VERMONT YANKEE
NUCLEAR POWER CORPORATION
185 Old Ferry Road, Brattleboro, VT 05301-7002
(802) 257-5271

Original Submittal and Revised

April 12, 1999
BVY 99-050
TDL 99-007

Regional Administrator, Region 1
ATTN: Mr. Julian H. Williams
United States Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

References: (a) License No. DPR-28 (Docket No. 50-271)

Subject: Reactor and Senior Reactor Operator Licensing Examinations – Vermont Yankee, May 1999

Enclosed, as Attachment I, for NRC review are the written examinations and operating tests intended to be given to the license candidates at Vermont Yankee the week of May 10, 1999. Enclosed within Attachment I are the applicable quality assurance checklists per NUREG 1021, Interim Rev. 8.

The enclosed materials are to be withheld from public disclosure until after the related licensing examination is complete.

If you have any questions, please contact Mr. Michael Gosekamp, Operations Training Supervisor, in our Brattleboro office at (802) 258-4161.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Michael Gosekamp
Operations Training Supervisor

A070

Attachment I - Withhold from Public Disclosure per NUREG 1021, Interim Rev. 8

c: USNRC Resident Inspector – VYNPS (Attachment I – Withhold from Public Disclosure)
USNRC Project Manager – VYNPS (Attachment I – Withhold from Public Disclosure)
Document Control Desk (Attachment I – Withhold from Public Disclosure)
VT Department of Public Service (Attachment I – Withhold from Public Disclosure)

Facility: Vermont Yankee Date of Exam: 05/10/99 Exam Level: RO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	2	2	3				2	1			3	13
	2	2	4	2				4	4			3	19
	3			1				1	2				4
	Tier Totals	4	6	6				7	7			6	36
2. Plant Systems	1	3	2	3	2	2	2	4	3	2	3	2	28
	2	2		1	3	2	2	2	2	3	1	1	19
	3	1			1		1		1				4
	Tier Totals	6	2	4	6	4	5	6	6	5	4	3	51
3. Generic Knowledge and Abilities		Cat 1			Cat 2			Cat 3			Cat 4		
		5			2			3			3		13

Note:
- Attempt to distribute topics among all K/A Categories: select at least one topic from every K/A category within each tier.
- Actual point totals must match those specified in the table.
- Select topics from many systems: avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
- Systems/evolutions within each group are identified on the associated outline.
- The shaded areas are not applicable to the category/tier.

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1								ES-401-2	
Number #	Name	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts.
295005	Main Turbine Generator Trip			X				AK3.01 Reactor scram	3.8	1
295006	SCRAM			X				AK3.01 Reactor water level response	3.8	1
295007	High Reactor Pressure			X				AK3.02 HPCI operation: Plant-Specific	3.7	1
295009	Low Reactor Water Level				X			AA1.02 Reactor water level control	4.0	1
295009	Low Reactor Water Level		X					AK2.02 Reactor water level control	3.9	1
295010	High Drywell Pressure									
295014	Inadvertent Reactivity Addition									
295015	Incomplete SCRAM	X						AK1.03 Reactivity effects	3.8	1
295015	Incomplete SCRAM						X	2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls	4.0	1
295024	High Drywell Pressure						X	2.4.20 Knowledge of operational implications of EOP warnings, cautions, and notes	3.3	1
295024	High Drywell Pressure		X					EK2.18 Ventilation	3.3	1
295025	High Reactor Pressure				X			EA1.03 Safety/relief valves: Plant-Specific	4.4	1
295031	Reactor Low Water Level					X		EA2.04 Adequate core cooling	4.6	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown						X	2.4.1 Knowledge of EOP entry conditions and immediate action steps	4.3	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	X						EK1.04 Hot shutdown boron weight: Plant-Specific	3.4	1
500000	High Containment Hydrogen Concentration									
	K/A Category Point Totals:	2	2	3	2	1	3	Group Point Total:		13

ES-401	BWR RO Examination Outline								ES-401-2	
	Emergency and Abnormal Plant Evolutions – Tier 1/Group 2									
Number #	Name	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts.
295001	Partial or Complete Loss of Forced Core Flow Circulation		X					AK2.01 Recirculation system	3.6	1
295001	Partial or Complete Loss of Forced Core Flow Circulation	X						AK1.02 Power/flow distribution	3.3	1
295001	Partial or Complete Loss of Forced Core Flow Circulation					X		AA2.03 Actual core flow	3.3	1
295002	Loss of Main Condenser Vacuum			X				AK3.01 Reactor SCRAM: Plant-Specific	3.7	1
295003	Partial or Complete Loss of A.C. Power				X			AA1.01 A.C. electrical distribution system	3.7	1
295003	Partial or Complete Loss of A.C. Power		X					AK2.04 A.C. electrical loads	3.4	1
295004	Partial or Complete Loss of D.C. Power		X					AK2.03 D.C. bus loads	3.3	1
295008	High Reactor Water Level						X	2.4.11 Knowledge of abnormal condition procedures	3.4	1
295008	High Reactor Water Level				X			AA1.07 Main turbine: Plant-Specific	3.4	1
295011	High Containment Temperature (Mark III Containment Only)									
295012	High Drywell Temperature	X						AK1.01 Pressure/temperature relationship	3.3	1
295013	High Suppression Pool Temperature									
295016	Control Room Abandonment			X				AK3.01 Reactor SCRAM	4.1	1
295016	Control Room Abandonment					X		AA2.03 Reactor pressure	4.3	1
295017	High Off-Site Release Rate									
295018	Partial or Complete Loss of Component Cooling Water						X	2.4.24 Knowledge of loss of cooling water procedures	3.3	1
295019	Partial or Complete Loss of Instrument Air					X		AA2.02 Status of safety-related instrument air system loads (see AK2.1 – AK2.19)	3.6	1
295019	Partial or Complete Loss of Instrument Air		X					AK2.03 Reactor feedwater	3.2	1
295020	Inadvertent Containment Isolation									
295022	Loss of CRD Pumps					X		AA2.01 Accumulator pressure	3.5	1
295026	Suppression Pool High Water Temperature						X	2.4.6 Knowledge symptom based EOP mitigation strategies	3.1	1
295027	High Containment Temperature (Mark III Containment Only)									
295028	High Drywell Temperature				X			EA1.02 Drywell ventilation system	3.9	1

