

no common

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. U/E/S	6. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job- Link	Minutia	#/ units	Back- ward		
1	H	3										S	
2	F	2										S	
3	F	3										S	
4	H	2										S	
5	F	3										S	EXPLAIN C, D "must" secure 230°?
6	H	3										S	
7	F	2										S	ENSURE NOT MULTIPLE CORRECT ANSWERS
8	H	3										S	SHD ONLY? KAT COMMON
9	F	2										S	
10	F	2										S	d distractor - only after CPSE injection?

Instructions

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11	F	2										S	FOR ELEMENTARY THINK. DISTRACTIONS
12	H	3										S	
13	H	3										S	
14	H	3										S	TO HIND FOR NO? EN CORNER
15	F	3										S	
16	F	2										S	
17	F	2										S	BAIT
18	F	2										S	
19	H	3										S	BACKWARD LOGIC? - TRANSITION REQUIRED
20	H	3										S	

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✓ 21	F	2										S	
✓ 22	F	2										S	
✓ 23	H	2										S	
✓ 24	F	2										S	
✓ 25	F	2										S	
✓ 26	H	2										S	
→ 27	F	2										S	
✓ 28	H	2										S	
✓ 29	F	2										S	
✓ 30	F	2										S/E	LOOK AT BASES, VERIFY ANSWER

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31	H	2										S	
32	H	2										S	
33	F	2										SS	Ass. Another more significant ones?
34	F	2										S	
35	F	2										S	
36	F	2										S	
37	F	2										S	
38	F	2										S	
39	F	2										S	
40	H	2										S	

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41	H	2										S	
42	H	2										S	
43	F	2										S	
44	F	2										S	
45	H	2										S	
46	H	2										S	
47	H	2										S	
48	H	2										S	
49	H	2										S	
50	H	2										S	BACKWARD LABEL - DEGREE OF ENLIGHTENMENT

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51	H	2										S/E	WORDING OF DISTRACTORS ANNUAL
52	H	2										S	
53	H	2										S	CHANGE ONE DISTRACTOR - FLOW INDICATES PROPERLY AS SUM OF ALL FLOWS
54	F	2										S	
55	H	2										S	
56	F	2										S	
57	F	2										S	
58	F	2										S	
59	F	2										S	
60	F	2										S	

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61	H	2										S	
62	F	2										S	
63	F	2										S	
64	H	2										S	
65	F	2										S	
66	H	2										S	
67	F	2										S	
68	F	2										S	
69	F	2										S	
70	H	2										S	

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71	H	2										S	
72	F	2										S	
73	F	2										S	
74	F	2										S	
75	H	2										S	
76	F	2										S	
77	F	2										S	
78	H	2										S	WHAT IS THE PURPOSE OF THIS KNOWLEDGE
79	F	2										S	
80	F	2										S	

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81	F	2										S	
82	H	2										S	
83	H	2										S	
84	F	2										S	
85	F	2										S	Why is this an H for item?
86	F	2											
87	F	2											
88	F	2											
89	F	2											
90	H	2											

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91	F	2											
92	H	2											
93	H	2											
94	F	2											
95	H	2											
96	F	2											
97	H	2											
98	H	2											
99	H	3											
100	F	2											

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2	F	2										✓	TOO BASEL
3	H	2										S	
4	F	2										U	TOO BASEL
5	F	2										S	
6	H	3										S	
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8	H	2										S	
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12	H	2										S	
13	F	2										S	
14	H	2										S	
15	H	2										S	
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18	F	2										S	
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23	F	2										S	
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 - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
 - The answer choices are a collection of unrelated true/false statements.
 - More than one distractor is not credible.
 - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
- Check the appropriate box if a job content error is identified:
 - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
 - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
 - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
 - The question requires reverse logic or application compared to the job requirements.
- Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
- For any "U" ratings, at a minimum, explain how the Appendix B psychometric attributes are not being met.

Nine Mile Unit 1 NRC Examination (July 26, 2000)
NRC Comment Resolution

Written Examination

Question SRO # 5:

NRC: Rejected and rated UNSAT. Too basic for SRO only question.

NMP: No longer credited as SRO only question. Maintain this question on the SRO exam. Currently 27 SRO only - reduced to 26. *12*

Question SRO #14:

NRC: Rejected and rated UNSAT. Too basic for SRO only question.

NMP: Replace with RO #14 and credit this as a common question, not SRO only. Currently 26 SRO only following action for SRO #5 - reduced to 25.

Question RO # 8:

NRC: Reconsider as SRO only due to knowledge level.

NMP: Maintain as a common question.

Question RO # 14:

NRC: Reconsider as SRO only due to knowledge level.

NMP: Maintain as RO question and replace SRO 14 with this question. Will be credited as a common question on the SRO examination.

Question RO # 5:

NRC: Disagree with the cognitive level identified for the question.

NMP: Requires the use of EOP-4, Primary Containment Control, to determine the requirements and interpreting Detail K, Containment Spray Initiation Limit.

NRC - Accepts

Question RO # 7:

NRC: Disagree with the cognitive level identified for the question.

NMP: Requires interpreting the reason for the failure to scram and determining the appropriate method to insert the control rods based on this interpretation.

