:	Open the following: WDV-94, WDV-62, WDV-61, and WDV-60. Operator rotates control switch for WDV-94, WDV-62, WDV-61, and WDV-60 and verifies for each valve red light ON and green light OFF.	_____ SAT _____UNSAT
STEP 4C: STANDARD: COMMENTS:	Select WDV-8/9 RC DR DIVERT Switch to MWS. Operator rotates RC DR DIVERT Switch to MWS and verifies that associated light comes ON.	_____ SAT _____UNSAT

STEP 5: Start transfer for WDT-5 (RCDT). Start WDP-8 (RCDT Pump). STANDARD: Operator rotates WDP-8 control handle to start and verifies that the red light does NOT come ON. EXAMINER'S NOTE: Operator may ask at some time during the JPM to turn power off to WDP-8. COMMENTS:	_____ SAT _____UNSAT
EXAMINER'S CUE: The Shift Supervisor requests that you use WDP-7 to lower the RCDT level. EXAMINER'S NOTE: Operator may restore lineup. STEP 6: IF using WDP-7 (RC Drain Pump) to lower WDT-5 (RCDT) level, THEN GO TO 4.6.1. STANDARD: Operator goes to step 4.6.1. COMMENTS:	_____ SAT _____UNSAT
STEP 7: Determine the flow path from WDT-5 (RCDT), in order to lower WDT-5 (RCDT) level. IF RCDT effluent to MWST, THEN GO to Step 4.6.5. STANDARD: Operator goes to step 4.6.5 (MWST mentioned in cue). COMMENTS:	_____ SAT _____UNSAT

STEP 8A: STANDARD: COMMENTS:	Perform valve alignment for transfer of WDT-5 (RCDT) to WDT-4 (MWST). Close the following: WDV-247. Operator notes that WDV-247 has been closed in an earlier step.	_____ SAT _____UNSAT
STEP 8B: STANDARD: COMMENTS:	Open the following: WDV-94, WDV-62, WDV-61, and WDV-60. Operator notes that WDV-94, WDV-62, WDV-61, and WDV-60 were opened in an earlier step.	_____ SAT _____UNSAT
STEP 8C: STANDARD: COMMENTS:	Select WDV-8/9 RC DR DIVERT Switch to MWS. Operator notes that WDV-8/9 RC DR DIVERT Switch was selected to MWS in an earlier step.	_____ SAT _____UNSAT

NOTE: WDP-7 has approximately 200 gpm capacity. NOTE: WDV-839 is locked in a throttled position. STEP 9A: Start transfer of WDT-5 (RCDT) via WDP-7 (RC Drain Pump). Close WDV-64, WDP-7 from OTSGs. EXAMINER'S CUE: WDV-64 is closed. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 9B: Open WDV-1045 EXAMINER'S CUE: WDV-1045 is open. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 9C: Close WDV-123 EXAMINER'S CUE: WDV-123 is closed. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 9D: Open WDV-65 EXAMINER'S CUE: WDV-65 is open. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 9E: Start WDP-7 STANDARD: Operator rotates control handle for WDP-7 to start and verifies red light ON and green light OFF. COMMENTS:	_____ SAT _____UNSAT
STEP 9F: Throttle WDV-839 to adjust between 43 and 53 psig and lock WDV-839 in the throttled position. EXAMINER'S CUE: The PPO is performing this action. STANDARD: N/A COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

JPM QUESTION #1

Question: The Reactor Coolant Drain Tank (RCDT) high level annunciator has just come into alarm. How many gallons will have to be pumped out to clear the high level alarm and bring the low level annunciator into alarm?

Answer: 800 gallons

CANDIDATE'S RESPONSE

Time:

K/A Rating:
007A1.01//2.9/3.1

References:

AR-402; AP-520, Table 1

JPM QUESTION #2

Question: At full reactor power the pressure in the RCDT is increasing due to a weeping code safety. If RCDT pressure is currently 4 psig (assume no other line losses), what would the temperature be of the steam space in the RCDT (prior to cooling)?

Answer: 225°F ± 5°F

CANDIDATE'S RESPONSE

Time:

K/A Rating:
007A4.10//3.6/3.8

References:
Steam table

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: At full reactor power the pressure in the RCDT is increasing due to a weeping code safety. If RCDT pressure is currently 4 psig (assume no other line losses), what would the temperature be of the steam space in the RCDT (prior to cooling)?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: The Reactor Coolant Drain Tank (RCDT) high level annunciator has just come into alarm. How many gallons will have to be pumped out to clear the high level alarm and bring the low level annunciator into alarm?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Reactor Operator.
The plant is in Mode 1.
The RCDT (WDT-5) is in high level alarm.

INITIATING CUES:

You are requested to start lowering RCDT level by pumping it to the MWST (Miscellaneous Waste Storage Tank).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 7CR/CONTROL ROOM

Perform a Functional Test of RM-A4

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: _____ Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Perform a Functional Test of RM-A4.

Alternate Path:
N/A

Facility JPM #:
New

K/ARating(s)/Task Number/AO, RO, SRO:
072A4.01//3.0/3.3//0720202002//RO, SRO

Task Standard:
Perform a Functional Test of RM-A4 using SP-335B, Radiation Monitoring Instrumentation Functional Test of RMLs and RM-A3, A4, A7 and A8.

Preferred Evaluation Method:
Simulator_____ In-Plant _____X_____

References:
SP-335B, Section 4.2

Validation Time: 20 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

SP-335B

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is at 100% full power.
SP-335B is in progress.
Testing for RM-A4 is complete through step 4.2.4

INITIATING CUES:

You are requested to complete Functional Test of RM-A4.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of SP-335B, Section 4.2.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	Obtain the high alarm setpoint for RM-A4 from the Radiation Monitor Setpoint Log and record. Operator finds RM-A4 high alarm setpoint in the Radiation Monitor Setpoint Log and records in procedure.	_____ SAT _____UNSAT
STEP 3: STANDARD: COMMENTS:	Record RM-A4 background below: Operator reads background from RM-A4 and records in procedure.	_____ SAT _____UNSAT

STEP 4: Verify AHF-10 running. STANDARD: Operator verifies red light ON for AHF-10. EXAMINER'S CUE (IF NEEDED): (If AHF-10 in not operating) Indicate that AHF-10 is operating. COMMENTS:	_____ SAT _____UNSAT
STEP 5: For RM-A4, turn the "alarm-operate-check source" selector switch to the "check source" position and hold for approximately one minute or until the meter indication ceases to increase. Record below if an increase occurred in the meter reading and in the reading on RM-A03-RIR. STANDARD: Operator rotates and holds the "alarm-operate-check source" selector switch to the "check source" position for one minute. EXAMINER'S NOTE: As, only one person is performing this JPM, the Operator will have to release selector switch to observe RM-A03-RIR. EXAMINER'S CUE: Indicate a reading of 700 cpm on the meter and the RM-A03-RIR AND state that the reading is no longer increasing. COMMENTS:	_____ SAT _____UNSAT

EXAMINER'S NOTE: Selector switch may have been released in previous step. STEP 6: Release the selector switch and observe the meter indication. Record below if the indication decreased to approximately the background reading recorded in Step 4.2.6. STANDARD: Operator releases "alarm-operate-check source" selector switch EXAMINER'S CUE: The meter and recorder have returned to background. COMMENTS:	_____ SAT _____UNSAT
STEP 7: IF the meter or the recorder did not increase from the check source, THEN perform the following: OTHERWISE, N/A this step. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 8: IF the interlock actuation cannot be reached per Steps 4.2.8 through 4.2.10, THEN decrease the high alarm setpoint below background until the actuation occurs. OTHERWISE, N/A this step. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 9: Record below if the following has occurred: AHF-10 is stopped? Rad Norm Permissive white lamp (AHF-10) OFF? EXAMINER'S CUE: Point to AHF-10 lights and indicate that green is ON, red is OFF and white is OFF. STANDARD: Operator records that AHF-10 is stopped and Rad Norm Permissive white lamp for AHF-10 is OFF. COMMENTS:	_____ SAT _____UNSAT
STEP 10: Record below if the annunciator alarm and local horn alarm have been received: Annunciator received? Local Alarm received? EXAMINER'S CUE: PPO has notified the Control Room that RM-A4 is in local alarm. Annunciators H-02-01, Event Point 1721 and H-02-02, Event Point 1722 are in alarm. STANDARD: Operator records in the procedure that both annunciator and local alarms have been received. COMMENTS:	_____ SAT _____UNSAT

STEP 11:	Silence the local horn alarm by pressing the "horn silence" pushbutton and record below if the alarm has cleared.	_____ SAT
STANDARD:	Operator depresses RM-A4 "horn silence" pushbutton and verifies pushbutton back lit.	_____UNSAT
	EXAMINER'S CUE: PPO reports to the Control Room that the horn has been silenced.	
COMMENTS:		
STEP 12:	IF the alarm setpoint was altered in Step 4.2.11, THEN restore it to its original value (as recorded in Step 4.2.5) OTHERWISE, N/A this step.	_____ SAT
STANDARD:	N/A	_____UNSAT
COMMENTS:		
STEP 13:	Reset the monitor by turning the selector switch to the "Alarm Reset" position and record below if the annunciator alarm clears. Annunciator alarm clear?	_____ SAT
STANDARD:	Operator rotates selector switch to the "Alarm Reset" position.	_____UNSAT
	EXAMINER'S CUE: The Annunciators have cleared.	
COMMENTS:		

STEP 14:	Re-enable the local horn by pressing the "Horn Silence" pushbutton and observing that the green back light goes out.	_____ SAT
STANDARD:	Operator depresses the RM-A4 "Horn Silence" pushbutton and verifies the back light goes out.	_____UNSAT
	EXAMINER'S CUE: The back light is out.	
COMMENTS:		
STEP 15:	Mark RM-A03-RIR recorder chart paper with SP-335B, initials and date.	_____ SAT
STANDARD:	Operator records SP-335B, initials and date on chart recorder	_____UNSAT
COMMENTS:		
STEP 16:	IF RM-A4 fails to meet surveillance acceptance criteria, THEN refer to section 5.2, Contingencies.	_____ SAT
STANDARD:	N/A, Operator marks SAT.	_____UNSAT
COMMENTS:		

STEP 17:	Restore the ventilation system to its normal operating mode.	_____ SAT
STANDARD:	Operator rotates control handle for AHF-10 to the start position and verifies that red light is ON and green light is OFF	_____UNSAT
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: Radiation Monitor RM-A4 is reading 625 cpm. What is the status of Auxiliary Building Ventilation?