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2								ES-401-2	
Number #	Name	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts.
295029	High Suppression Pool Water Level									
295030	Low Suppression Pool Water Level									
295033	High Secondary Containment Area Radiation Levels				X			EA1.01 Area radiation monitoring system	3.9	1
295034	Secondary Containment Ventilation High Radiation									
295038	High Off-Site Release Rate									
600000	Plant Fire On Site									
	K/A Category Point Totals:	2	4	2	4	4	3	Group Point Total:		19

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 3								ES-401-2	
Number #	Name	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts.
295021	Loss of Shutdown Cooling				X			AA1.04 Alternate heat removal methods	3.7	1
295021	Loss of Shutdown Cooling					X		AA2.04 Reactor water temperature	3.6	1
295023	Refueling Accidents									
295032	High Secondary Containment Area Temperature			X				EK3.01 Emergency/normal depressurization	3.5	1
295035	Secondary Containment High Differential Pressure									
295036	Secondary Containment High Sump/Area Water Level					X		EA2.02 Water level in the affected area	3.1	1
	K/A Category Point Totals:	0	0	1	1	2	0	Group Point Total:		4

ES-401	BWR RO Examination Outline												ES-401-2	
	Emergency and Abnormal Plant Evolutions – Tier 2/Group 1													
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
215005	Average Power Range Monitor/Local Power Range Monitor System	X											K1.04 LPRM channels	3.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System	X											K1.01 RPS	4.0	1
216000	Nuclear Boiler Instrumentation								X				A2.07 Reference leg flashing	3.4	1
217000	Reactor Core Isolation Cooling System (RCIC)		X										K2.01 Motor operated valves	2.8	1
218000	Automatic Depressurization System					X							K5.01 ADS logic operation	3.8	1
223001	Primary Containment System and Auxiliaries														
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off	X											K1.01 Main steam system	3.8	1
239002	Relief/Safety Valves						X						K6.02 Air (Nitrogen) supply; Plant Specific	3.4	1
241000	Reactor/Turbine Pressure Regulating System			X									K3.02 Reactor pressure	4.2	1
259001	Reactor Feedwater System						X						K6.05 Component cooling water systems	2.7	1
259001	Reactor Feedwater System									X			A3.01 RFP auto start; Plant-Specific	3.3	1
259002	Reactor Water Level Control System														
261000	Standby Gas Treatment System							X					A1.01 System flow	2.9	1
264000	Emergency Generators (Diesel/Jet)				X								K4.07 Local operation and control	3.3	1
	K/A Category Point Totals:	3	2	3	2	2	2	4	3	2	3	2	Group Point Total:		28

?

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 2/Group 1													ES-401-2	
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
215004	Source Range Monitor (SRM) System										X		A4.07 Verification of proper functioning/operability	3.4	1
215005	Average Power Range Monitor/Local Power Range Monitor System	X											K1.04 LPRM channels	3.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System	X											K1.01 RPS	4.0	1
216000	Nuclear Boiler Instrumentation								X				A2.07 Reference leg flashing	3.4	1
217000	Reactor Core Isolation Cooling System (RCIC)		X										K2.01 Motor operated valves	2.8	1
218000	Automatic Depressurization System					X							K5.01 ADS logic operation	3.8	1
223001	Primary Containment System and Auxiliaries														
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off	X											K1.01 Main steam system	3.8	1
239002	Relief/Safety Valves						X						K6.02 Air (Nitrogen) supply; Plant Specific	3.4	1
241000	Reactor/Turbine Pressure Regulating System			X									K3.02 Reactor pressure	4.2	1
259001	Reactor Feedwater System						X						K6.05 Component cooling water systems	2.7	1
259001	Reactor Feedwater System									X			A3.01 RFP auto start; Plant-Specific	3.3	1
259002	Reactor Water Level Control System														
261000	Standby Gas Treatment System							X					A1.01 System flow	2.9	1
264000	Emergency Generators (Diesel/Jet)				X								K4.07 Local operation and control	3.3	1
	K/A Category Point Totals:	3	2	3	2	2	2	4	3	2	3	2	Group Point Total:		28

This outline does not make sense. It does not make sense

1 1 ?

2, but someone

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 2/Group 2												ES-401-2	
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
201003	Control Rod and Drive Mechanism	X											K1.01 Control rod drive hydraulic system	3.2	1
201003	Control Rod and Drive Mechanism											X	2.4.11 Knowledge of abnormal condition procedures	3.4	1
201004	Rod Sequence Control System (Plant Specific)														
201006	Rod Worth Minimizer System (RWM) (Plant Specific)					X							K5.12 Withdraw block: Plant-Specific (Not-BWR6)	3.5	1
202001	Recirculation System								X				A2.24 Valve opening	3.1	1
204000	Reactor Water Cleanup System								X				A2.07 Loss of plant air systems	2.5	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode)					X							K5.02 Valve operation	2.8	1
214000	Rod Position Information System														
215002	Rod Block Monitor System						X						K6.05 LPRM detectors: BWR-3, 4, 5	2.8	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode										X		A4.02 Valve lineup	3.7	1
226001	RHR/LPCI: Containment Spray System Mode														
230000	RHR?LPCI: Torus/Suppression Pool Spray Mode														
239001	Main and Reheat Steam System														
245000	Main Turbine Generator and Auxiliary Systems							X					A1.05 Reactor pressure	3.5	1
256000	Reactor Condensate System														
262001	A.C. Electrical Distribution									X			A3.02 Automatic bus transfer	3.2	1
262002	Uninterruptable Power Supply (A.C./D.C.)				X								K4.01 Transfer from preferred power to alternate power supplies	3.1	1
263000	D.C. Electrical Distribution				X								K4.01 Manual/automatic transfers of control: Plant Specific	3.1	1
263000	D.C. Electrical Distribution			X									K3.03 Systems with D.C. components (i.e. valves, motors, solenoids, etc.)	3.4	1