NRC - Disagree with step of how to determine section

Question RO # 10:

NRC: Disagree with the cognitive level identified for the question.

NMP: Must determine the status of core cooling with regards to execution of the EOPs (application of core cooling under various injection sources). -84 inches actual level is the top of active fuel versus level in question which is 31 inches lower (-115 inches).

✓ **Question RO # 11:**

NRC: Disagree with the cognitive level identified for the question.

NMP: Requires knowledge and application of the technical specification SDM requirements to the EOP requirements to exit the procedure (how to maintain the reactor shutdown without boron).

just a note

✓ **Question RO # 15:**

NRC: Disagree with the cognitive level identified for the question.

NMP: With a degrading main condenser vacuum the candidate must determine the systems that are affected and at what vacuum - and then determine the effect on reactor operation.

Question RO # 16:

NRC: Disagree with the cognitive level identified for the question.

NMP: Must determine which of the sources are available following station blackout conditions.

L1

~~**Question RO # 17:**~~

~~NRC: Disagree with the cognitive level identified for the question.~~

~~NMP: Currently level 1.~~

Question RO # 18:

NRC: Disagree with the cognitive level identified for the question.

NMP: Candidate must determine the applicable method for stopping a rise in RPV level based upon the conditions provided.

L1

✓ **Question RO # 27:**

NRC: Disagree with the cognitive level identified for the question.

NMP: Requires assessing conditions and determining applicable curves, then calculating the limit for these conditions.

not a graph, not sample #

→ **Question RO # 35:**

NRC: Disagree with the cognitive level identified for the question.

NMP: Must determine the effects of a loss of the Reactor Building ventilation system exhaust fan on the system and on secondary containment.

L1

Question RO # 44:

NRC: Disagree with the cognitive level identified for the question.

NMP: There is no procedure that identifies how the topping pump will respond. This question requires knowledge of the logic associated with the pump.

L1

✓ **Question RO # 60:**

NRC: Disagree with the cognitive level identified for the question.

NMP: Must interpret the conditions to determine the start signal available to start the pump (low discharge pressure caused by the LOOP and pump trip) and determine how to reset the start signal (rotate the control switch). Reset varies depending upon the cause of the trip.

Question RO # 62:

NRC: Disagree with the cognitive level identified for the question.

NMP: Must determine the effect of placing the FW Valve Sequence Control Module switch to start which is an unauthorized (abnormal) position for the conditions provided.

L /

Question RO # 63:

NRC: Disagree with the cognitive level identified for the question.

NMP: Candidate must determine the effects not securing one train of EVS within 30 minutes of a LOCA. This is a precaution and limitation from the procedure. This should be a level 1.

L /

✓ **Question RO # 65:**

NRC: Disagree with the cognitive level identified for the question.

NMP: Candidate must determine the effects of opening a scram inlet valve at power (requires knowledge of flowpaths and pressures) and then the effects on reactor power and the SDV over a period of time. *Requires strong knowledge, operation but was in violation*

Question RO # 73:

NRC: Disagree with the cognitive level identified for the question.

NMP: Knowledge of the start sequence of CST pumps following a LOCA and how a subsequent loss of power affects the ability to meet design limits. The secondary and primary spray loops are different in that only one meets the design requirements.

L /

✓ **Question RO # 85:**

NRC: Disagree with the cognitive level identified for the question.

NMP: Must determine the applicable refueling interlocks for the conditions given. Must apply knowledge of the status of the fuel movement to when interlock conditions should be present.

Question RO # 96:

NRC: Disagree with the cognitive level identified for the question.

NMP: Currently at level 1.

Admin Examination

NRC: Direct Lookups

NMP1 July 2000 NRC Examination Changes

Written Examination

- RO 30 / SRO20: Clarified the question wording, answer, and distractors.
- RO 51: Clarified the question stem and reworded the distractors and answers.
- SRO 14: Deleted current SRO 14 and replaced with RO 14. This affected the SRO written examination outline which is changed.

Admin Examination

- RO A.1 Question #1 (Parameter Verification)
Changed the question. Previous question was beyond RO knowledge level.
- RO A.2 Question #1 (Tagging)
Focused the question on a specific point rather than several general ideas.

JPM Examination

- J1-2: Added a word that was missing on the turnover sheet.
- J1-3: Clarified the initial conditions and turnover sheet to the system configuration.
Step 8 was clarified to reflect the actual component label.
- J1-5: Changed to reflect a different control rod to be used.
Clarified the turnover sheet to the system configuration.
- J1-6: Step "14j" was changed to a critical step.
- J1-7: Added Step 5 (core flow verification). Because step numbering changed, the entire JPM is provided.

Simulator Examination:

- Scenario #1 Added a Reactor Engineering role play for the thermal limit verification.
Clarified the Technical Specifications on Page 14. It was not clear that tables needed to be referenced.
- Scenario #2 Clarified the SRO action on page 17.
- Scenario #3 Added the procedure that is to be used on page 16.

NEW

Question #

RO 30

SRO 20

Examination Outline	Level	RO	SRO
Cross-Reference	Tier #	1	1
	Group #	2	1
	K/A #	295030	295030
		EK2.07	EK2.07
	Importance Rating	3.5	3.8
Knowledge of the interrelations between LOW SUPPRESSION POOL WATER LEVEL and the following: Downcomer/Horizontal Vent Submergence			

Proposed Question:

In the Torus Level Leg of EOP-4, Primary Containment Control, Step TL-3 allows lowering the level band if level CANNOT be maintained within the Technical Specification band.