Answer: AHF-10, Spent Fuel Floor Supply Fan, is tripped.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
072A4.01//3.0/3.3

References:
RMS Setpoint Log

JPM QUESTION #2

Question: Several Radiation Monitors have come into high alarm in the following order: RM-G3, RM-A7, RM-A4, and RM-A2. What is the most probable source of the leak and what is the status of Auxiliary Building Ventilation?

Answer: The leak is in the Primary Sample Room. The following fans have tripped: AHF-10, Fuel Handling Area Fan; AHF-11A/B, Auxiliary Building Supply Fans; AHF-9A/B, Penetration Cooling Fans; AHF-34A, Hot Machine Shop/Weld Hood Exhaust Fan and Cooling Unit; AHF-30, Chem Lab Supply Fan.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
072A3.01//2.9/3.1

References:
Operator Aide

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Several Radiation Monitors have come into high alarm in the following order: RM-G3, RM-A7, RM-A4, and RM-A2. What is the most probable source of the leak and what is the status of Auxiliary Building Ventilation?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Radiation Monitor RM-A4 is reading 625 cpm. What is the status of Auxiliary Building Ventilation?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is at 100% full power.
SP-335B is in progress.
Testing for RM-A4 is complete through step 4.2.4

INITIATING CUES:

You are requested to complete Functional Test of RM-A4.

RM-A4 Gaseous Channel

ALARM SET POINTS

DATE	WARNING SETPOINT	HIGH TRIP SETPOINT	CHANGE DOCUMENT REFERENCE NUMBER	INITIALS
11/22/89	300	500	FUR C89-158	AWS

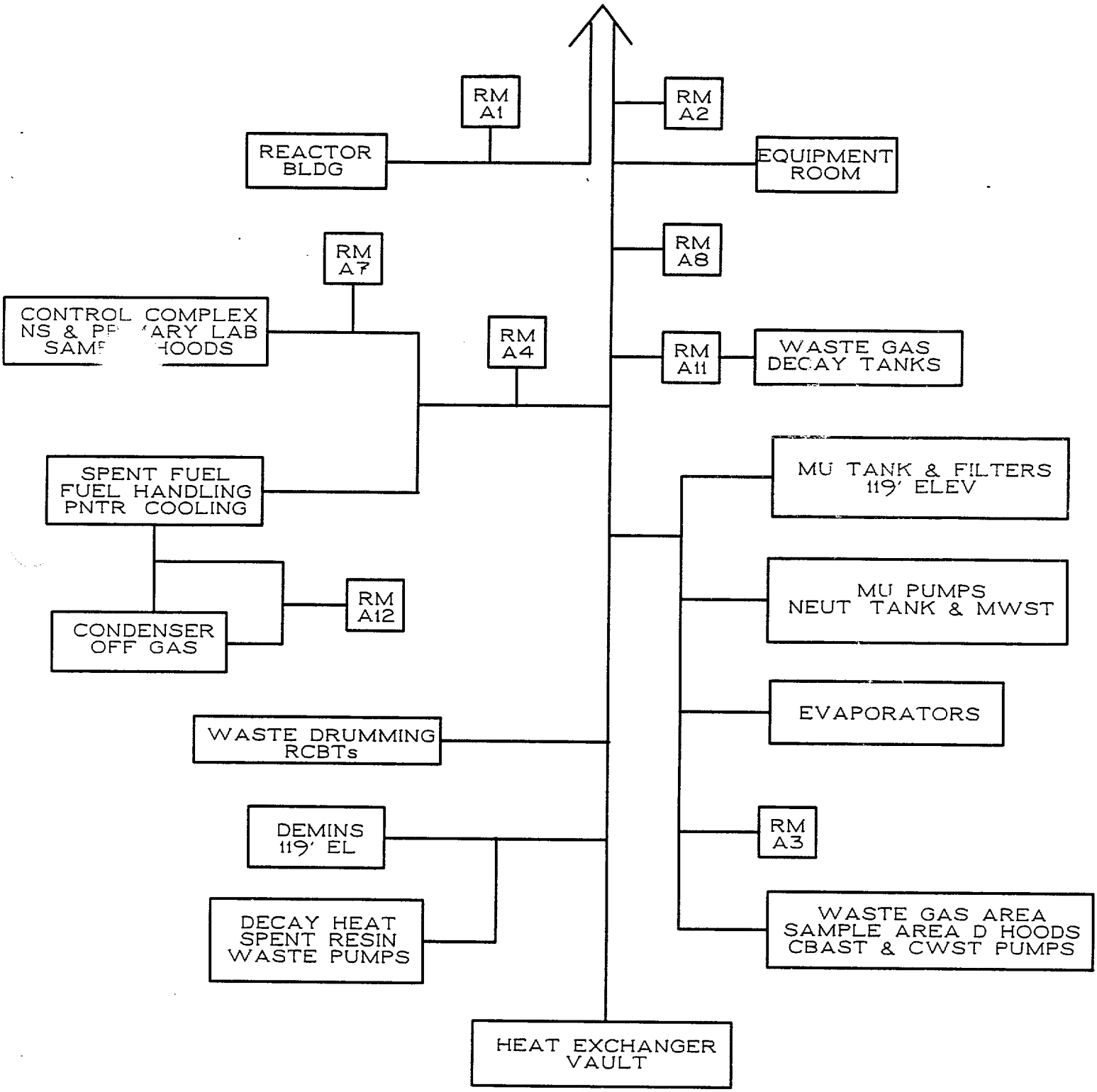

RM A1
RM A2
REACTOR BLDG
EQUIPMENT ROOM
RM A8
RM A7
CONTROL COMPLEX
NS & PE ARY LAB
SAME HOODS
RM A4
RM A11
WASTE GAS DECAY TANKS
SPENT FUEL
FUEL HANDLING
PNTR COOLING
MU TANK & FILTERS
119' ELEV
MU PUMPS
NEUT TANK & MWST
RM A12
CONDENSER
OFF GAS
EVAPORATORS
WASTE DRUMMING
RCBTs
RM A3
DEMINS
119' EL
WASTE GAS AREA
SAMPLE AREA D HOODS
CBAST & CWST PUMPS
DECAY HEAT
SPENT RESIN
WASTE PUMPS
HEAT EXCHANGER
VAULT

TABLE 1
RMG LOCATIONS AND DETECTOR TYPES

NAME	DETECTOR	LOCATION
		AUXILIARY BUILDING
RM-G1	GM	CONTROL ROOM
RM-G2	GM	RADIO CHEMISTRY LABORATORY
RM-G3	GM	SAMPLE ROOM
RM-G4	GM	RCA ENTRANCE CORRIDOR
RM-G5	GM	GAS DECAY TANK AREA
RM-G6	GM	MAKEUP TANK AREA
RM-G7	GM	RC BLEED TANK AREA
RM-G8	GM	RC BLEED TANK AREA
RM-G9	GM	A. B. NEAR PERSONNEL ACCESS HATCH
RM-G10	GM	MAKEUP PUMP AREA
RM-G11	GM	DEBORATING DEMINERALIZER AREA
RM-G12	GM	SPENT RESIN STORAGE TANK AREA
RM-G13	GM	DECONTAMINATION PIT AREA
RM-G14	GM	FUEL STORAGE POOL AREA
RM-G15	GM	FUEL HANDLING BRIDGE A. B. SIDE
		CONTAINMENT BUILDING
RM-G16	GM	FUEL HANDLING BRIDGE
RM-G17	GM	NEAR PERSONNEL HATCH
RM-G18	GM	INCORE INSTRUMENT REMOVAL AREA
		AUXILIARY BUILDING
RM-G21	SCINTL	WASTE PROCESSING ROOM AREA
RM-G22	SCINTL	WASTE PROCESSING ROOM AREA
RM-G23	SCINTL	WASTE PROCESSING ROOM AREA
RM-G24	SCINTL	WASTE PROCESSING ROOM AREA
		INTERMEDIATE BUILDING
RM-G25	ION CHAMBER	A-1 MAIN STEAM LINE
RM-G26	SCINTL	B-1 MAIN STEAM LINE
RM-G27	SCINTL	A-2 MAIN STEAM LINE
RM-G28	ION CHAMBER	B-2 MAIN STEAM LINE
		CONTAINMENT BUILDING
RM-G29	ION CHAMBER	R. B. TOP OF A `D' RING
RM-G30	ION CHAMBER	R. B. TOP OF B `D' RING

TABLE 4

RADIATION MONITORING SYSTEM INTERLOCKS

RMG's

CHANNEL	INTERLOCK(s)

THERE ARE NO INTERLOCKS ASSOCIATED WITH THE RMG's.

RMA's

CHANNEL	INTERLOCK(s)
RM-A1	Upon alarm on either the gas channel or on high flow, will: CLOSE AHV-1A, 1B, 1C, AND 1D. (Containment purge supply and exhaust valves) (NOTE: fans must be stopped manually). CLOSE LRV-70, 71, 72, 73 (RB Vent Valves)
RM-A2	Upon alarm on either the gas channel OR on high flow will: TRIP AHF-10 (Fuel Handling Area Fan) TRIP AHF-11A & B (AB Supply Fans) TRIP AHF-9A & B (3A & B Penetration cooling fans) TRIP AHF-34A (Hot machine shop, weld hood exhaust fan and cooling unit) TRIP AHF-30 (Chem Lab supply fan) CLOSE WDV-436, 437, & 438 (WGDT outlet isolation to release header)
RM-A3	TRIP AHF-11A & B (AB supply fans) CLOSE D-29 & 36 (WGDT area supply and exhaust dampers)
RM-A4	TRIP AHF-10 (Fuel handling area supply fan)

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 8CR/CONTROL ROOM

While Reactor Building Purge is in Progress respond to RM-A1 Actuation

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallion Date/ 12-17-98

VALIDATED BY: * D Jones Date/ 12-17-98

APPROVED BY: R. Wes Jones Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:

While Reactor Building Purge is in progress respond to RM-A1 actuation.