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 2/Group 2												ES-401-2	
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
271000	Offgas System	X											K1.01 Condenser air removal system	3.1	1
272000	Radiation Monitoring System						X						K6.03 A.C. power	2.8	1
272000	Radiation Monitoring System							X					A1.01 Lights, alarms, and indications associated with normal operations	3.2	1
286000	Fire Protection System									X			A3.01 Fire water pump start	3.4	1
290001	Secondary Containment														
290003	Control Room HVAC									X			A3.01 Initiation/reconfiguration	3.3	1
300000	Instrument Air System (IAS)				X								K4.02 Cross-over to other air systems	3.0	1
400000	Component Cooling Water system (CCWS)														
	K/A Category Point Totals:	2	0	1	3	2	2	2	2	3	1	1	Group Point Total:		19

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 2/Group 3												ES-401-2	
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
215001	Traversing In-Core Probe														
233000	Fuel Pool Cooling and Clean-up								X				A2.02 Low pool level	3.1	1
234000	Fuel Handling Equipment				X								K4.01 Prevention of core alteration during control rod movements	3.3	1
239003	MSIV Leakage Control System														
268000	Radwaste														
288000	Plant Ventilation Systems						X						K6.03 Plant air systems	2.7	1
290002	Reactor Vessel Internals	X											K1.10 CRD hydraulic system	3.1	1
	K/A Category Point Totals:	1	0	0	1	0	1	0	1	0	0	0	Group Point Total:		4

Facility: Vermont Yankee	Date of Exam: 05/10/99		Exam Level: RO	
Category	KA#	KA Topic	Imp.	Points
Conduct of Operations	2.1.01	Knowledge of conduct of operations requirements	3.7	1
	2.1.02	Knowledge of Operator responsibilities during all modes of plant operation	3.0	2
	2.1.19	Ability to use plant computer to obtain and evaluate parametric information on system or component status	3.0	1
	2.1.20	Ability to execute procedure steps	4.3	1
		Total Points		5
Equipment Control	2.2.13	Knowledge of tagging and clearance procedures	3.6	1
	2.2.22	Knowledge of limiting conditions for operations and safety limits	3.4	1
		Total Points		2
Radiation Control	2.3.10	Ability to perform procedures to reduce excessive levels of radiation	2.9	1
	2.3.11	Ability to control radiation releases	2.7	1
	2.3.09	Knowledge of the process for performing a containment purge	2.5	1
		Total Points		3
Emergency Procedures	2.4.17	Knowledge of EOP terms and definitions	3.1	1
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions including: 1. Reactivity control 2. Core cooling and heat removal 3. Reactor coolant system integrity 4. Containment conditions 5. Radioactivity release control	3.7	1
	2.4.29	Knowledge of the emergency plan	2.6	1
		Total Points		3
Tier 3 Target Point Total (RO/SRO)				13

ATTACHMENT I

Facility: Vermont Yankee Date of Examination: _____ Examination Level (circle one): RO / SRO Operating Test Number: _____		
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Plant Parameter Verification	JPM – Calculate Drywell Temperature Profile.
A.1	Reactor Plant Startup	Question – When withdrawing rods to achieve criticality, describe the required actions for a short SRM period.
		Question – With rods withdrawn, describe the requirements to bypass the RWM.
A.2	Tagging and Clearances	JPM – Hang white tag on control room circuit breaker
A.3	Use of Survey Instruments	JPM – Perform survey of personal items carried into the RCA.
A.4	Emergency Communciations	JPM – As the Emergency Communicator, make plant announcements,

Facility: _____ Date of Examination: _____

Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No: _____

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G – Importance – Description
1. RPV Venting via RCIC M, S	4	a. RCIC system operation – valve logic 217000 A2.12 3.0
		b. CST low level 217000 K6.04 3.5
2. Reset a GPI isolation D, S	5	a. PCIS IOPL 223002 A3.01 3.4
		b. MSIV Reopening 239001 K4.09 3.3
3. Terminate and Prevent Injection during ATWS D, S	1	a. RPV Water Level (90") Bases 295037 EK3.03 4.1
		b. T&P during an RPVED 295037 EA2.06 4.0
4. Transfer Station Loads from S/U to Aux D, S, L	6	a. Parallel Operation 262001 A4.04 3.6
		b. Outage Operation 295003 AA2.04 3.5
5. Reactor Scram Reset D, S	7	a. RPS Logic 212000 K5.02 3.3
		b. Individual Control Rod Scram 212000 A4.13 3.4
6. Transfer Press Control MPR to EPR N, S	3	a. EPR Power Supply Loss 241000 A2.11 3.1
		b. 1st Stage Press/RPS Bypass 241000 K4.05 3.7
7. FWLC Shift N, S, A	2	a. FWLC with a reference leg leak 259001 A2.07 3.7
		b. Condenser Hotwell Makeup 256000 A2.06 3.2
8. Isolate/Vent Scram Air Header D, P, R	1	a. Bases for CRD-56 Operation 295037 EA1.05 3.9
		b. CRD System Response to Vent 295019 AK2.01 3.8
9. Operate SRV from RCIC Room D, P, R	3	a. Tailpipe Temp Predictions 239002 A1.01 3.3
		b. Appendix R Bypass Switch Logic 295016 AK3.03 3.5
10. Open Rx Bldg RR Door D, P, R	5	a. Secondary Containment Definition G.2.1.27 2.8
		b. SBGT System Initiation Logic 261000 K4.01 3.7

* 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

Facility: Vermont Yankee Date of Examination: _____ Examination Level (circle one): RO / SRO Operating Test Number: _____		
Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Plant Parameter Verification	JPM – Calculate Drywell Temperature Profile.
A.1	Reactor Plant Startup	Question – When withdrawing rods to achieve criticality, descriibe the required actions for a short SRM period.
		Question – With rods withdrawn, describe the requirements to bypass the RWM.
A.2	Tagging and Clearances	JPM – Hang white tag on control room circuit breaker
A.3	Use of Survey Instruments	JPM – Perform survey of personal items carried into the RCA.
A.4	Emergency Communciations	JPM – As the Emergency Communicator, make plant announcements,

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Drywell Temperature Profile

Reference: OP -4115

Task Number: 2997170301

Task Performance: AO/RO/SRO __ RO/SRO X Only __ SE Only __

Sequence Critical: Yes __ No X

Time Critical: Yes __ No X

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation __ Performance __ Discuss __

Setting: Classroom __ Simulator X Plant __

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS __ FAIL __ Time Required: ____

Prepared by: _____ 4/8/99
Operations Training Instructor — Date

Reviewed by: _____ 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

- The plant is at normal full power operations. You are the CRO and, after having received a high drywell temperature alarm, are performing OP-4115, section E, "Drywell Temperature Profile". You have obtained all the required data points and are ready to proceed.