Which one of the following describes the N1-ODP-PRO-0305, EOP/SAP Technical Bases reason for this lower limit on the level band?

- a. Lower the heat input to containment before taking the actions.
- b. Provide time to try to control torus level to avoid an RPV blowdown.
- c. Extend the time that is permitted to use the torus as a heat sink.
- d. Allow depressurization by other means to avoid ERV operation.

Proposed Answer: b. The delay in the requirement of Step TL-3 to perform additional actions (scram, EOP-2, blowdown) is to continue actions to maintain torus water level > 8 feet.

Explanation (Justification of Distractors):

- a. Scramming the reactor reduces the rate of energy production and the heat input to the drywell. A reactor scram is not required until the determination is made that level cannot be maintained above 8 feet. This action is one of the required actions that is being delayed.
- c. This is not a consideration in the delay before the actions are required.
- d. There is no entry condition for EOP-2, so alternate depressurization is not an option.

Technical Reference(s): N1-ODP-PRO-0305, EOP/SAP Technical Bases
(Attach if not previously provided)

Proposed references to be provided to applicants during the examination:

EOPs with the entry conditions removed

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New

Question History:	Previous NRC Exam
	Previous Test / Quiz

Question Cognitive Level:	Memory of Fundamental Knowledge	1
	Comprehension or Analysis	

10 CFR Part 55 Content:	41.7
	45.8

Comments:

N 5W

Question #

RO 51

Examination Outline	Level	RO
Cross-Reference	Tier #	2
	Group #	1
	K/A #	215004
		4.07
	Importance Rating	3.4
Ability to manually operate and/or monitor in the control room: Verification of proper functioning / operability.		

Proposed Question:

Given the following conditions:

- Reactor is critical
- Control Rod 26-15 is being withdrawn from 24 to position 48
- RWM is operable
- SRMs are partially withdrawn
- The highest SRM indicates 2×10^5 cps and rising
- Reactor period indicates 60 seconds
- All IRM detectors are fully inserted
- IRMs are on mid-scale on Ranges 4 and 5 and rising

The ASSS directs that the startup be stopped. Which one of the following conditions describes why?

- a. The reactor period is too short.
- b. The SRMs are NOT in the correct position.
- c. The control rod withdrawal block has failed.
- d. The proper SRM/IRM overlap is NOT present.

Proposed Answer: c. A control rod block should have occurred at 1×10^5 cps

Explanation (Justification of Distractors):

- a. Reactor period may be as short as 30 seconds, this period is OK.
- b. SRMs are withdrawn when the IRMs are on Range 8 or above.
- d. Proper overlap would have been verified earlier, there is no indication here

of im-proper overlap.

Technical Reference(s): N1-OP-43A, Sect. E.1.6

(Attach if not previously
provided)

Proposed references to be provided to applicants during the examination:

N/A

Learning Objective:

Question Source:	Bank No.	
	Modified Bank #	
	New	New

Question History:	Previous NRC Exam
	Previous Test / Quiz

Question Cognitive Level:	Memory of Fundamental Knowledge	2
	Comprehension or Analysis	

10 CFR Part 55 Content:	41.7
	45.5 to 45.8

Comments:

Examination Outline	Level	SRO
Cross-Reference	Tier #	1
	Group #	1
	K/A #	295003
		AA2.02
	Importance Rating	4.3
Ability to determine and interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF AC POWER: Reactor power / pressure / and level.		

Proposed Question:

The plant is at 100% power when a loss of Power Board 11 occurs. Conditions after the power loss are:

- Reactor power is 45%
- Generator Mwe are slowly rising and lowering
- TCV Positions are cycling
- APRM indications are cycling 12% but the peaks are at different times
- Thirty (30) seconds after the power loss LPRM upscale alarms occur at a constant frequency

Per N1-SOP-02, Unplanned Reactor Power Change, which one of the following describes the required actions?

- a. Raise operating RCS pump speeds to raise core flow.
- b. Continue to monitor nuclear instruments and insert cram rods.
- c. Immediately position the Reactor Mode Switch to SHUTDOWN.
- d. Scram the reactor when LPRM upscale and downscale alarms occur simultaneously.

Proposed Answer: c. Thermal hydraulic instability is detected requiring a manual reactor scram and entry into SOP-1.

Explanation (Justification of Distractors):

- a. This action is appropriate if power oscillations are not present to exit the restricted area. Power oscillations are present requiring a reactor scram.
- b. This action is appropriate if power oscillations are not present and recirc flow has been adjusted. Power oscillations are present requiring a reactor scram.
- d. Upscale or downscale alarms are all that are required for THI.

Technical Reference(s): N1-SOP-2

Proposed references to be provided to applicants during the examination:

None.