Alternate Path:

N/A

Facility JPM #:

053

K/ARating(s)/Task Number/AO, RO, SRO:

029A3.01//3.8/4.0//1150402011//RO, SRO

Task Standard:

While Reactor Building Purge is in progress respond to RM-A1 actuation using AP-250, Radiation Monitor Actuation.

Preferred Evaluation Method:

Simulator_____ In-Plant ____X____

References:

AP-250

Validation Time: 12 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

AP-250

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is in Mode 5.
The Reactor Building (RB) purge is in progress.
Both purge supply and exhaust fans are operating.
RM-A1 Gas comes into high alarm.

INITIATING CUES:

You are requested to take appropriate actions.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of AP-250. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Ensure auto actions of affected radiation monitors occur. See table 1. STANDARD: Operator verifies AHV-1A, AHV-1B, AHV-1C and AHV-1D are closed by either verifying the ES status light is green OR at each valves' control switch verifying the green light ON and the red light OFF. The Operator will also verify that LRV-70, LRV-71, LRV-72, and LRV-73 are closed by verifying at each valves' control switch the green light is ON and the red light is OFF. EXAMINER'S CUE: AHV-1A, AHV-1B, AHV-1C, AHV-1D, LRV-70, LRV-71, LRV-72, and LRV-73 are all closed. COMMENTS:	_____ SAT _____UNSAT

STEP 3:	Notify personnel of plant conditions. STA, Plant Operators, and NSM.	_____ SAT
STANDARD:	Operator calls or radios STA, Plant Operators, and NSM of entry into AP-250 for RM-A1 alarm.	_____UNSAT
COMMENTS:		
STEP 4:	IF RM-A1 Gas is actuated. THEN stop RB purge fans. AHF-7A, AHF-7B, AHF-6A, and AHF-6B.	_____ SAT
STANDARD:	Operator rotates control handles of AHF-7A, AHF-7B, AHF-6A, and AHF-6B to the stop position and verifies green light ON and red light OFF.	_____UNSAT
	EXAMINER'S CUE: The purge fans are shut down.	
COMMENTS:		

CAUTION: With all CC ventilation stopped, the CC may reach its design limit of 95°F in 30 minutes. STEP 5: IF RM-A5 is actuated, AND AHD-3 is closed, THEN stop CC supply and return fans. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 6A: Verify alarm is valid. Depress the affected radiation monitor remote HORN SILENCE pushbutton. STANDARD: Operator depresses the RM-A1 HORN SILENCE pushbutton and verifies the pushbutton is back-lit. EXAMINER'S CUE: RM-A1 is in HORN SILENCE. COMMENTS:	_____ SAT _____UNSAT
STEP 6B: Ensure radiation monitor is energized. STANDARD: Operator verifies power light is illuminated. EXAMINER'S CUE: All power lights are illuminated. COMMENTS:	_____ SAT _____UNSAT

STEP 6C:	Ensure ALARM RESET OPERATE CHECK SOURCE switch is in the OPERATE position.	_____ SAT
STANDARD:	Operator verifies ALARM RESET OPERATE CHECK SOURCE switch is selected to the OPERATE position.	_____UNSAT
COMMENTS:		
STEP 6D:	Ensure proper alarm setpoints: RM-A1 per the applicable Release Permit.	_____ SAT
STANDARD:	Operator rotates alarm setting switch to verify the setpoints match the Release Permit.	_____UNSAT
	EXAMINER'S NOTE: Operator may check the setpoints for RM-A2 also.	
	EXAMINER'S CUE: RM-A1 setpoints match the Release Permit.	
COMMENTS:		

STEP 6E: Observe trends on other radiation monitors, if applicable. EXAMINER'S CUE: RM-G16 and RM-G18 are trending upward STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 7: IF radiation monitor is off scale high, THEN ensure RANGE switch selected to 1M setting. EXAMINER'S CUE: RM-1G is not off-scale. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 8: Notify Health Physics and Chemistry of radiation monitor actuation. STANDARD: Operator notifies Health Physics and Chemistry of the RM-1G actuation. COMMENTS:	_____ SAT _____UNSAT

STEP 9: Evacuate affected areas, if required. EXAMINER'S CUE: No one is in the Reactor Building. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 10: Review current Operation, Maintenance, and Chemistry activities for any actions that may have caused the actuation. EXAMINER'S CUE: The Nuclear Shift Manager is performing this activity. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 11: Stop activities suspected of causing increased radiation levels and restore systems as necessary. EXAMINER'S CUE: The Nuclear Shift Manager is performing this activity. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 12: IF RM-A1 is NOT actuated, THEN GO TO Step 3.14 in this procedure. STANDARD: N/A, Operator continues with the next step. COMMENTS:	_____ SAT _____UNSAT
STEP 13: IF RM-A1 Gas indicates or approaches off-scale high, THEN select RM-A1 LMH VALVE CONTROLLER to AUTO. EXAMINER'S CUE: RM-A1G is nearing off-scale. STANDARD: Operator selects LMH VALVE CONTROLLER toggle to AUTO. EXAMINER'S CUE: LMH VALVE CONTROLLER toggle is selected to AUTO. Terminate JPM. COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

JPM QUESTION #1

Question: Radiation Monitor, RM-A1G, is reading 3.0 x 10^2 mR/hr. Which detector (Low-Medium-High) scale of the monitor would this be read from if the Low-Medium-High Valve Controller is in automatic?

Answer: The High-Range detector would automatically be selected.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
073A1.01//3.2/3.5

References:
RM-A1 meters in the Control Room

JPM QUESTION #2

Question: If RM-A1 count rate drops to 4820 cpm particulate and 780,000 cpm iodine can the "Atmospheric Radiation High" alarm be cleared (the gas channel is in warning)?

Answer: Yes.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
073A4.02//3.7/3.7

References:
RMS Setpoint Log; AR-403

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: If RM-A1 count rate drops to 4820 cpm particulate and 780,000 cpm iodine can the "Atmospheric Radiation High" alarm be cleared (the gas channel is in warning)?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Radiation Monitor, RM-A1G, is reading 3.0×10^2 mR/hr. Which detector (Low-Medium-High) scale of the monitor would this be read from if the Low-Medium-High Valve Controller is in automatic?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is in Mode 5.
The Reactor Building (RB) purge is in progress.
RM-A1 Gas comes into high alarm.

INITIATING CUES:

You are requested to take appropriate actions.

2.5 COMPUTER

A multi-job, multi-task, data acquisition and processing computer is used to perform gamma spectroscopic analysis. The computer operates the near line solenoid valves and the moveable collimator whenever their individual control switches are in REMOTE.

2.6 MULTI CHANNEL ANALYZER

The multi channel analyzer is a digital computer terminal that acquires the gamma spectrum from the signal transmitter from each detector. It operates the spectrum analysis software and is installed in the IRP.

2.7 INSTRUMENT RADIONUCLIDE ANALYSIS PANEL (IRP)

The IRP is located in the Counting Room and contains various components used in gamma spectroscopic analysis. The solid state relay panel contains a series of toggle switches used to manually operate the collimators and the solenoid valves located in the near sample lines in the AIMS cabinets. When these switches are in the REMOTE position, they are operated by the computer. The CAV-484 controller is located at the top of the IRP and the gamma spectroscopy hardware is located at the bottom.

2.8 LINE PRINTER

Generates hard copy reports.

2.9 REACTOR BUILDING AND AUXILIARY BUILDING VENT MANIFOLDS

The RANGE system contains two identical manifolds: a Reactor Building Vent (RBV) manifold and an Auxiliary Building Vent (ABV) manifold. Each manifold contains two high range particulate and iodine filters, a mid range noble gas monitor, a high range noble gas monitor, sample line solenoid valves, and the LMHVC. The two high range particulate and iodine filters use silver zeolite rather than activated charcoal. This enables them to collect much higher concentrations of particulates and iodides than the filters in RM-A1 and RM-A2 can. The mid range noble gas monitors have a range of 10^{-2} to 10^{3} MR/HR. They overlap the low range monitors (RM-A1 and RM-A2) upper limit of 10^{6} CPM.

Each mid range monitor consists of a halogen quenched Geiger-Muller tube with a provision for flushing the sample chamber with instrument air. This is to protect the detector from accident radiation levels. The high range monitors have a range of 10^{-1} to 10^{7} MR/HR. They overlap the mid range monitors upper limit of 10^{3} MR/HR. The high range monitors use dual ion chambers and are always on line when the mid range monitors are on line.

2.10 LOW MEDIUM HIGH VALVE CONTROLLER

The LMHVC operates a series of valves to direct the flow of air samples to the desired low, medium, or high radiation detectors. The LMHVC may be operated either manually or automatically. In MANUAL, the operator directs air flow by selecting opening and closing of the valves. In AUTOMATIC, the LMHVC directs air flow to the correct detectors according to the radiation intensity of the sample air flow. The LMHVC Systems are installed in the Auxiliary Building Vent RANGE Manifold and the Reactor Building Vent RANGE Manifold. During normal conditions, RM-A1 takes a 5 cfm sample from the Reactor Building vent and passes it through the normal duty particulate and iodine filters and the low range noble gas detector. The sample is then either returned to the RB vent duct by the RM-A1 gas pump, sent to the RANGE AIMS for isotopic analysis, and/or sent to the RANGE grab sampler. RM-A1 measures noble gas concentrations from 10 to 10^{6} CPM. When the RM-A1 noble gas detector reaches approximately ¾ of its range, the sample flow path is automatically diverted to the RANGE manifold by a second nozzle and the LMHVC. This sampling path uses the RM-A1 pump but bypasses the RM-A1 detector and filter. In this configuration, the sample flows through the high range particulate and iodine filters, the high range noble gas detector, and then the mid range noble gas detector. The mid range detector measures the noble gas concentrations from 10^{-2} to 10^{3} MR/HR. When the mid range detector reaches ¾ of its range, the LMHVC cuts it out of the sample flow path leaving only the high range detector in service. In this configuration, the sample flows through the high range particulate and iodine filters and then the high range noble gas detector. The high range detector measures noble gas concentrations from 10^{-1} to 10^{7} MR/HR. Because the mid range detector Geiger-Muller tube will deteriorate if exposed to high levels of radioactivity, purge air is introduced into the chamber of the mid range detector when the LMHVC switches the sample to the high range detector. As the noble gas concentration returns to normal, the mid range and low range detectors are automatically reactivated at appropriate range settings. After passing through the Reactor Building Vent RANGE, the sample is either returned to the duct by the RM-A1 gas pump, sent to the RANGE AIMS for isotopic analysis, and/or sent to the RANGE grab sampler. The Auxiliary Building Vent RANGE system is

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 9CR/CONTROL ROOM

Startup Fourth Reactor Coolant Pump at Power

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallian Date/ 12-17-98

VALIDATED BY: * _____ Date/ 12-17-98

APPROVED BY: _____ Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Startup the fourth Reactor Coolant Pump at power.