Initiating Cues:

Review the previously obtained data, complete form VYOPF 4115.05 and Section E of OP 4115 "Drywell Temperature Profile".

(Examiner Note: Provide examinee partially completed form VYOPF 4115.05)

Task Standards:

Form VYOPF 4115.05 complete and supervision informed of results.

Required Materials:

Procedure OP-4115.
Filled in data points for form VYOP 4115.05 (see attached).
Calculator.

Simulator Setup:

Any 100% Power IC.
Insert malfunction to energize annunciator CRP 9-5, F-2, "Drywell Trouble".

Evaluation **Performance Steps**

TIME START: ____

Interim Cue: If asked, work orders are submitted for all INOP temperature sensors.

SAT/UNSAT **Step 1: Calculate Average Temperature for Elevation < 270 ft.**

Standard: Averages temperature data for 10 operable points, obtains 160.5 (160 - 161) and records on form.

SAT/UNSAT ***Step 2: Recognize Temperature Outside Acceptance Criteria.**

Standard: Informs SCRO that temperature outside acceptance criteria.

Note: Examanee may inform SCRO at a latter point.

SAT/UNSAT **Step 3: Calculate Average Temperature for Elevation 270 – 315 ft.**

Standard: Averages temperature data for 6 operable points, obtains 140.1 (140 – 141) and records on form

---

Note: The average in the above step will be within the acceptance criteria. The average in the next step need not be computed as the minimum sensors are not available.

SAT/UNSAT ***Step 4: Recognize Insufficient Sensors for Elevation > 315 ft.**

Standard: Informs SCRO that minimum number of sensors is not available.

SAT/UNSAT **Step 5: Completes Form.**

Standard: Places signature, date and time on form. Indicates on form that average for > 315 ft. doesn't meet minimum sensors.

Interim Cue: If asked, inform examinee to insert a note on form concerning the number of operable sensors.

SAT/UNSAT **Step 6: Inform SCRO of Required Notifications**

Standard: Informs SCRO that Duty and Call Officer and the Operations Manager is to be notified..

Interim Cue: Tell examanee you will notify the DCO and OM.

SAT/UNSAT **Step 7 Inform SCRO of Required Event Report**

Standard: Informs SCRO of requirement to generate and Event Report.

TIME FINISH: ____

Terminating Cue: SCRO notified of out of spec readings, required notifications and event report.

Evaluators Comments: _____
_____
_____

Generic K/A's: 2.1.7 3.7/4.4

DRYWELL TEMPERATURE PROBE LOCATIONS

NOTE

Identify any out of service temperature probe with INOP and ensure a WOR is submitted.

CRP 9-25 TR 1-149

Point							Place a Mark If RRU In Operation	
1.	RRU 1 Return	155 °F	5.	RRU 1 Disch	110 °F	RRU 1	A X	B
2.	RRU 2 Return	158 °F	6.	RRU 2 Disch	112 °F	RRU 2	A X	B
3.	RRU 3 Return	154 °F	7.	RRU 3 Disch	108 °F	RRU 3	A X	B
4.	RRU 4 Return	154 °F	8.	RRU 4 Disch	110 °F	RRU 4	A X	B

RBCCW HX IN SERVICE (A or B) A RBCCW HEAT EXCH OUTLET 85 °F (M008 or M009)

A. Calculate the average temperature for each drywell elevation.

DW Elev.	Min. # of Sensors	Avg. Acceptance Criteria
<270'	10	≤ 150°F
270'-315'	6	≤ 185
>315'	4	≤ 270

$T_{AVG} = \frac{A}{B}$

A = Sum of all operable sensors

B = number of all operable sensors

1. DRYWELL TEMPERATURE FOR ELEV. BELOW 270'

COMPUTER POINT

MO-20 Inop °F
MO-21 155 °F
MO-22 166 °F
MO-23 158 °F
MO-24 162 °F

STEAM LEAK DETECTION TOUCHSCREEN MONITOR IN CRP 9-21 (DRYWELL SCREEN)

CHANNEL 1 164 °F
2 162 °F
3 157 °F
4 159 °F

T AVG (<270') = [ ] / [ ] = _____

Acceptance Criteria: Max. Avg.≤150°F

TI-16-19-30B(DW) 160°F TR-16-19-45 (DW) 162 °F

2. DRYWELL TEMPERATURE FOR ELEV. 270' TO 315'

COMPUTER POINT

MO-14 140 °F
MO-15 138 °F
MO-16 142 °F
MO-17 142 °F

STEAM LEAK DETECTION TOUCHSCREEN MONITOR IN CRP 9-21 (DRYWELL SCREEN)

CHANNEL 15 137 °F
16 140 °F
17 142 °F

T AVG (270'-315') = [ ] / [ ] = _____

Acceptance Criteria: Max. Avg.≤185°F

3. DRYWELL TEMPERATURES ABOVE ELEV. 315'

COMPUTER POINT

MO-12 Inop°F
MO-13 140 °F

STEAM LEAK DETECTION TOUCHSCREEN MONITOR IN CRP 9-21 (DRYWELL SCREEN)

CHANNEL 5 139 °F
6 138 °F
7 Inop °F

T AVG (>315') = [ ] / [ ] = _____

Acceptance Criteria: Max. Avg.≤270°F

erformed By_____ Date/Time_____/_____

Reviewed By_____ Date_____
Shift Supervisor

CANDIDATE:_____ DOCKET:_____ DATE:_____

TOPIC: REACTOR STARTUP

A.1.Q#1.a A reactor startup is underway. The last rod withdrawn was 42-23 to position 48 (see attached pull sheet). The next rod is selected and the RWM generates a select block, withdraw block and insert block. The RWM can not be reinitialized regardless of which rod is selected.

Can the startup continue? Justify your answer.

ANSWER:

No.

Only ten rods have been withdrawn. One requirement to bypass the RWM is that 12 or more rods have been withdrawn.

(NOTE: The following is additional information but not required for full credit.)

With reactor power below 20%, the RWM is required to be operable. However, it may be bypassed if all of the following conditions are satisfied:

1) Notification of the Reactor Engineering Manager.