Learning Objective:

Question Source:	Bank No. Modified Bank # New	New
Question History:	Previous NRC Exam Previous Test / Quiz	
Question Cognitive Level:	Memory of Fundamental Knowledge Comprehension or Analysis	2
10 CFR Part 55 Content:	41.10 43.5 45.13	

Comments:

Nine Mile Point 1 Category "A" - Examination Outline Cross Reference	
Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.1
Subject Description:	Parameter Verification
Question Number:	1

Question:

A plant startup and power ascension is in progress.

- Reactor Power is 80%
- Computer Point A390 FW ENT RX TEMP W indicates 328.9°F
- Computer Point A392 FW ENT RX TEMP E indicates 329.0°F

Based on the above conditions, what actions are required by the Reactor Operator?

Answer:

Notify the SSS that Feedwater temperature is below the minimum required value for the current power level.

EVALUATOR NOTE:

N1-OP-43A, Reactivity Control, step E.4.7 directs verifying minimum feedwater temperature requirement vs. core thermal power per N1-OP-16, Attachment 4.

N1-OP-16, Attachment 4 indicates the minimum feedwater temperature for 1480 MWth (80% power) is 329.2°F. The data provided is below the minimum required value for feedwater inlet temperature.

Technical Reference(s):

N1-OP-43A, E.4.7, N1-OP-16, Attachment 4

K/A #:	Importance:
2.1.7, 2.1.19,	

Comments:

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Nine Mile Point 1**Category "A" - Examination Outline Cross Reference**

Operating Test Number	Cat "A" Test: 1
Examination Level	RO
Administrative Topic	A.2
Subject Description:	Tagging
Question Number:	1

Question:

During a refueling outage a markup has been issued to isolate and drain Reactor Water Cleanup Filter #11. After single valve isolation it has been determined that Demineralized Water is leaking into the filter.

Using Unit 1 prints show me what must be done to isolate the demineralized water into the Reactor Water Cleanup Filter #11?

Answer:

Review the markup and locate the Demineralized Water to the Filter on P&ID C-18009-C, Sht 2. Determine Valve 35-102 is leaking-by. Go to P&ID C-18034-C, Sht 2 and locate manual isolation valve 55-06.

Technical Reference(s):

P&IDs C-18009-C, Sht 2, C-18034-C, Sht 2

K/A #:

2.1.29, 2.1.24

Importance:**Comments:**

Initial Conditions:

1. LPRM 20-25A failed upscale.
2. There are no other LPRMs inoperable or bypassed.
3. No APRMs are bypassed.
4. The ASSS has completed N1-OP-38C, Attachment 5, and determined that the LPRM 20-25A input to its associated ARPM can be bypassed.

Initiating cue:

Bypass LPRM 20-25A input to its associated APRM per N1-OP-38C.

Note: You are NOT required to bypass the LPRM alarm function for this JPM.

Initial Conditions:

1. The control room ventilation system is being restarted following testing.
2. N1-OP-49, Attachment 1 valve lineup is complete.
3. N1-OP-49, Attachment 2 electrical lineup is complete.
4. Ask the operator for any questions.

Initiating cue:

“(Operator’s name), startup the Control Room Ventilation System with Control Room Circulating Fan 12, Cooling Coil 11, Chilled Water Circulating Pump 11, and Chiller 11 operating in accordance with N1-OP-49.”

Performance Steps	Standard	Grade	Comments
1. Provide repeat back of initiating cue. <i>Evaluator Acknowledge repeat back providing correction if necessary</i>	Proper communications used for repeat back (GAP-OPS-01)	Sat/Unsat	

RECORD START TIME _____

2. •Obtain a copy of the reference procedure and review/utilize the correct section.	N1-OP-49 obtained. - Section E, Startup, referenced.	Sat/Unsat	
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**Note: Step E.1.0 is NOT required
since the valve and electrical lineups
are complete (see initial conditions)**

<i>Performance Steps</i>	<i>Standard</i>	<i>Grade</i>	<i>Comments</i>
7. Place Control Room Emergency Fan 12 control switch in OFF.	Control Room Emergency Fan 12 control switch in OFF.	Pass/Fail	
8. Place Cooling Coil Block Valve selector switch in position 11.	Place Cooling Coil Block Valve selector switch in position 11.	Sat/Unsat	
9. Depress START pushbutton for CHILLED WATER CIRCULATING PUMP 11 and confirm red indicator light lit.	START pushbutton for CHILLED WATER CIRCULATING PUMP 11 is depressed. Checks red indicator light lit.	Sat/Unsat	

Initial Conditions:

1. The control room ventilation system is being restarted following testing.
2. N1-OP-49, Attachment 1 valve lineup is complete.
3. N1-OP-49, Attachment 2 electrical lineup is complete.

Initiating cue:

Startup the Control Room Ventilation System with Control Room Circulating Fan 12, Cooling Coil 11, Chilled Water Circulating Pump 11, and Chiller 11 operating in accordance with N1-OP-49.

Recommended Start Location:

N/A

Simulator Set-up:

- a. IC-24.
- b. RD014243, 42-43, Control Rod Failure – Drift In (F3)
- c. RD093431, 34-31, Control Rod Failure – Drift In (F4)
- d. CRD pump 11 and FCV 11 (A) in service.

Directions to the Instructor/Evaluator:

Prior to performance of this JPM, obtain SSS / CSO general permission to open equipment cabinets and inspection covers. If opening the equipment cabinet or inspection cover will affect Tech. Spec. Operability, operational status, or the effects are unknown, obtain specific SSS / CSO permission.