Alternate Path:
N/A

Facility JPM #:
045

K/ARating(s)/Task Number/AO, RO, SRO:
003A4.02//2.9/2.9//0020102021//RO, SRO

Task Standard:
Startup the fourth Reactor Coolant Pump (RCP) at power using OP-302, RC Pump Operation.

Preferred Evaluation Method:
Simulator_____ In-Plant ____X____

References:
OP-302

Validation Time: 18 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-302

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

The plant is at 20% full power.
RCP-1D is not running.
The DNPO Pre-Job Briefing for RCP start is complete.

INITIATING CUES:

You are requested to start RCP-1D.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1:	Obtain a copy of appropriate procedure.	_____ SAT
STANDARD:	Operator obtains a copy of OP-302, Section 4.5.	
COMMENTS:		_____UNSAT
STEP 2:	Perform a DNPO Pre-Job Briefing in accordance with AI-607, Pre-Job and Post-Job Briefings.	_____ SAT
STANDARD:	N/A, see initial conditions.	_____UNSAT
COMMENTS:		
STEP 3:	Ensure RCP Start Permissives are met. Refer to Step 3.1.12 of this procedure.	_____ SAT
STANDARD:	Operator verifies that permissive white lights for RCP-1D are ON.	_____UNSAT
	EXAMINER'S CUE: Indicate that all permissive lights are illuminated except lift oil.	
COMMENTS:		

STEP 4: Select applicable Group to trend for one hour at ten minute intervals. Monitor applicable group if printer is unavailable, Group 81 for RCP-1D. EXAMINER'S CUE: The Printer is unavailable. STANDARD: Operator selects group trend on the computer, then selects Group 81 and monitors. EXAMINER'S CUE: Group 81 is being displayed. COMMENTS:	_____ SAT _____UNSAT
NOTE: RCP-1A has only a DC Lift Oil Pump. STEP 5: IF Starting RCP-1B, RCP-1C, or RCP-1D, THEN Start the applicable AC Lift Oil Pump. Otherwise GO TO 4.5.7. Start AC Lift Oil Pump and allow pump to run for a minimum of 2 minutes before continuing. STANDARD: Operator rotates control handle of AC Lift Oil Pump for RCP-1D to start and verifies red light ON and green light OFF. EXAMINER'S CUE: The AC Lift Oil Pump for RCP-1D has been running for 2 minutes. COMMENTS:	_____ SAT _____UNSAT

STEP 6: Select DC Lift Oil Pump control switch to NOR-AFT-STOP. EXAMINER'S CUE: The DC Lift Oil Pump is in PULL-TO-LOCK. STANDARD: Operator pushes control handle for DC Lift Oil Pump control handle in and rotates handle to NOR- AFT-STOP and verifies green light ON and red light OFF. EXAMINER'S CUE: The DC Lift Oil Pump is in NOR-AFT-STOP. COMMENTS:	_____ SAT _____UNSAT
STEP 7A: Ensure DC Lift Oil Pump is operational. Trip AC Lift Oil Pump and verify DC Lift Oil Pump starts. STANDARD: Operator rotates control handle of AC Lift Oil Pump to STOP and verifies green light ON and red light OFF. Operator verifies DC Lift Oil Pump is running by red light ON and green light OFF. EXAMINER'S CUE: The DC Lift Oil Pump for RCP-1D is running. COMMENTS:	_____ SAT _____UNSAT

STEP 7B: Start AC Lift Oil Pump. STANDARD: Operator rotates control handle of AC Lift Oil Pump for RCP-1D to start and verifies red light ON and green light OFF. **EXAMINER'S CUE: The AC Lift Oil Pump for RCP-1D is running.** COMMENTS:	_____ SAT _____UNSAT
STEP 7C: Stop DC Lift Oil Pump. STANDARD: Operator rotates control handle of DC Lift Oil Pump for RCP-1D to stop and verifies green light ON and red light OFF. **EXAMINER'S CUE: The DC Lift Oil Pump for RCP-1D is stopped.** COMMENTS:	_____ SAT _____UNSAT

STEP 7D:	Ensure DC Lift Oil Pump control handle is in NOR-AFT-STOP.	_____ SAT
STANDARD:	Operator verifies the DC Lift Oil Pump control switch is in NOR-AFT-STOP and verifies green light ON and red light OFF.	_____UNSAT
EXAMINER'S CUE:	The DC Lift Oil Pump is in NOR-AFT-STOP.	
COMMENTS:		
STEP 8:	IF Starting RCP-1A, THEN Start DC Lift Oil Pump for RCP-1A.	_____ SAT
STANDARD:	N/A	_____UNSAT
COMMENTS:		

STEP 9A: Start RCP AND verify all operating parameters. IF ICS is in AUTO, THEN Ensure FW re-ratioing. EXAMINER'S CUE: ICS is in AUTO. STANDARD: Operator rotates the control handle of RCP-1D and verifies red light ON and green light OFF. Operator verifies FW flows stabilize and each loop is approximately equal. EXAMINER'S CUE: RCP-1D is running and Feedwater is normal. COMMENTS:	_____ SAT _____UNSAT
STEP 9B: IF ICS not in AUTO, THEN manually re-ratio FW. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 9C:	Check RCP operating parameters: Controlled Bleed-off flow, Seal Injection flow, individual seal temperatures, and seal pressures.	_____ SAT
STANDARD:	Operator at a minimum should refer to Group 81 trend on the computer and check the RCP-1D seal pressures on the back of the control board.	_____UNSAT
	EXAMINER'S CUE: All parameters for RCP-1D are normal.	
COMMENTS:		
STEP 9D:	IF pump is within its operating parameters, THEN Select NOR-AFT-STOP on Lift Oil Pump control switch.	_____ SAT
STANDARD:	Operator rotates control handle of AC Lift Oil Pump for RCP-1D to stop and then ensure handle goes to NOR-AFT-STOP and verify green light ON and red light OFF.	_____UNSAT
	EXAMINER'S CUE: The AC Lift Oil Pump for RCP-1D is in NOR-AFT-STOP.	
COMMENTS:		

STEP 9E: RCP Motor Oil Collection System should be checked each shift for detection of any in-leakage, i.e., SW System. EXAMINER'S CUE: The SPO has been notified to perform this task. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 10: Ensure Seal Injection Flows are equalized for all 4 RCPs. EXAMINER'S CUE: Seal Injection flows are equalized. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 11: Ensure proper alignment of RC Inlet Temp Signal Sources. EXAMINER'S CUE: RC Inlet Temp Signal Sources are in proper alignment. STANDARD: N/A COMMENTS: END of TASK	_____ SAT _____UNSAT

STOP TIME: _____

JPM QUESTION #1, NO PROCEDURE ALLOWED

Question: Given the following set of RCP conditions, can the forth RCP be started?

Reactor power is 10%.

Total Nuclear Services Closed Cycle Cooling Water (SW) flow to all RCPs is 1100 gpm. Assume flow is evenly distributed between the pumps.

All Controlled Bleed-Off valves are open.

Tcold for the loop is 470°F.

Oil lift pressure for the pump to be started is 105 psig.

All Oil Reservoirs for the RCPs are Normal.

Total Seal Injection for all RCPs is 23 gpm. Assume flow is evenly distributed between the pumps.

Answer: No. Oil lift pressure is too low.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
003K1.01//2.6/2.8

References:
No Reference is allowed

JPM QUESTION #2

Question: Both MTR VIBRATION HIGH AND VIBRATION ALERT Alarms are annunciated for RCP-1D. Given the attached set of vibration readings what action, if any, should be taken?

Answer: Reduce power to < 95% and stop RCP-1D.

CANDIDATE'S RESPONSE

Time:

K/A Rating:
003A4.06//2.9/2.9

References:

AR-501
OP-302
RCP Action Levels

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Both MTR VIBRATION HIGH AND VIBRATION ALERT Alarms are annunciated for RCP-1D. Given the attached set of vibration readings what action, if any, should be taken?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question:

Given the following set of RCP conditions, can the forth RCP be started?

Reactor power is 10%.

Total Nuclear Services Closed Cycle Cooling Water (SW) flow to all RCPs is 1100 gpm. Assume flow is evenly distributed between the pumps.

All Controlled Bleed-Off valves are open.

Tcold for the loop is 470°F.

Oil lift pressure for the pump to be started is 105 psig.

All Oil Reservoirs for the RCPs are Normal.

Total Seal Injection for all RCPs is 23 gpm. Assume flow is evenly distributed between the pumps.

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

The plant is at 20% full power.
RCP-1D is not running.
The DNPO Pre-Job Briefing for RCP start is complete.

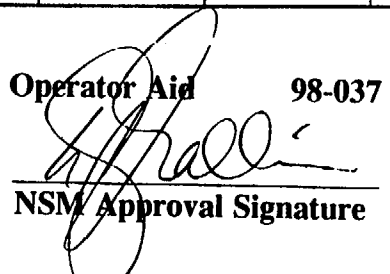
INITIATING CUES:

You are requested to start RCP-1D.