2) Authorization obtained from the Operations Manager, Operations Superintendent or Plant Manager.

3) At least 12 control rods are withdrawn.

4) A second licensed operator is monitoring and documenting further rod motion.

5) The rod select template is in place.

RESPONSE:

SAT_____ UNSAT_____ K/A NUMBER: 2.1.23 2.8/4.0

REFERENCE USE ALLOWED: YES

REFERENCES: AP-105, Rev 4, page 5.

INPUT DATE: 5-May-1998 16:12:14
Sequence 20-A-2(1)

Template II Page 1

Group	Array	Insert Limit	With-Draw Limit	Rods	Out	In	Out	In	Out	In	Out	In
1	1	0	48									
				2623	J.D.							
				1807	J.D.							
				0223	J.D.							
				1839	J.D.							
				3431	J.D.							
				3415	J.D.							
				1015	J.D.							
				1031	J.D.							
				2639	J.D.							
				4223	J.D.							
				2607								
				1823								
2	2	0	48									
				3439								
				3407								
				1007								
				1039								
				3423								
				1023								
				2631								
				1815								
				1831								
				2615								

VYOPF 2404.01

CANDIDATE:_____ DOCKET:_____ DATE:_____

TOPIC: REACTOR STARTUP

A.1.Q1.b The plant is performing a startup and the reactor is subcritical. After a control rod notch withdrawal the operator observes the following:

- SRM and IRM count rate steadily increasing
- Reactor period stable at 25 seconds

What actions shall the operator take?

ANSWER:

Use Emergency In to turn the period. Insert rods until the reactor is subcritical and then inform the SCRO/SS.

NOTE: The following is additional information but not required for full credit.

If the sustained period becomes shorter than 30 seconds:

f. Notify the Shift Supervisor, Operations Manager, and Reactor Engineering Manager.

g. Obtain permission from Shift Supervisor prior to recommencing the startup after ensuring cause of the short period is understood and precautions taken to prevent recurrence.

RESPONSE:

SAT_____ UNSAT_____ K/A NUMBER: 2.1.23 2.8/4.0

REFERENCE USE ALLOWED: YES

REFERENCES: AP-105, Rev 4, page 15

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Hanging a White Tag

Reference: AP 0140

Task Number: 2997270301

Task Performance: AO/RO/SRO __ RO/SRO X Only __ SE Only __

Sequence Critical: Yes __ No X

Time Critical: Yes __ No X

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation __ Performance __ Discuss __

Setting: Classroom __ Simulator X Plant __

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS __ FAIL __ Time Required: ____

Prepared by: _____ 4/8/99
Operations Training Instructor — Date

Reviewed by: _____ 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

The plant is at normal full power operations. Electrical Maintenance is working on a plant modification to upgrade the suppression pool temperature recorders.

Initiating Cues:

The SCRO has directed you to hang the white tag for deenergizing the Suppression Pool Temperature Recorder. Prior to hanging the tag you are to verify ckt # 45, 120 V Instrument AC Dist (43-72) on CRP 9-46 is closed.

(Hand examinee the tag and the switchman's copy of the tagout)

Task Standards:

The breaker has been opened and the white tag has been hung.

Required Materials:

Switchman's copy of tagout and white tag. Roll of masking tape or duct tape for hanging tag.

Simulator Setup:

Any 100% Power IC.

Insure attached copy of Switching and Tagging Order is current.
Change tagout's and tag's date/time as required to make it current.
Write (or stamp) "SWITCHMAN'S COPY" in the table that contains the work party leaders information.
Write Examinee's name in the "Order Executed By" section.

Evaluation **Performance Steps**

TIME START: ____

Interim Cue: If asked, a peer check is not required.

SAT/UNSAT **Step 1: Verifies Post Accident Panel is energized**

Standard: Opens 120V Instrument AC Dist. panel (43-72) and verifies breaker # 45 is "ON" (Closed).

SAT/UNSAT ***Step 2: Opens breaker #32.**

Standard: Opens 120V Inst AC Dist. panel (1-42) places breaker #32 to the "OFF" position (Open).

SAT/UNSAT **Step 4: Initials tag.**

Standard: Places initials in the "Tagged By" section of tag.

Interim Cue: If asked (or operator starts looking for tape) provide operator with a section of tape.

SAT/UNSAT ***Step 5: Places tag on breaker #32.**

Standard: Attaches tag to breaker #32.

SAT/UNSAT **Step 6: Reports tagout complete.**

Standard: Verbally reports that tagout is complete **OR** returns the Switchman's copy of the Switching and Tagging Order.

TIME FINISH: ____

Terminating Cue: Verbally reports that tagout is complete **OR** return of the Switchman's copy of Switching and Tagging Order.

Evaluators Comments: _____

_____

_____

Generic K/A's: 2.2.13

** TAGS ON ** **Vermont Yankee Generating Station** ** TAGS ON **
Switching And Tagging Order

Switching And Tagging Order Number: **99-0256**

Primary Component Protection (ID NO) **Temp. Recorder** | Description **Suppression Pool Temp. Recorder**

Reason for Tagging: **Plant Mod 99-1234**

Component Worked On: **Suppression Pool Temp. Recorder (TR-16-19-40)**

Tags Requested By: **Doe, John**
Authorized Person

TECH. SPECS./SAFETY EQUIPMENT **X** YES ____ NO

TAGS ON / PLACEMENT

P.R.	E.O.	SEQ	Component	Position	Location
		1	**IAC (CRP 9-46), CKT 32**	**OPEN**	**CRB 272/Control Rm on CRP 9-46**

____Continued On Continuation Sheet

____Ground Tags Issued ____Local Permissive Test Tags Issued

____Switching And Tagging Order Change ____Sys Drained, Depress'd, Vented (UND94006OP2)

Secondary Containment Second Level Review By: **N/A**

Order Issued By: **Goeskamp, Mike** / _____ / _____
Control Authority Date Time

Order Executed By: _____

Safety Supervisor: **N/A** Maintenance Rule Entry ____ Yes **X** No

____Workmen Notified ____Verification Complete ____Block Tagging Order

WORK PARTY LEADERS	COMPONENT WORKED ON	SIGNATURE (WORK START)	DATE	SIGNATURE * (WORK COMPLTD.)	DATE
Doe, John	**S.P. Temp Rec.**	**XXXXXXXX**	**XXXXXX**		

Remarks/Special Conditions Relative To Clearance:

Switchman - Verify ckt #45, 120 V Instrument AC Dist

(43-72) on CRP 9-46 is CLOSED prior to hanging tagout.