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SSS, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a “•”.
2. During Evaluated JPM:
 - Self-verification shall be demonstrated.
3. During Training JPM:
 - Self-verification shall be demonstrated.
 - No other verification shall be demonstrated.

References:

1. N1-OP-5, F.5.0
2. N1-ARP-F3, 2-4
K/A 201001 A2.07 (3.2/3.1), 201002 A2.02 (3.2/3.3)

Tools and Equipment:

1. None

Task Standard: Manual reactor scram is inserted when the second rod drift is received and N1-SOP-1 is entered.

Performance Steps	Standard	Grade	Comments
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Alternate Path: After the AO has been directed to switch the FCVs, insert the ROD DRIFT IN malfunction for control rod 42-43 (F3).

When the candidate positions the EMER ROD IN switch to insert rod 42-43 OR when rod 42-43 is at position 30, insert the ROD DRIFT IN malfunction for control rod 34-31.

6. Respond to annunciator F3-2-6.

Silence and acknowledge alarm.

Sat/Unsat

Reference ARP F3-2-6.

a. Confirm control rod 42-43 is drifting in.

Observe F Panel RPIS indication
AND/OR
Control rod position of process computer.

Sat/Unsat

Determines control rod 42-43 is drifting in.

b. • If > 1 rod is drifting, then insert a manual reactor scram.
Enter N1-SOP-1, Reactor Scram.

Determines that only one rod is drifting.
Determines reactor scram is NOT required.

Pass/Fail

<i>Performance Steps</i>	<i>Standard</i>	<i>Grade</i>	<i>Comments</i>
c. Select drifting rod and insert to notch 00 using EMERGENCY ROD IN.	<p>Depress rod select matrix p.b. for control rod 42-43 and verify backlight is lit.</p> <p>Verify full core display select light (white) for control rod 42-43 is lit.</p> <p>Positions EMERGENCY ROD IN to INSERT and hold.</p> <p>Verify 42-43 is moving inward using RPIS.</p>		
d. • If > 1 rod is drifting, then insert a manual reactor scram. Enter N1-SOP-1, Reactor Scram.	<p>Determines that control rod 34-31 is also drifting (2 rods drifting).</p> <p>Determines reactor scram is required.</p> <p>Place Reactor Mode Switch to shutdown.</p>	Pass/Fail	
e. Reports the Mode switch is in shutdown, RPV water level, RPV pressure and control rod position status.	Report received and acknowledged.	Sat/Unsat	

End of JPM

TERMINATING CUE: Manual reactor scram is inserted when the second rod drift is received and N1-SOP-1 is entered.

RECORD STOP TIME _____

Initial Conditions:

1. The plant is at 100% power.
2. CRD FCV A (44-151), which is in service needs to be removed from service.
3. Communications are established between the Control Room and RB elev. 237'.
4. For this JPM you are accountable to respond to all alarms at the F Panel and take the required actions.

Initiating cue:

Switch CRD FCV from 11 (44-151) to 12 (44-159) per N1-OP-5, Section F.5.0.

<i>Performance Steps</i>	<i>Standard</i>	<i>Grade</i>	<i>Comments</i>
f. 201.2-03, DRYWELL N2 MAKEUP AND BLEED ISOL VALVE 12	Observes green light ON. Observes red light OFF.	Sat/Unsat	
g. 201.2-136, P SYS DISCH ROUTE	Observes green light ON. Observes red light OFF.	Sat/Unsat	
h. 201-11, TORUS VENT TO CONDENSER	Observes green light ON. Observes red light OFF.	Sat/Unsat	
i. 202-47, EM VENTILATION TIE BV	Observes green light ON. Observes red light OFF.	Sat/Unsat	
j. 202-36, EM VENTILATION FROM REACTOR BLDG BV	Observes red light ON. Unlocks control switch and rotates it to CLOSE Observes red light OFF and green light ON	Pass/Fail	
15. Open 201-18, EM VENTILATION FROM DRYWELL AND TORUS BV	Positions c/s to OPEN. Observes red light ON. Observes green light OFF.	Pass/Fail	

NIAGARA MOHAWK POWER CORPORATION
OPERATOR JOB PERFORMANCE MEASURE

Title: Recirc Pump Startup During Power Operations

Revision: 0

Task Number: 2239010401

Approvals:

General Supervisor Date
Operations Training (Designee)

General Supervisor Date
Operations (Designee)

Configuration Control Date

Performer: _____ (RO/SRO)

Trainer/Evaluator: _____

Evaluation Method: X Perform Simulate

Evaluation Location: Plant X Simulator

Expected Completion Time: 30 minutes Time Critical Task: NO Alternate Path Task: NO

Start Time: _____ Stop Time: _____ Completion Time: _____

JPM Overall Rating: Pass Fail

NOTE: A JPM overall rating of fail shall be given if any critical step is graded as fail. Any grade of unsat or individual competency area unsat requires a comment.