RCP ACTION LEVELS FOR OP-302

RCP Shutdown Action Levels (Bently-Nevada 3300 Vector Modules)										
Revised	10/15/98									
SENSOR	TAG #	SHUTDOWN DIRECT	SHUTDOWN 1X AMP. (Low)	SHUTDOWN 1X AMP. (High)	SHUTDOWN 1X PHASE (Low)	SHUTDOWN 1X PHASE (High)	SHUTDOWN 2X AMP. (Low)	SHUTDOWN 2X AMP. (High)	SHUTDOWN 2X PHASE (Low)	SHUTDOWN 2X PHASE (High)
RCP-1A										
Pump X	LP-10-SI1A	20.00	NA	18.00	120	245	NA	5.00	195	325
Pump Y	LP-10-SI2A	20.00	NA	18.00	25	155	NA	5.00	10	140
Motor X	LP-10-SI4A	20.00	NA	18.00	NA	NA	NA	5.00	NA	NA
Motor Y	LP-10-SI5A	20.00	NA	18.00	NA	NA	NA	5.00	NA	NA
RCP-1B										
Pump X	LP-10-SI1B	20.00	NA	18.00	335	105	NA	5.00	180	310
Pump Y	LP-10-SI2B	20.00	NA	18.00	245	15	NA	5.00	20	145
Motor X	LP-10-SI4B	20.00	NA	18.00	305	75	NA	5.00	220	350
Motor Y	LP-10-SI5B	20.00	NA	18.00	215	345	NA	5.00	45	175
RCP-1C										
Pump X	LP-10-SI1C	20.00	NA	18.00	NA	NA	NA	5.00	100	230
Pump Y	LP-10-SI2C	20.00	NA	18.00	NA	NA	NA	5.00	305	75
Motor X	LP-10-SI4C	20.00	NA	18.00	140	270	NA	5.00	NA	NA
Motor Y	LP-10-SI5C	20.00	NA	18.00	30	160	NA	5.00	355	125
RCP-1D										
Pump X	LP-10-SI1D	20.00	NA	18.00	125	255	NA	5.00	150	280
Pump Y	LP-10-SI2D	20.00	NA	18.00	10	140	NA	5.00	325	95
Motor X	LP-10-SI4D	20.00	NA	18.00	120	250	NA	5.00	205	335
Motor Y	LP-10-SI5D	20.00	NA	18.00	0	130	NA	5.00	20	150

Operator Aid 98-037



NSM Approval Signature

The above limits are intended primarily for 4 RCP operation at steady state 100% power. Verify redundant monitors clearly indicate unacceptable levels prior to securing an RCP under startup/shutdown or changing conditions.

ENCLOSURE 2

RCP Vibration Readings

	Monitor	Direct Vibration (mils)	1X Amplitude (mils)	1X Phase Lag (degrees)	2X Amplitude (mils)	2X Amplitude (mils)
RCP-1A	LP-10-SI1A					
	LP-10-SI2A					
	LP-10-SI4A					
	LP-10-SI5A					
RCP-1B	LP-10-SI1B					
	LP-10-SI2B					
	LP-10-SI4B					
	LP-10-SI5B					
RCP-1C	LP-10-SI1C					
	LP-10-SI2C					
	LP-10-SI4C					
	LP-10-SI5C					
RCP-1D	LP-10-SI1D	21.0	19.3	256		
	LP-10-SI2D	20.3	18.7	143		
	LP-10-SI4D	19.7	17.6	279		
	LP-10-SI5D	21.2	18.4	129		

Initial/Date

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 7P/PLANT

Place the "A" Hydrogen Analyzer In Service

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallion Date/ 12-17-98

VALIDATED BY: * D Jones Date/ 12-17-98

APPROVED BY: R. Wes Jones Date/ 12-18,98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Place the "A" Hydrogen Analyzer in Service.

Alternate Path:
N/A

Facility JPM #:
Requal JPM

K/A Rating(s)/Task Number/AO, RO, SRO:
028A4.03//3.1/3.3//0090503001//AO, RO, SRO

Task Standard:
Place the "A" Hydrogen Analyzer in service using EOP-14, Enclosure 2.

Preferred Evaluation Method:
Simulator_____ In-Plant ____X____

References:
EOP-14

Validation Time: 11 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT ____ UNSAT ____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

EOP-14, Enclosure 2
Key

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The plant has just tripped.
A LOCA is in progress.
DHV-3 is energized.

INITIATING CUES:

You are requested by the Shift Supervisor to complete EOP-14, Enclosure 2.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: STANDARD: COMMENTS:	Obtain a copy of appropriate procedure. Operator obtains a copy of EOP-14, Enclosure 2.	_____ SAT _____UNSAT
STEP 2: STANDARD: COMMENTS:	Energize DHV-3. N/A, see initial conditions.	_____ SAT _____UNSAT
STEP 3: STANDARD: COMMENTS:	Energize HPI recirc to sump valves. Unlock and close DPDP 8A-4 energizing MUV-543 and MUV-544 ("A" ES 4160 SWGR Room). Operator unlock breaker DPDP-8A-4 and rotate handle to ON. EXAMINER'S CUE: Breaker DPDP-8A-4 is ON.	_____ SAT _____UNSAT

STEP 4: Energize PZR vent valves. Unlock and close DPDP 8A-13 energizing RCV-159 and RCV-160 ("A" ES 4160 SWGR Room). STANDARD: Operator unlock breaker DPDP-8A-13 and rotate handle to ON. EXAMINER'S CUE: Breaker DPDP-8A-13 is ON. COMMENTS:	_____ SAT _____UNSAT
STEP 5: Energize WS valves for Hydrogen analyzers. Unlock and close DPDP 8A-14 energizing WSV-28, WSV-30, WSV-34 and WST-42 ("A" ES 4160 SWGR Room). STANDARD: Operator unlock breaker DPDP-8A-14 and rotate handle to ON. EXAMINER'S CUE: Breaker DPDP-8A-14 is ON. COMMENTS:	_____ SAT _____UNSAT

STEP 6:	Ensure "A" DC cooling control is aligned to Control Room. Ensure DH COOLER 3A OUTLET TEMP. CONTROL LOCATION switch DCV-177 MS is selected to CONTROL ROOM ("A" ES 4160V SWGR Room).	_____ SAT _____UNSAT
STANDARD:	Operator verifies that DH COOLER 3A OUTLET TEMP. CONTROL LOCATION switch DCV-177 MS is selected to CONTROL ROOM.	
COMMENTS:		
STEP 7:	Energize HPI recirc to sump valves. Unlock and close DPDP 8B-8 energizing MUV-545 and MUV-546 ("B" ES 4160 SWGR Room).	_____ SAT
STANDARD:	Operator unlock breaker DPDP-8B-8 and rotate handle to ON.	_____UNSAT
	EXAMINER'S CUE: Breaker DPDP-8B-8 is ON.	
COMMENTS:		

STEP 8:	Energize WS valves for Hydrogen Analyzers. Unlock and close DPDP 8B-21 energizing WSV-26, WSV-32, WSV-38 and WSV-41 ("B" ES 4160 SWGR Room).	_____ SAT
STANDARD:	Operator unlock breaker DPDP-8B-21 and rotate handle to ON.	_____UNSAT
	EXAMINER'S CUE: Breaker DPDP-8B-21 is ON.	
COMMENTS:		
STEP 9:	Ensure "B" DC cooling control is aligned to Control Room. Ensure DH COOLER 3B OUTLET TEMP. CONTROL LOCATION switch DCV-178 MS is selected to CONTROL ROOM ("B" ES 4160V SWGR Room).	_____ SAT _____UNSAT
STANDARD:	Operator verifies that DH COOLER 3B OUTLET TEMP. CONTROL LOCATION switch DCV-178 MS is selected to CONTROL ROOM.	
COMMENTS:		

STEP 10: Energize "A" loop HPVs. Unlock and close DPDP 5A-1 energizing RCV-157 and RCV-158 ("A" ES 480 SWGR Room). STANDARD: Operator unlock breaker DPDP-5A-1 and rotate handle to ON. EXAMINER'S CUE: Breaker DPDP-5A-1 is ON. COMMENTS:	_____ SAT _____UNSAT
STEP 11: Energize WS valves for Hydrogen Analyzers. Unlock and close DPDP 5A-2 energizing WSV-29, WSV-31, WSV-35 and WSV-43 ("A" ES 480 SWGR Room). STANDARD: Operator unlock breaker DPDP-5A-2 and rotate handle to ON. EXAMINER'S CUE: Breaker DPDP-5A-2 is ON. COMMENTS:	_____ SAT _____UNSAT

STEP 12: Energize "B" loop HPVs. Unlock and close DPDP 5B-1 energizing RCV-163 and RCV-164 ("B" ES 480 SWGR Room). STANDARD: Operator unlock breaker DPDP-5B-1 and rotate handle to ON. EXAMINER'S CUE: Breaker DPDP-5B-1 is ON. COMMENTS:	_____ SAT _____UNSAT
STEP 13: Energize WS valves for Hydrogen Analyzers. Unlock and close DPDP 5B-27 energizing WSV-27, WSV-33, WSV-39 and WSV-40 ("B" ES 480 SWGR Room). STANDARD: Operator unlock breaker DPDP-5B-27 and rotate handle to ON. EXAMINER'S CUE: Breaker DPDP-5B-27 is ON. COMMENTS:	_____ SAT _____UNSAT

NOTE: Which Hydrogen analyzer to be used should be based on pre-existing (standby) status of analyzers and their power supplies. IF VBXS-1A is not on its normal power supply, "A" analyzer should not be considered available. If VBXS-1B is not on its normal power supply, "B" analyzer should not be considered available. EXAMINER'S CUE: All Inverters are on their normal power supply. STEP 14: Notify NSS to choose Hydrogen analyzer and containment sample points to be used. EXAMINER'S CUE: The NSS requests you place the "A" Hydrogen Analyzer in service sampling from the RB Dome. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 15: IF "B" Hydrogen Analyzer is to be place in service, THEN GO TO Step 2.19 in this enclosure. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STATUS: The "A" Hydrogen Analyzer is to be place in service. STEP 16: Open Containment Monitor Hydrogen Sampling Valves for sample point selected ("A" EFIC Room, RELAY RACK RR4A). IF RB Dome was elected, THEN open the following valves: WSV-30 and WSV-31. STANDARD: Operator rotates control switches for both WSV-30 and WSV-31 to open and verifies red light ON and green light OFF. EXAMINER'S CUE: WSV-30 and WSV-31 are open. COMMENTS:	_____ SAT _____UNSAT
STEP 17: Open the "A" Hydrogen Analyzer return valves ("A" EFIC Room, RELAY RACK RR4A). WSV-42 and WSV-43. STANDARD: Operator rotates control switches for both WSV-42 and WSV-43 to open and verifies red light ON and green light OFF. EXAMINER'S CUE: WSV-42 and WSV-43 are open. COMMENTS:	_____ SAT _____UNSAT

STEP 18:	Energize the "A" Hydrogen Analyzer ("A" EFIC Room, RELAY RACK RR4A). Select "System Power" switch to ON on WS-11-CS.	_____ SAT
STANDARD:	Operator selects toggle switch for "System Power" to on and verifies the indicating light illuminated.	_____UNSAT
	EXAMINER'S CUE: The "A" Hydrogen Analyzer is in service.	
COMMENTS:		
STEP 19:	Notify Control Room that PPO post event actions are complete with the "A" Hydrogen Analyzer in service and EXIT this enclosure.	_____ SAT
STANDARD:	Operator notifies the Control Room.	_____UNSAT
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: Following a LOCA with other complicating events, DPDP-1A is de-energized and WSV-38 is failed in the closed position. What are the sample flow paths for both hydrogen Analyzers?