* Note if Tags Are Double Cleared

Instructor note: The following is for printout and attachment to the white tag.

Order #: **99-0256** Date:

Component Tagged: **IAC (CRP 9-46) CKT 32**

Description: **SUPPRESSION POOL TEMP. RECORDER**

Position: **OPEN**

Tagged For: **DOE, JOHN**

Apparatus Protected: **S.P. TEMP. RECORDER (TR-16-19-40)**

Safety Supervisor: **N/A**

Tagged By: _____ Checked By: _____

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: **Perform a Frisk of Personal Items Prior to Exiting RCA using Automated Tool Frisker**

Reference: AP 0519

Task Number: 2990100301

Task Performance: AO/RO/SRO __ RO/SRO _X_ Only __ SE Only __

Sequence Critical: Yes __ No _X_

Time Critical: Yes __ No _X_

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation __ Performance _X_ Discuss ___

Setting: Classroom __ Simulator __ Plant _X_

Performance Expected Completion Time: _10 minutes_

Evaluation Results:

Performance: PASS _____ FAIL _____ Time Required: _____

Prepared by: _____ 4/9/99
Operations Training Instructor — Date

Reviewed by: _____ 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the **plant** and you are to **perform** the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

The plant is at normal full power operations, and you are exiting the RCA following rounds.

Initiating Cues:

You are directed to verify your clipboard is not contaminated prior to exiting the RCA

Task Standards:

Clipboard contamination level verified per AP 0519 using the tool frisker

Required Materials:

Clipboard (use evaluator's clipboard since this item already needs to be frisked. Be careful not to allow examinee to see any JPM documentation on the clipboard. These items should be removed and properly frisked by evaluator separately)

Tool Frisker

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Review AP 0519 and applicable precautions**

Standard: This task is normally performed from memory since AP 0519 is "Information Use".

Interim Cue: If asked, provide copy of AP 0519.

SAT/UNSAT **Step 2: Verify clipboard is dry**

Standard: Check that clipboard is dry.

SAT/UNSAT **Step 4: Verify that the clipboard is an "Item That May Be Frisked by Non-RP Personnel"**

Standard: Review posted list of items from AP 0516 and verify that a clipboard is on the list.

SAT/UNSAT **Step 5: Check that a valid source check of the instrument has been performed for that day**

Standard: Verify the instrument has been source checked by observing initials on source check sticker on the instrument for that day. If source check has not been performed for that day yet, previous day's source check is satisfactory.

SAT/UNSAT **Step 6: Verify that the display panel is reading "READY"**

Standard: Verify that the display panel indicates "READY".

SAT/UNSAT **Step 7: Verify that no warning lights are on**

Standard: Verify that no warning lights are lit on the monitor.

SAT/UNSAT ***Step 8: Open monitor doors and place item inside the detector enclosure**

Standard: Open monitor doors and place clipboard inside.

Evaluation **Performance Steps**

SAT/UNSAT ***Step 9:** **Close monitor doors**

Standard: Close monitor doors, left side first.

SAT/UNSAT **Step 10:** **Verify count automatically starts**

Standard: Verify count has started by observing monitor display timing the count.

Evaluator Note: Step 11 may not be necessary if count auto starts, however it is a critical step if it is necessary.

SAT/UNSAT/NA ***Step 11:** **If count has not automatically started, depress red button on front of monitor**

Standard: Depress red button and verify count has started by observing monitor display.

SAT/UNSAT ***Step 12:** **Upon completion of count observe monitor display to determine contamination status**

Standard: Observe monitor red and green lamps and monitor display.

Interim Cue: When examinee observes monitor lights and display, inform him that the red light is lit and the display indicates 700 counts per second contamination level.

Note: If clipboard is actually contaminated, cue need not be given.

SAT/UNSAT ***Step 13:** **Contact RP personnel for direction**

Standard: Examinee expresses need to contact RP personnel for further direction.

Terminating Cue: No further actions are required for this JPM.

TIME FINISH: _____

Evaluators Comments:

Generic K/A's: 2.3.4 RO/2.5 SRO/3.1

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Perform Duties of Communicator During E-Plan Event

Reference: OP 3504

Task Number: 2857100101

Task Performance: AO/RO/SRO __ RO/SRO X Only __ SE Only __

Sequence Critical: Yes __ No X

Time Critical: Yes X No __

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation __ Performance __ Discuss __

Setting: Classroom __ Simulator X Plant _

Performance Expected Completion Time: 20 minutes

Evaluation Results:

Performance: PASS __ FAIL __ Time Required: ____

Prepared by: _____ 4/8/99
Operations Training Instructor — Date

Reviewed by: _____ 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

The reactor has experienced a LOCA. The SS has declared an Alert.

Initiating Cues:

The SS has designated you as the Communicator. In the Emergency Plan Implementing Procedure (EPIP) you are to perform steps 6 of Appendix One of OP 3501, "Emergency Communications".

Task Standards:

Plant announcement over Gai-Tronics has been made.

Required Materials:

Appendix One, OP 3501.

Simulator Setup:

Any 100% Power IC. Insert malfunction RR01A @ 100%.

Verify attached Appendix I, OP-3501 is current and fill in time for step 5 and 6d.
If simulator operator is unavailable, place alarms in silence.

Evaluation **Performance Steps**

TIME START: ____

Interim Cue: As the SS provide examinee with copy of Appendix One of OP 3501.

SAT/UNSAT **Step 1: Positions Page System Volume switch on CRP 9-10**

Standard: Operator positions Page Sys Volume switch on CRP 9-10 to "ALERT"

SAT/UNSAT **Step 2: Positions Alarm Tone Control Switch on CRP 9-10**

Standard: Operator positions Alarm Tone Control Switch to "ON" for 10 seconds (+/- 2 secs) and back to "OFF".

SAT/UNSAT ***Step 3: Makes announcement**

Standard: Operator uses Gai-Tronics to announce the following:

- "Attention all personnel, attention all personnel, ALERT,ALERT, ALERT."
- "An ALERT has been declared at _____ hours due to:

Note: Time announced is time given initially for the Alert.