Comments:

Evaluator Signature: _____

Date: _____

Recommended Start Location:
N/A

Simulator Set-up:

- a. Initialize to power operation IC with four recirc pumps in operation. Recirc pump #13 is secured.
- b. Reactor power at 85% power.
- c. Ensure recirc flow is $< 50 \times 10^6$ lbm/hr.
- d. Recirc pump 13:
 - ensure that the suction valve and the discharge bypass valve are open, and the discharge valve is closed (N1-OP-1, H.14.0)
 - ensure the pump controller is in manual at 40%.
- e. Recirc loop 13 loop temperature is within 17°F of an operating loop temperature.

Directions to the Instructor/Evaluator:

Prior to performance of this JPM, obtain SSS / CSO general permission to open equipment cabinets and inspection covers. If opening the equipment cabinet or inspection cover will affect Tech. Spec. Operability, operational status, or the effects are unknown, obtain specific SSS / CSO permission.

Directions to Operators:

Read Before Every JPM Performance:

For the performance of this JPM, I will function as the SSS, CSO, and Auxiliary Operators. Prior to providing direction to perform this task, I will provide you with the initial conditions and answer any questions. During task performance, I will identify the steps to be simulated, or discuss and provide cues as necessary.

Read Before Each Evaluated JPM Performance:

This evaluated JPM is a measure of your ability to perform this task independently. The Control Room Supervisor has determined that a verifier is not available and that additional / concurrent verification will not be provided; therefore it should not be requested.

Read Before Each Training JPM Performance:

During this Training JPM, applicable methods of verification are expected to be used. Therefore, either another individual or I will act as the additional / concurrent verifier.

Notes to Instructor / Evaluator:

1. Critical steps are identified as **Pass/Fail**. All steps are sequenced critical unless denoted by a "•".
2. During Evaluated JPM:
 - Self-verification shall be demonstrated.
3. During Training JPM:
 - Self-verification shall be demonstrated.
 - No other verification shall be demonstrated.

References:

1. N1-OP-1, H.14.0
 2. N1-OP-1, H.5.0
- K/A 202001 A4.01 (3.7/3.7)

Tools and Equipment:

1. None

Task Standard: Recirc Pump 13 is in operation with its discharge valve open and its flow controller in automatic.

Initial Conditions:

1. The plant is at 85% power with four recirc pumps in operation.
2. The mechanical stops have NOT been adjusted for four (4) loop operation.
3. Recirc loop #13 flow instrument is valved in.
4. Recirc pump #13 is secured.
5. Reactor engineer has reported that the projected power increase from a recirc pump start will NOT violate thermal limits or preconditioning limits.
6. Ask the operator for any questions.

Initiating cue:

“(Operator’s name), start recirc pump 13 per N1-OP-1, Section H.5.0.”

<i>Performance Steps</i>	<i>Standard</i>	<i>Grade</i>	<i>Comments</i>
1. Provide repeat back of initiating cue. <i>Evaluator Acknowledge repeat back providing correction if necessary</i>	Proper communications used for repeat back (GAP-OPS-O1)	Sat/Unsat	

RECORD START TIME _____

2. •Obtain a copy of the reference procedure and review/utilize the correct section.	N1-OP-1 obtained. - Section H.5.0 referenced.	Sat/Unsat	
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Performance Steps	Standard	Grade	Comments
3. Verify recirc pump is unisolated. Checks the following valves are OPEN:			
a. REACTOR R PUMP 13 SUCTION VALVE	Observes green light OFF. Observes red light ON.	Sat/Unsat	
b. REACTOR R PUMP 13 DISCHARGE BYPASS VALVE	Observes green light OFF. Observes red light ON.	Sat/Unsat	
4. Verify loop flow instrument is valved in.	Confirms through shift management that the flow instrument is valved in.	Sat/Unsat	
Cue: As the ASSS, the recirc loop 13 flow instrument is valved in.			
5. Verify Recirculation Flow is less than 50×10^6 lbm/hr.	Verify Recirculation Flow is less than 50×10^6 lbm/hr using core flow indication on E Panel. F Panel core flow indication may be used.	Sat/Unsat	
6. If the mechanical stops were adjusted for 4 loop operation, then place the operating loops on the local M/A controller.	Confirms through shift management that the mechanical stops are adjusted for 5 loop operation.	Sat/Unsat	
Cue: As the ASSS, the Mechanical stops are adjusted for 5 loop operation.			

Performance Steps	Standard	Grade	Comments
7. Confirm idle loop temperature is within 17°F of an operating loop temperature.	<p>Using computer points: Compare recirc pump 13 suction temp (A435) to another pump suction temp (A427, A431, A439, or A443). Confirm within 17°F of each other.</p> <p>Compare recirc pump 13 discharge temp (A436) to another pump discharge temp (A428, A432, A440, or A444). Confirm within 17°F of each other.</p>	Sat/Unsat	
8. Verify the following are RESET for recirc pump 13:			
a. LOCKOUT RELAY Cue: If asked, as the AO report the LOCKOUT RELAY for recirc pump 13 in the Aux. Control Room is reset.	Direct an operator to the Auxiliary Control Room to check the LOCKOUT RELAY is RESET.	Sat/Unsat	
b. PUMP MOTOR VIBRATION RESET	Check computer for no alarms. Depress reset pushbutton (not required)	Sat/Unsat	
c. SCOOP TUBE AIR FAILURE LOCK RESET	Check scoop tube lock failure light clear. Depress reset pushbutton (not required)	Sat/Unsat	
9. Verify recirc pump M/A station AUTO/BAL/MAN switch to MAN.	Verify AUTO/BAL/MAN switch positioned to MAN.	Sat/Unsat	