Answer: The "A" Hydrogen Analyzer has no flow path.
The "B" Hydrogen Analyzer can only take samples from the Reactor Building Recirculation Duct.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

028A4.03//3.1/3.3

References:

EOP-14, Enclosure 2
Flow diagram

JPM QUESTION #2

Question: With the "A" Hydrogen Analyzer placed in service hydrogen concentration is 2.7% with a flow rate of 0.8 scfh through the analyzer. The following valves are open:

WSV-30, WSV-31, WSV-42 and WSV-43

What is the flow path and alarm status of the "A" Hydrogen Analyzer?

Answer: The "A" Hydrogen Analyzer is taking samples from the Reactor Building Dome. The "A" Hydrogen Analyzer should also be in alarm for low sample flow.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

028A4.03//3.1/3.3

References:

EOP-14, Enclosure 2
Flow diagram
AR-302

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question:

With the "A" Hydrogen Analyzer placed in service hydrogen concentration is 2.7% with a flow rate of 0.8 scfh through the analyzer. The following valves are open:

WSV-30, WSV-31, WSV-42 and WSV-43

What is the flow path and alarm status of the "A" Hydrogen Analyzer?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Following a LOCA with other complicating events, DPDP-1A is de-energized and WSV-38 is failed in the closed position. What are the sample flow paths for both hydrogen Analyzers?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The plant has just tripped.
A LOCA is in progress.
DHV-3 is energized.

INITIATING CUES:

You are requested by the Shift Supervisor to complete EOP-14, Enclosure 2.

KEY #: P001571
10

REACTOR BUILDING

EMERGENCY R.B. RECIRCULATION VENTILATION DUCT @ EL. 233'0" SEE DWG FD-302-751 (F-2)

NORMAL R.B. RECIRCULATION VENTILATION DUCT @ EL. 190'0" SEE DWG FD-302-751 (F-4)

TO AUX BLDG MAIN EXHAUST 752-SH1 B-8

TO AUX BLDG MAIN EXH 700-SH1 C-5

AUX. BLDG EXHAUST DUCT 695-SH1 H-7

POST ACCIDENT GAS SAMPLING 694-SH1 F-3

CA 694-SH1 C-2

TO PENETRATION 118 271-SH2 F-4

FROM PENETRATION 116

TO R.B. INST.& SERV. AIR 271-SH2 F-3

LEAK RATE TEST PANEL 722-SH1 C-5

H_2 ANALYZER-A
WS-11-CE
CONTROLLED AND INDICATED IN EFFTC RM.(RR4A)
NOTE: THIS EQUIPMENT IS NUCLEAR SAFETY RELATED CLASS 1E

H_2 ANALYZER-B
WS-10-CE
CONTROLLED AND INDICATED IN EFFTC RM.(RR4B)
NOTE: THIS EQUIPMENT IS NUCLEAR SAFETY RELATED CLASS 1E

4 GAS BOTTLES (1 ZERO 3 SPAN)
2.5% H_2 SPAN #5
5% H_2 SPAN #4
9.5% H_2 SPAN #3
0% H_2 SPAN #1
TYP.5 PLACES

V2 MA-60 PARTICULATE MONITOR RM-A6
V7 MG-2A GAS MONITOR
V1 ROTAMETER RM-A6-FI1
RM-A6-FC
RMP-A6
V3 ACTIMETER
V4 ACTIMETER
V5 NOTE 7
V6 NOTE 7
SEE LFE DWG. C950565
VAC. GAUGE
VAC. RELEASE VAC. SWITCH
AIR SUPPLY

PORTABLE H_2

SAMPLE BOMB

REACTOR BLDG. ATMOSPHERE SAMPLE STATION

NOTES:
1. CONTROLLED AND INDICATED FROM EFTC RM. (RR4A) VALVE POSITION INDICATED IN CONTROL RM. NORMALLY LOCKED CLOSED BY POWER REMOVED.
2. CONTROLLED AND INDICATED FROM EFTC RM. (RR4B) VALVE POSITION INDICATED IN CONTROL RM. NORMALLY LOCKED CLOSED BY POWER REMOVED.
3. CONTROLLED AND INDICATED FROM EFTC RM. (RR4A) VALVE POSITION INDICATED IN CONTROL RM. AND COUNT RM. (MIMIC PNL.) NORMALLY LOCKED CLOSED BY POWER REMOVED.
4. CONTROLLED AND INDICATED FROM EFTC RM. (RR4B) VALVE POSITION INDICATED IN CONTROL RM. AND COUNT RM. (MIMIC PNL.) NORMALLY LOCKED CLOSED BY POWER REMOVED.
5. CONTROLLED AND INDICATED FROM COUNT RM. MIMIC PNL. WSV-78 INTERLOCKED SUCH THAT IT CANNOT BE ENERGIZED OPEN IF EITHER WSV-37,38,33, OR 35 ARE ENERGIZED OPEN.
6. CONTROLLED AND INDICATED FROM CONTROL RM. VALVE POSITION INDICATED IN COUNT RM. ON MIMIC PNL.
7. CONTROLLED FROM RM-A6 PNL. ON 119' EL.
8. FOR PENETRATION CONTAINMENT ISOLATION CONFIGURATION SEE REF. DWG'S 315-386, 315-315, 315-332, 315-358, 315-378

ALL PIPING SEISMIC I AND LINE SPEC. 150-2 EXCEPT AS NOTED.

47 CAUTION:
302 DRAWINGS MAY NOT REFLECT ACTUAL VALVE POSITIONS IN THE PLANT. VALVE POSITIONS ARE CONTROLLED THROUGH OPERATING PROCEDURES. NOCS (62846)

NO.	REVISIONS	BY	CHECKED	APPROVED	DATE
47	REVISED PER DCN 98-2011	MAD	TMG	CSS	8-13-98
46	REVISED PER DCN 98-1706	TDF	NLM	CSS	8-13-98
45	REVISED PER DCN 98-012	TMG	NLM	CSS	5-19-98

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA
CRYSTAL RIVER PLANT
UNIT NO.3 — 855,000 KW
NUCLEAR PLANT PIPING — W.S. SYSTEM FLOW DIAGRAM

CONTAINMENT MONITORING SYSTEM
1ST AND ORIGINAL DESIGN BASIS CODE CLASSES — FSAR FIG. 9-20

REDRAWN ON CAD SYSTEM
DRAWN BY B.A.R. DATE: 92-12-03
CHECKED BY B.A.R. DATE: 92-12-03
CHECK VERIFIED B.A.R. DATE: 92-12-03

BAYMONT ENGINEERING COMPANY

SCALE — FD-302-693 SHEET 01 OF 01 — DRAWING NUMBER — 47 REV

FILE: 3026931.DWG

D-9-8

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 8P/PLANT

Release a Waste Gas Decay Tank to Plant Ventilation

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Gallion Date/ 12-17-98

VALIDATED BY: * D P Jones Date/ 12-17-98

APPROVED BY: R. Wes Lee Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** _____ Date/_____
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Release a Waste Gas Decay Tank to Plant Ventilation..

Alternate Path:
N/A

Facility JPM #:
NRC Bank

K/A Rating(s)/Task Number/AO, RO, SRO:
071A4.26//3.1/3.9//0710103006//AO, RO, SRO

Task Standard:
Using OP-412B, WGDT Release to Ventilation, finish the startup of a release of "C" Waste Gas Decay Tank to plant ventilation.

Preferred Evaluation Method:
Simulator_____ In-Plant _____X_____

References:
OP-412B

Validation Time: 9 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-412A
Key
Calculator

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The previous shift has started the process of releasing the "C" Waste Gas Decay Tank to plant ventilation.

INITIATING CUES:

You are requested to continue with the release of the "C" Waste Gas Decay Tank, starting with step 4.1.32.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains the partially completed copy of OP-412B. COMMENTS:	_____ SAT _____UNSAT
STEP 2Aa: Perform Valve Alignment for WGDT "C" Discharge. Close the following: WDV-392. STANDARD: Operator rotates WDV-392 control switch to CLOSE. EXAMINER'S CUE: WDV-392 is CLOSED. COMMENTS:	_____ SAT _____UNSAT
STEP 2Ab: Perform Valve Alignment for WGDT "C" Discharge. Close the following: WDV-435. EXAMINER'S CUE: WDV-435 was CLOSED by the previous shift. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 2Ac: Perform Valve Alignment for WGDT "C" Discharge. Close the following: WDV-395. STANDARD: Operator rotates WDV-395 control switch to CLOSE. EXAMINER'S CUE: WDV-395 is CLOSED. COMMENTS:	____SAT ____UNSAT
STEP 2Ba: Perform Valve Alignment for WGDT "C" Discharge. Open the following: WDV-439. STANDARD: Operator rotates WDV-439 control switch to OPEN. EXAMINER'S CUE: WDV-439 is OPEN. COMMENTS:	____SAT ____UNSAT

STEP 2Bb: Perform Valve Alignment for WGDT "C" Discharge. Open the following: WDV-438. STANDARD: Operator rotates WDV-438 control switch to OPEN. EXAMINER'S CUE: WDV-438 is OPEN. STANDARD: N/A COMMENTS:	_____ SAT _____ UNSAT
STEP 2Bc: Perform Valve Alignment for WGDT "C" Discharge. Open the following: WDV-477. STANDARD: Operator rotates WDV-477 handwheel in counter-clockwise direction until OPEN. EXAMINER'S CUE: WDV-477 is OPEN. COMMENTS:	_____ SAT _____ UNSAT