Drywell pressure > 2.5 psig and both drywell floor and equipment drain sump level high alarms are energized.

- "Emergency personnel report to the Technical Support Center, the Operations Support Center, and the Emergency Operations Facility as required. As a precautionary measure, declared pregnant plant staff should leave the site and report to the EOF. All other personnel, visitors, and contractors report to the Governor Hunt House Information Center and wait for further instructions. All other personnel stay clear of the affected area."

SAT/UNSAT **Step 4: Repeat announcment**

Standard: Operator repeats announcement as in above step.

SAT/UNSAT **Step 5: Return volume switch to normal**

Standard: Operator places Page Sys Volume switch to "OFF".

SSAT/UNSAT **Step 8: Inform SS**

Standard: Operator informs SS that announcement has been made and the States notified.

SAT/UNSAT **Step 9: Paperwork completed**

Standard: Operator places initials and time in step 6g.

TIME FINISH: ____

Terminating Cue: Paperwork has been completed.

Evaluators Comments: _____
_____
_____

Generic K/A's: 2.4.39

Time Initial

5. Before making Gai-Tronics announcement prepared in Step 6, authorize announcement text.

____ BM (SS/PED

6. Make the following Gai-Tronics announcement:

   a. Turn the PAGE SYSTEM VOLUME INCREASE Switch to the ALERT position.

   b. Turn the ALARM TONE CONTROL switch to the ON position for 10 seconds then return to the OFF position.

   c. "Attention all personnel, attention all personnel, ALERT, ALERT, ALERT."

   d. "An ALERT has been declared at _____ hours due to:

Drywell pressure > 2.5 psig and both drywell floor and equipment drain sump level high alarms are energized.

   e. "Emergency personnel report to the Technical Support Center, the Operations Support Center, and the Emergency Operations Facility as required. As a precautionary measure, declared pregnant plant staff should leave the site and report to the EOF. All other personnel, visitors, and contractors report to the Governor Hunt House Information Center and wait for further instructions. All other personnel stay clear of the affected area."

   f. Repeat Steps 6.c - 6.e.

   g. Turn the PAGE SYSTEM VOLUME INCREASE Switch to the OFF position. ____ _____

Time Initial

7. Request that extra Operations personnel report to the OSC, to provide assistance, as warranted. ____ _____

8. Direct Security Shift Supervisor to request an Alternate Communicator to report to the Control Room, per Section III of OP 3531. ____ _____

NOTES

STATES NOTIFICATION MUST BE INITIATED WITHIN 15 MINUTES OF EMERGENCY CLASSIFICATION DECLARATION.

---

9. a. Ensure that the notification of the VT/NH/MA State Police Agencies is being implemented per VYOPF 3504.03, "Emergency Classification and PAR Notification Form". ____ _____

b. If commercial telephone service is degraded, instruct Communicator to inform States of this condition and request that all State call-back communications should occur through the NAS (orange phone). (Use Remarks section of VYOPF 3504.03 to note directive.) ____ _____

c. After the completion of the States notification, SS/PED acknowledges that the States notification has been completed. ____ _____ (SS/PE

d. Record call-backs from state officials concerning plant conditions.

_____ VT Official ____ _____

_____ NH Official ____ _____

_____ MA Official ____ _____

e. If officials have not made contact with the plant within one hour, recall State Police by utilizing the appropriate NAS (Orange Phone) number or telephone backup number listed on VYOPF 3504.03.

Facility: _____ Date of Examination: _____

Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No: _____

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G – Importance – Description
1. RPV Venting via RCIC M, S	4	a. RCIC system operation – valve logic 217000 A2.12 3.0
		b. CST low level 217000 K6.04 3.5
2. Reset a GPI isolation D, S	5	a. PCIS IOPL 223002 A3.01 3.4
		b. MSIV Reopening 239001 K4.09 3.3
3. Terminate and Prevent Injection during ATWS D, S	1	a. RPV Water Level (90") Bases 295037 EK3.03 4.1
		b. T&P during an RPVED 295037 EA2.06 4.0
4. Transfer Station Loads from S/U to Aux D, S, L	6	a. Parallel Operation 262001 A4.04 3.6
		b. Outage Operation 295003 AA2.04 3.5
5. Reactor Scram Reset D, S	7	a. RPS Logic 212000 K5.02 3.3
		b. Individual Control Rod Scram 212000 A4.13 3.4
6. Transfer Press Control MPR to EPR N, S	3	a. EPR Power Supply Loss 241000 A2.11 3.1
		b. 1st Stage Press/RPS Bypass 241000 K4.05 3.7
7. FWLC Shift N, S, A	2	a. FWLC with a reference leg leak 259001 A2.07 3.7
		b. Condenser Hotwell Makeup 256000 A2.06 3.2
8. Isolate/Vent Scram Air Header D, P, R	1	a. Bases for CRD-56 Operation 295037 EA1.05 3.9
		b. CRD System Response to Vent 295019 AK2.01 3.8
9. Operate SRV from RCIC Room D, P, R	3	a. Tailpipe Temp Predictions 239002 A1.01 3.3
		b. Appendix R Bypass Switch Logic 295016 AK3.03 3.5
10. Open Rx Bldg RR Door D, P, R	5	a. Secondary Containment Definition G.2.1.27 2.8
		b. SBGT System Initiation Logic 261000 K4.01 3.7

* 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

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: RPV Venting via RCIC

Reference: OE 3107 Appendix FF

Task Number: 2007760501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant _

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: MD Hanko 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: A plant transient has occurred and the SCRO has entered EOP 5 and is performing RPV/ED.

Initiating Cues: The SCRO directs you to depressurize the RPV defeating interlocks using RCIC per OE 3107 Appendix FF. E&C is standing by to assist.

Task Standards: The reactor vented through RCIC to the main condenser per Appendix FF.

Required Materials: OE 3107 Appendix FF

Simulator Setup: Any IC. RCIC-15 and RCIC-16 Shut

When requested by the examinee, place remote function RPR25 to BYPASS.

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain Procedure OE 3107 Appendix FF and review prerequisites.**

Standard: Operator obtains procedure and reviews prerequisites.

Interim Cue: When the operator asks inform him that the prerequisites are met.