<i>Performance Steps</i>	<i>Standard</i>	<i>Grade</i>	<i>Comments</i>
10. Set RECIRC PUMP 13 SPEED CONTROL to match running pumps.	Position RECIRC PUMP 13 SPEED CONTROL to match running pumps. 50% speed (maximum) is NOT exceeded	Pass/Fail	
11. Verify scoop tube position at 40%.	Verify scoop tube position indicator at 40%.	Sat/Unsat	
12. Verify REACTOR R PUMP 13 DISCHARGE VALVE is closed.	Observes green light ON. Observes red light OFF.	Sat/Unsat	
13. Verify the following valves are OPEN:			
a. REACTOR R PUMP 13 SUCTION VALVE	Observes green light OFF. Observes red light ON.	Sat/Unsat	
b. REACTOR R PUMP 13 DISCHARGE BYPASS VALVE	Observes green light OFF. Observes red light ON.	Sat/Unsat	
14. Announce component start.	Announces Recirc Pump 13 start.	Sat/Unsat	

Performance Steps	Standard	Grade	Comments
15. Place REACTOR RP MOTOR 13 MG SET switch to START and observe the following:	Positions REACTOR RP MOTOR 13 MG SET c/s to START. Verify GREEN light off and RED light on.	Pass/Fail	
a. MG MOTOR starts. b. MG Generator accelerates to proper speed. c. Generator Field breaker closes. d. Generator slows to 20% speed. Cue: If REACT RECIRC PUMP - MOTOR 13 (F2, 1-3) alarms, inform the candidate that the CSO will check the ARP and computer. Continue with the pump start. Cue: Inform the candidate that HIGH VIBRATION alarmed as expected and is clear. Continue with the pump start.	Monitors for normal start indications - observe: - AMPS rise then lower. - MG Generator accelerates to 50-60 hertz. - Generator field breaker closes (MG Generator speed lowers) - Scoop tube positions to about 20% - Generator slows to 20% speed (10 – 12 hertz).	Pass/Fail	
16. Open REACTOR R PUMP 13 DISCHARGE VALVE.	Hold in OPEN position REACTOR R PUMP 13 DISCHARGE VALVE control switch until RED light on (GREEN light off).	Pass/Fail	
17. If desired, maintain Total Recirc Flow constant by reducing other RRP speeds.	Confirms through shift management if the other recirc pump speeds should be adjusted.	Sat/Unsat	
Cue: As the ASSS, inform the candidate that it is NOT necessary to adjust the speed of the other RRP.			

Performance Steps	Standard	Grade	Comments
18. Verify RRP 13 is within the following limits: <ul style="list-style-type: none"> - Generator MW <0.790 - Generator amps <240 - RRP flow <16.8x106 lbm/hr 	Confirms RRP 13: <ul style="list-style-type: none"> - Generator MW <0.790 - Generator amps <240 - RRP flow <16.8x106 lbm/hr 	Sat/Unsat	
19. Adjust pump speed to match other pumps.	Adjust RRP 13 flow controller until speed is matched with other RRPs.		
20. When speed matches other pumps and deviation meter is at zero, place RECIRC PUMP 13 SPEED CONTROL in AUTO or BALANCE, if desired. Cue: As the ASSS, inform the candidate to place RRP 13 in AUTO on the master RRP controller.	Rotate RECIRC PUMP 13 SPEED CONTROL to AUTO.	Sat/Unsat	
21. Verify P/F map on E panel updated to 5 loop operation.	Selects 5 loop P/F map at the E panel.	Sat/Unsat	

<i>Performance Steps</i>	<i>Standard</i>	<i>Grade</i>	<i>Comments</i>
22. Verify reset 50 SR PUMP MOTOR STALLED ROTOR target (Aux CR). Cue: As the Aux Operator, report that 50 SR PUMP MOTOR STALLED ROTOR target is reset.	Direct an Aux Operator to verify reset 50 SR PUMP MOTOR STALLED ROTOR target (Aux CR).	Sat/Unsat	
23. Report to SSS/CSO that Recirc Pump 13 has been started.	Report received and acknowledged.	Sat/Unsat	

End of JPM

TERMINATING CUE: Recirc Pump 13 is in operation with its discharge valve open and its flow controller in automatic.

RECORD STOP TIME_____

Initial Conditions:

The plant is at 85% power with four recirc pumps in operation.

The mechanical stops have NOT been adjusted for four (4) loop operation.

Recirc loop #13 flow instrument is valved in.

Recirc pump #13 is secured.

Reactor engineer has reported that the projected power increase from a recirc pump start will NOT violate thermal limits or preconditioning limits.

Initiating cue:

Start recirc pump 13 per N1-OP-1, Section H.5.0.