STEP 3A: Complete Valve Alignment for WGDT Release. Close WDV-566. STANDARD: Operator rotates WDV-566 manual valve operator in clockwise direction until CLOSED. EXAMINER'S CUE: WDV-566 is CLOSED. COMMENTS:	____SAT ____UNSAT
STEP 3B: Complete Valve Alignment for WGDT Release. Close WDV-549. STANDARD: Operator rotates WDV-549 handwheel in clockwise direction until CLOSED. EXAMINER'S CUE: WDV-549 is CLOSED. COMMENTS:	____SAT ____UNSAT

STEP 3C: Complete Valve Alignment for WGDT Release. Open WDV-565. STANDARD: Operator rotates WDV-565 manual valve operator in counter-clockwise direction until OPEN. EXAMINER'S CUE: WDV-565 is OPEN. COMMENTS:	_____ SAT _____UNSAT
STEP 4: IF RM-A11 is inoperable, THEN complete Independent Verification of Discharge Valves Lineup. EXAMINER'S CUE: RM-A11 is operable. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 5: Notify Security of Waste Gas Release. EXAMINER'S CUE: This has been completed by the Control Room. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT
STEP 6: Ensure Channel Check on WD-19-FR is completed. EXAMINER'S CUE: Step 4.1.16 has been completed SAT. STANDARD: N/A COMMENTS:	_____ SAT _____UNSAT

STEP 7	Start WGDT Release to Ventilation Filter Units. Unlock and throttle WDV-478, adjusting flow to the most conservative of the following: flow less than 10 SCFM on WD-19-FR OR flow less than limits established on GRWRP.	____SAT ____UNSAT
	EXAMINER'S CUE: The GRWRP limit is 15 SCFM.	
STANDARD:	Operator unlocks WDV-478 and rotates handwheel counter-clockwise to a throttled position.	
	EXAMINER'S CUE: WDV-478 is throttled with WD-19-FR indicating 12 SCFM. (WDV-478 is in a different location from WD-19-FR.)	
STANDARD:	Operator rotates WDV-478 handwheel clockwise to a throttled position.	
	EXAMINER'S CUE: WDV-478 is throttled with WD-19-FR indicating 7 SCFM. This completes the JPM	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1

Question: During a release of the "A" Waste Gas Decay Tank (WDT-1A), Radiation Monitor RM-A2 gas channel becomes inoperable; what are the requirements, if any, regarding the release?

Answer: The release may continue provided grab samples are collected at least once per 12 hours and analyzed within 24 hours, and either the requirements of ACTION 24 Part 2 (independent verification of the samples; release rate calculations and discharge valve lineup) are met or Radiation Monitor RM-A11 is OPERABLE prior to releasing the contents of the Waste Gas Decay Tanks.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

071K1.0//3.1/3.1

References:

ODCM

JPM QUESTION #2

Question: Complete Enclosure 1 from OP-412B, WGDT Release to Ventilation?

Answer: See attached.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

071K4.06//2.7/3.5

References:

OP-412B

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Complete Enclosure 1 from OP-412B, WGDT Release to Ventilation?

JPM QUESTION #1
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: During a release of the "A" Waste Gas Decay Tank (WDT-1A), Radiation Monitor RM-A2 gas channel becomes inoperable; what are the requirements, if any, regarding the release?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Primary Plant Operator.
The previous shift has started the process of releasing the "C" Waste Gas Decay Tank to plant ventilation.

INITIATING CUES:

You are requested to continue with the release of the "C" Waste Gas Decay Tank, starting with step 4.1.32.

ENCLOSURE 1

MANUAL RELEASE RATE DATA SHEET

Time*	WGDT Pressure (PSIG)	Δ WGDT Pressure (PSIG)	Δ Pressure / Δ Time (min) X 119.28	Release Rate (SCFM)	Initials & Date
0900	78	N/A	N/A	N/A	
1100	75		_____ X 119.28 =		
1300	71		_____ X 119.28 =		
1500	69		_____ X 119.28 =		
			_____ X 119.28 =		
			_____ X 119.28 =		
			_____ X 119.28 =		
			_____ X 119.28 =		
			_____ X 119.28 =		

*Every two hours or per SSOD

Reviewed by _____ Time _____ Date _____
SSOD

ENCLOSURE 1

MANUAL RELEASE RATE DATA SHEET

Time*	WGDT Pressure (PSIG)	Δ WGDT Pressure (PSIG)	Δ Pressure / Δ Time (min) X 119.28	Release Rate (SCFM)	Initials & Date
0900	78	N/A	N/A	N/A	MG 2-8-99
1100	75	3	3/120 X 119.28 =	2.98	MG 2-8-99
1300	71	4	4/120 X 119.28 =	3.98	MG 2-8-99
1500	69	2	2/120 X 119.28 =	1.99	MG 2-8-99
			_____ X 119.28 =		
			_____ X 119.28 =		
			_____ X 119.28 =		
			_____ X 119.28 =		
			_____ X 119.28 =		

*Every two hours or per SSOD

Reviewed by _____ Time _____ Date _____
SSOD

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

JPM 9P/PLANT

Start Station Air Compressor, SAP-1E

CANDIDATE _____

EXAMINER _____

PREPARED/
REVISED BY: Melissa Sallin Date/ 12-17-98

VALIDATED BY: * D P Jones Date/ 12-17-98

APPROVED BY: R. Wes Lowry Date/ 12-18-98
(Operations Training Manager)

CONCURRED: ** [illegible] Date/ 12-18-98
(Operations Representative)

* Validation not required for minor enhancements, procedure Rev changes that do not affect the JPM, or individual step changes that do not affect the flow of the JPM.

** Operations Concurrence required for new JPMs and changes that affect the flow of the JPM (if not driven by a procedure revision).

REGION II
INITIAL LICENSE EXAMINATION
JOB PERFORMANCE MEASURE

Task:
Start Station Air Compressor-1E.

Alternate Path:
N/A

Facility JPM #:
New

K/A Rating(s)/Task Number/AO, RO, SRO:
065AA1.04//3.5/3.4//0780104005//AO, RO, SRO

Task Standard:
Start Station Air Compressor-1E using OP-411 or Operator Aide at compressor.

Preferred Evaluation Method:
Simulator_____ In-Plant _____X_____

References:
OP-411

Validation Time: 4 min. Time Critical: NO

Candidate: _____ Time Start: _____
NAME

Performance Rating: SAT _____ UNSAT _____ Performance Time _____

Examiner: _____ _____/_____
NAME SIGNATURE DATE

COMMENTS

_____

_____

_____

_____

SIMULATOR OPERATOR INSTRUCTIONS:

N/A

Tools/Equipment/Procedures Needed:

OP-411 or Operator Aide
FD-302-271

READ TO OPERATOR

DIRECTIONS TO TRAINEE:

I will explain the initial conditions, and state the task to be performed. All in-plant steps, including any required communications, shall be simulated for this JPM. Under no circumstances are you to operate any plant equipment. I will provide initiating cues and reports on other actions when directed by you. Ensure you indicate to me when you understand your assigned task. To indicate that you have completed your assigned task return the handout sheet I provided you.

INITIAL CONDITIONS:

Your are the Secondary Plant Operator.
The plant has had a loss of all OFF-Site Power.
All in-house air compressors have no power.
SAP-1C and SAP-1D have no power.

INITIATING CUES:

You are requested to start SAP-1E.

START TIME: _____ Shaded Block Indicates Critical Step

STEP 1: Obtain a copy of appropriate procedure. STANDARD: Operator obtains a copy of OP-411 step 4.5.1.4 or Operator Aide. COMMENTS:	_____ SAT _____UNSAT
STEP 2: Ensure open SAV-140, SAP-1E discharge valve. STANDARD: Operator rotates handwheel of SAV-140 in the counter-clockwise direction until the hard stop is reached. EXAMINER'S CUE: SAV-140 is open. COMMENTS:	_____ SAT _____UNSAT
STEP 3: Select UNLOAD/AUTO switch to UNLOAD. STANDARD: Operator selects UNLOAD/AUTO toggle switch to UNLOAD. EXAMINER'S CUE: The UNLOAD/AUTO switch is selected to UNLOAD. COMMENTS:	_____ SAT _____UNSAT

STEP 4:	Start engine by placing the TEST/OFF/AUTO switch to TEST.	_____SAT
STANDARD:	Operator selects TEST/OFF/AUTO toggle switch to TEST and verifies SAP-1E starts.	_____UNSAT
	EXAMINER'S CUE: SAP-1E is running.	
COMMENTS:		
STEP 5:	IF engine does not start during the start cycle, THEN place the TEST/OFF/AUTO switch to OFF to reset the system; otherwise, N/A.	_____ SAT
STANDARD:	N/A	_____UNSAT
COMMENTS:		

STEP 6: Select UNLOAD/AUTO switch to AUTO. STANDARD: Operator selects UNLOAD/AUTO toggle switch to AUTO. EXAMINER'S CUE: The UNLOAD/AUTO switch is selected to AUTO. COMMENTS:	_____SAT _____UNSAT
STEP 7: Ensure open 3 inch discharge valve located below control panel at hose connection to compressor. STANDARD: Operator rotates handwheel of 3 inch valve in the counter-clockwise direction until the hard stop is reached. EXAMINER'S CUE: 3 inch valve is open. COMMENTS:	_____SAT _____UNSAT

STEP 8:	Ensure air compresssor unloads at < 130 psig.	_____ SAT
STANDARD:	Operator verifies at local gage that SAP-1E unloads at < 130 psig.	_____UNSAT
	EXAMINER'S CUE: Indicate that compressor unloaded at 125 psig.	
COMMENTS:		
	END of TASK	

STOP TIME: _____

JPM QUESTION #1, NO PROCEDURE ALLOWED

Question: SAP-1C is supplying the Instrument and Station Air Systems when a large air leak develops. What will the status of the air systems be if the leak is located between IAV-7 and IAV-11?

Answer: If the Instrument Air and Station Air pressure falls below 95 psig, all the in-house air compressors will auto-start. If the Instrument Air pressure falls below 80 psig, IAV-30 closes and SAV-6 (a check valve) will try to supply Instrument Air with Station Air. However, because of the leak location and depending on the size of the leak, the Instrument Air pressure will continue to decrease. If the leak is sufficiently sized, Station Air pressure may continue to decrease.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

078K1.02//2.7/2.7

References:

Flow diagram

JPM QUESTION #2

Question: Given a set of daily surveillance readings on the Instrument Air system (see attached), what action(s), if any, is (are) required?

Answer: There is a high differential pressure across the dryer initiate maintenance.

CANDIDATE'S RESPONSE

Time:

K/A Rating:

078A3.01//3.1/3.2

References:

SP-300
OP-411

JPM QUESTION #2
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: Given a set of daily surveillance readings on the Instrument Air system (see attached), what action(s), if any, is (are) required?

JPM QUESTION #1
NO PROCEDURE ALLOWED
CANDIDATE COPY
(TO BE RETURNED TO EXAMINER)

Question: SAP-1C is supplying the Instrument and Station Air Systems when a large air leak develops. What will the status of the air systems be if the leak is located between IAV-7 and IAV-11?

CANDIDATE CUE SHEET
(TO BE RETURNED TO EXAMINER UPON COMPLETION OF TASK)

INITIAL CONDITIONS:

Your are the Secondary Plant Operator.
The plant has had a loss of all OFF-Site Power.
All in-house air compressors have no power.
SAP-1C and SAP-1D have no power.

INITIATING CUES:

You are requested to start SAP-1E.

Daily Logsheet

Sequence: 49 Station: 49
Maximum: 180 Units: DEG C SI
Minumum:
480V RX AUX BUS 3B TRANSFORMER TEMP.
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00			
16:00			

Sequence: 50 Station: 50
Maximum: 180 Units: DEG C SI
Minumum:
480V RX AUX BUS 3A TRANSFORMER TEMP.
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00			
16:00			

Sequence: 51 Station: 51
Maximum: 180 Units: DEG C SI
Minumum:
480V TURB AUX BUS 3B TRANSFORMER TEMP.
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00			
16:00			

Sequence: 52 Station: 52
Maximum: 180 Units: DEG C SI
Minumum:
480V TURB AUX BUS 3A TRANSFORMER TEMP.
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00			
16:00			

Sequence: 53 Station: 73 Tag No.: IA-8-PI
Maximum: Units: PSIG
Minumum: 100
IA PRE-FILTER INLET PRESSURE
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00	120		
08:00			
16:00			

Sequence: 54 Station: 74 Tag No.: IA-9-PI
Maximum: Units: PSIG
Minumum: 92
IA DRYER INLET PRESSURE
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00	112		
08:00	N/A		
16:00	N/A		

Sequence: 55 Station: 75 Tag No.: CALCULATION
Maximum: 10 Units: PSID SI
Minumum:
IA PRE-FIL. DELTA P (IA-8-PI)-(IA-9-PI)
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00	N/A		
16:00	N/A		

Sequence: 56 Station: 76 Tag No.: IA-10-PI
Maximum: Units: PSIG
Minumum: 92
IA DRYER OUTLET PRESSURE
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00	96		
08:00	N/A		
16:00	N/A		

Sequence: 57 Station: 77 Tag No.: CALCULATION
Maximum: 15 Units: PSID SI
Minumum:
IA DRYER DELTA PRESS (IA-9-PI)-(IA-10-PI
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00	N/A		
16:00	N/A		

Sequence: 58 Station: 78 Tag No.: IA-11-PI
Maximum: Units: PSIG
Minumum: 92
IA POST-FLTR OUTLET PRESSURE
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00	91		
08:00	N/A		
16:00	N/A		

Sequence: 59 Station: 79 Tag No.: CALCULATION
Maximum: 10 Units: PSID SI
Minumum:
IA POST-FLTR DELTA P (IA-10-PI)-(IA-11-P
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00	N/A		
16:00	N/A		

Sequence: 60 Station: 80 Tag No.: IA-21-FI
Maximum: 16.6 Units: SCFM
Minumum: 15.4
IA DRYER (IADR-1) PURGE FLOW
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00	N/A		
16:00	N/A		

Sequence: 61 Station: 81 Tag No.: IA-52-MA
Maximum: 20 Units: DEG F
Minumum:
IA DEWPOINT MONITOR
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00	N/A		
16:00	N/A		

Sequence: 62 Station: 82
Maximum: YES Units:
Minumum: YES
IA & SA RECEIVERS ARE DRAINED?
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00	N/A		
16:00	N/A		

Sequence: 63 Station: 53 Tag No.: MTSW 2G
Maximum: 180 Units: DEG C SI
Minumum:
4160V REACTOR AUX TRANSFORMER TEMP.
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00			
16:00			

Sequence: 64 Station: 54
Maximum: YES Units: SI
Minumum: YES
GENERATOR H2 DRYER CRYSTALS ARE BLUE?
Location: 95
Applicable DOW: Every

Shift	Reading	Operator	Notes
00:00			
08:00			
16:00			

FLORIDA POWER CORPORATION

CRYSTAL RIVER PLANT

UNIT NO. 3

TURBINE PIPING

1A & 5A SYSTEM FLOW DIAGRAM

INSTRUMENT AIR & STATION SERVICE AIR

FD-302-271

SHEET 02 OF 03

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CAUTION:
302 DRAWINGS MAY NOT REFLECT ACTUAL VALVE POSITIONS IN THE PLANT. VALVE POSITIONS ARE CONTROLLED THROUGH OPERATING PROCEDURES. NOCS (62846)

AUX. BLDG. EL. 95'-0" & ABOVE

INTERMEDIATE BLDG

REACTOR BLDG EL. 119'-0"

TURBINE BLDG LOOP EL. 93'-0

CONTROL BLDG. AIR HANDLING AIR COMPRESSOR RECEIVERS

EMERGENCY AIR COMPRESSORS (SEE NOTE 4)

STATION AIR COMPRESSOR 3A 125 PSIG @ 125 PSIG

STATION AIR COMPRESSOR 3B 125 PSIG @ 125 PSIG

AIR CYLINDER RACK SAX-1

AIR CYLINDER RACK SAX-2

AIR CYLINDER RACK SAX-3

AIR CYLINDER RACK SAX-4

DETAIL "A" (TYPICAL CYLINDER RACK)

SEE SHEET 3 OF 3 FOR NOTES

KEY # P002334

KEY # P881529
18

INSTRUMENT AIR DRYER
IADR-2

INSTRUMENT AIR DRYER AFTER FILTERS

INSTRUMENT AIR DRYER PREFILTERS

INSTRUMENT AIR DRYER
IADR-1

ATMOS.

87 CU. FT.

AFTER-COOLER 3A

INTAKE FILTER IAFL-1A

INSTRUMENT AIR COMPRESSOR
● 345 SCFM
● 115 PSIG

SEE SHEET 3 OF 3 FOR NOTES

AFTER-COOLER 3B

INTAKE FILTER IAFL-1B

INSTRUMENT AIR COMPRESSOR
● 345 SCFM
● 115 PSIG

87 CU. FT.

VENT

HOSE CONNECTION FOR WASTE COMPACTOR BREATHING AIR

TO GATE SEAL

ROOT VALVE FOR IA TO THE FIRE SERVICE BLDG. (SEE NOTE 3)

TO ABN DEMINER

TO RANGE MANIFOLD

R.B.

INSIDE REACTOR BLDG.

OUTSIDE REACTOR BLDG.

NOTE: 10 PER #11

DIRT TRAP

TEMP CONN. FOR AIR TEST

TEST & DRAIN

NEW WESTINGHOUSE-ELECTRICAL AND I & C SHOPS

BACK UP FOR CONDENSING STATION

TURBINE BLDG. LOOP EL. 119'-6"

TURBINE BLDG. LOOP EL. 95'-6"

LINE FOR SECONDARY PLANT LABORATORY

LINE FOR CONTROL BLDG.

LINE FOR RADIO CHEM. LAB

AUX. BLDG. EL. 95'-6"

ROOT VALVES (SEE NOTE 3)

TO FUEL HNDLG AREA AIR MOTOR CASE

SODIUM HYDROXIDE, SODIUM BISULFATE STORAGE TANKS

TO CHEM. ASSYS FOR S.F. GATES PNEUMATIC SEALS

(IAV-379 THRU IAV-384 HOSE CONNECTIONS FOR HOT MACHINE SHOP BREATHING AIR.)

INTAKE STATION AIR COMPRESSOR

SAP-2

SAT-2

TO ATMOSPHERE

TO DISTRIBUTION HEADER (3" UNDERGROUND LINE SPEC. NO. 150-3)

VENDOR

SPARE COIL

BACKUP AIR SYSTEM FOR ADVS

72 CAUTION:

302 DRAWINGS MAY NOT REFLECT ACTUAL VALVE POSITIONS IN THE PLANT. VALVE POSITIONS ARE CONTROLLED THROUGH OPERATING PROCEDURES. NOCS (62846)

		MAD			
72	REVISED PER DCN 98-2010	TDF	KLM	CSS	9-12-98
71	REVISED PER DCN 98-1780	MAD	DAW	CSS	7-16-98
70	AS BUILT PER MAR 97-01-98-01, FCN-3	BY	CHECKED	APPROVED	DATE
NO.	REVISION				

FLORIDA POWER CORPORATION
ST. PETERSBURG, FLORIDA

CRYSTAL RIVER PLANT
UNIT NO. 3

TURBINE PIPING — 805,888 #/...

IA & SA SYSTEM FLOW DIAGRAM

INSTRUMENT AIR & STATION SERVICE AIR

FSAR AND ORIGINAL DESIGN BASIS CODE CLASSES — FSAR FIG. 9-17(1OF3)

REDRAWN ON CAD SYSTEM

DRAWN BY: M.G. — DATE: 12-12-92
CHECKED BY: D.A.K. — DATE: 12-16-92
CHECK VERIFIED: K.M.S. — DATE: 12-16-92

BAYMONT ENGINEERING COMPANY

FD-302-271
SHEET 01 OF 03
72

SCALE — DRAWING NUMBER — REV.

FILE: 302271.DWG

D-9-8