IV. SCENARIO

INSTRUCTOR ACTIONS/ PLANT RESPONSE

OPERATOR ACTIONS

- **If directed** Removes RRMG from service **in accordance with N1-OP-1, H.2.0**
 - Verify OPEN Recirc Pump Disc Bypass Valve.
 - Lower Recirc Pump 13 flow to 6-8x10⁶ lb/hr.
 - Close Recirc Pump 13 Disc Valve.
 - Stop Reactor RP Motor 13
 - Hold Recirc Pump 13 Disc Valve in OPEN position for 2-3 secs.
 - After 30 min. Close Disc Valve
- Monitor and adjust to maintain proper feedwater pump loading.

ROLE PLAY:

As operations management (if called) direct power be restored to 100%.

As RE (if called) provide the SRO with power maneuver to raise power to 100% using Recirc flow, not to exceed 6 Mwe/min.

As RE (if called) report that the thermal limits are met.

SRO

- Directs power restored to 100% after Recirc Pump 13 discharge valve is closed and conditions established.

IV. SCENARIO

INSTRUCTOR ACTIONS/ PLANT RESPONSE

OPERATOR ACTIONS

ACTIVATE malfunction by depressing F5 key

NM37B, APRM Channel 12 Failure INOP (F5)

Event 5 RO (I)

At F Panel, 4 RPS CH 11 white lights extinguish indicating a half reactor trip and Red BU Scram Vent and Drain light extinguishes.

Expected Annunciators:

F2 (1-6) APRM 11-14

F3 (4-4) ROD BLOCK

*F1 (1-1) RPS CH 11 REACT NEUTRON
MONITOR*

F1 (2-1) RPS CH 11 AUTO REACTOR TRIP

At F Panel, 4 RPS CH 11 white lights illuminate indicating a RPS CH 11 has been reset and Red BU Scram Vent and Drain light illuminates.

RO

PO-17.0

Respond to Annunciator

- Determines APRM INOP trip
- Bypass APRM 12 using N1-OP-38C, sect. H.1.0
 - Place APRM 12 in BYPASS
 - Verify APRM 12 BYPASS light lit on E Panel.
 - Verify APRM Bypass light lit on LPRM/APRM Drawer

- Depress Reactor Trip Reset pushbutton to reset half scram

SRO

- Check T.S. table 3.6.2.a(9) (b), table 3.6.2.g(3)
- Direct RO to Bypass APRM 12 per N1-OP-38C and reset the half scram.
- Verifies (or directs) operation is within the P/F map (ARP F2-1-6)

IV. SCENARIO

INSTRUCTOR ACTIONS/ PLANT RESPONSE

OPERATOR ACTIONS

<p>ACTIVATE malfunction by depressing F8 key</p> <p>TC06, EPR oscillates (F8)</p> <p>Event 7 Crew (M)</p> <p>Expected Annunciator</p> <p><i>A2 (4-4), TURBINE MECHANICAL PRESS. REG IN CONTROL</i></p>	<p><u>SRO</u></p> <p>Diagnose MPR cycling</p> <p>Enter SOP-2</p>
	<p><u>BOP</u></p> <p>Observes RPV Press and recognizes EPR is oscillating</p> <ul style="list-style-type: none"> • Lowers MPR setpoint to place MPR in control and stop oscillations per N1-OP-31, H.1.0. • Attempt to raise EPR
<p>ACTIVATE malfunctions by depressing F7 key</p> <p>TC05, Electrical Pressure Regulator Fails – Low (F7)</p> <p>TC08, Mechanical Pressure Regulator Fails – Low (F7)</p> <p>RP04A, RPS Channel 11 Failure to Scram Automatic (F7)</p> <p>RD41, Scram Dump Volume Rupture (100%) (F7)</p> <p>RX01, Fuel Cladding Failure (10%)</p> <p>After the reactor has been scrammed insert:</p> <p>RP03, Reactor Scram (F6)</p>	<p><u>SRO</u></p> <p>Enter N1-SOP-1</p> <ul style="list-style-type: none"> • Determine a failure of RPS 11 to automatically scram and direct inserting a MANUAL trip of RPS 11 channel. • Enters N1-EOP-2 on High RPV Pressure

IV. SCENARIO

INSTRUCTOR ACTIONS/ PLANT RESPONSE

OPERATOR ACTIONS

Torus temperature rises as heat is rejected to the containment through open ERV's.

ROLE PLAY:

As NAO when directed pull fuses FU8/FU9, acknowledge the request,

Wait 2 minutes then ACTIVATE F6, Remote, FW24, Removal of HPCI fuses.

Then report the HPCI fuses FU8/FU9 have been removed.

BOP

- Bypass ADS
- Initiate ARI
- Verify all Recirc Pumps tripped
- Verify M/S in REFUEL

SRO

- Directs RPV pressure band of 800 to 1000 psig using EC's and ERV's
- Direct execution of EOP-3.1, ALTERNATE CONTROL ROD INSERTION
- Direct terminating and preventing RPV injection per EOP-1.0, Att. 24
- Direct RPV level lowered to -41 in.

BOP

- Perform EOP-1.0, Att. 24
 - Place FW controllers 11 & 12 in Manual
 - Manually Close FWP Valves 11 & 12
 - Direct NAO to pull fuses FU8/FU9
 - Allow level to lower
 - Report when RPV level is -41 in on the FZ instr.
- Manually opens ERV's to maintain 800 to 1000 psig, as directed.