SAT/UNSAT ***Step 2: Defeat the RCIC-131 auto-open signal.**

Standard: Direct E&C to lift lead AA-41 in CRP 9-30.

Interim Cue: E&C has lifted the lead. E&C has initialed their form and will transfer initials on to master form after completing the task.

SAT/UNSAT **Step 3: Verify RCIC-131 closed**

Standard: On CRP 9-4 verify RCIC-131 SHUT by Green light ON and the Red light OFF.

SAT/UNSAT ***Step 4: Defeat PCIS Group 6 isolation interlocks for RCIC-15.**

Standard: Direct E&C to perform the following:

Lift leads:	CRP 9-33, CC-52
	CRP 9-30, AA-19
Install jumpers:	CRP 9-30, AA-15 to AA-16

Interim Cue: E&C has lifted the leads and installed the jumper. E&C has initialed their form and will transfer initials on to master form after completing the task.

Evaluation **Performance Steps**

SAT/UNSAT ***Step 5:** **Defeat PCIS Group 6 isolation interlocks for RCIC-16.**

Standard: Direct I&C to perform the following:

Lift leads: CRP 9-33, CC-53
CRP 9-30, AA-24

Install jumper: CRP 9-30, AA-20 to AA-21

Interim Cue: E&C has lifted the leads and installed the jumper. E&C has initialed their form and will transfer initials on to master form after completing the task.

SAT/UNSAT ***Step 6:** **OPEN RCIC-15.**

Standard: On CRP 9-4 place control switch for RCIC-15 to OPEN

SAT/UNSAT **Step 7:** **Verify RCIC-15 Open.**

Standard: On CRP 9-4 verify RCIC-15 Open by Red light ON and Green light OFF.

SAT/UNSAT ***Step 8:** **OPEN RCIC-16.**

Standard: On CRP 9-4 place control switch for RCIC-16 to OPEN

SAT/UNSAT **Step 9:** **Verify RCIC-16 Open.**

Standard: On CRP 9-4 verify RCIC-16 Open by Red light ON and Green light OFF.

SAT/UNSAT ***Step 10:** **Open RCIC-32**

Standard: On CRP 9-4 place control switch for RCIC-32 to OPEN

SAT/UNSAT **Step 11:** **Verify RCIC-32 Open.**

Standard: On CRP 9-4 verify RCIC-32 Open by Red light ON and Green light OFF.

Evaluation **Performance Steps**

SAT/UNSAT **Step 12: Verify RCIC-34 Open.**

Standard: On CRP 9-4 verify RCIC-34 Open by Red light ON and Green light OFF.

SAT/UNSAT **Step 13: Verify RCIC-35 Open.**

Standard: On CRP 9-4 verify RCIC-35 Open by Red light ON and Green light OFF.

TIME FINISH: _____

Terminating Cue: The reactor vented through RCIC to the main condenser per Appendix FF.

Evaluators Comments: _____
_____
_____

System: 217000 **K/A's:** K2.01 K3.03 A3.01 A2.12

JPM 20046

Question 1:

During the implementation of OE 3107 Appendix FF, RPV VENTING VIA RCIC STEAM LINE DRAINS, the operator fails to perform Step 1. The AA-41 lead in CRP 9-30 has not been lifted. Predict the effect on the operator's ability to implement the procedure both with and without an initiation signal present.

Answer:

WITHOUT a RCIC initiation signal present: There will be no effect on the operator's ability to implement the procedure.

WITH a RCIC initiation signal present: RCIC-131 will be open preventing the opening of the RCIC Steam Line Drains RCIC-34, RCIC-35. The procedure can not be implemented.

K/A: 217000 A: 2.12 RO: 3.0

IG: LOT-00-217

OBJ: 10

REF: CWD 1197, OE 3107 Appendix FF

Open Reference Question

JPM 20046

Question 2:

RCIC initiates on low-low RPV water level. OP 2121 directs the operator to monitor RPV water level and CST level. How will the RCIC system respond to a lowering CST water level?

Answer:

At a low CST tank level, Torus suction valve, RCIC-39 and RCIC-41 open automatically and CST suction RCIC-18 closes automatically.

K/A: 217000 K: 6.04 RO: 3.5

IG: LOT-00-217

OBJ: 10, 22

REF: OP 2121

Close Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Reset a Group I Isolation
Reference: OP 2115, Primary Containment
Task Number: 2000030501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes _X_ No ___

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant _

Performance Expected Completion Time: 2 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/9/99
Operations Training Instructor — Date

Reviewed by: MO Harris 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: A Group I isolation has occurred due to low main steam line pressure, OT 3100, scram procedure has been carried out, mode switch is in shutdown.

Initiating Cues: The SCRO directs you to reset the Group I logic per OP 2115, Section G.

Task Standards: Group I Logic reset

Required Materials: OP 2115, Primary Containment

Simulator Setup: Any power IC.
Insert malfunction RP03, then delete
Complete OT 3100 actions
Control pressure using SRVs 800-1000 psi

Evaluation **Performance Steps**

TIME START: _____

NOTE: **Steps 4-11 can be completed in any order, but must be completed before completing Step 13.**

SAT/UNSAT **Step 1: Obtain procedure, review administrative limits, precautions, and prerequisites**

Standard: OP 2115 obtained, Section G administrative limits, precautions, and prerequisites reviewed

---

Interim Cue: If asked, inform operator that prerequisites are met.

SAT/UNSAT **Step 2: Verify RV 39 Control Switch is in CLOSE Position**

Standard: Verify RV 39 control switch in CLOSE

SAT/UNSAT **Step 3: Verify RV 40 Control Switch is in CLOSE Position**

Standard: Verify RV 40 control switch into CLOSE

SAT/UNSAT *** + Step 4: Place MSIV 80A Control Switch to CLOSE**

Standard: MSIV 80A control switch to CLOSE

SAT/UNSAT *** + Step 5: Place MSIV 80B Control Switch to CLOSE**

Standard: MSIV 80B control switch to CLOSE

SAT/UNSAT *** + Step 6: Place MSIV 80C Control Switch to CLOSE**

Standard: MSIV 80C control switch to CLOSE

SAT/UNSAT *** + Step 7: Place MSIV 80D Control Switch to CLOSE**

Standard: MSIV 80D control switch to CLOSE

Evaluation	Performance Steps
SAT/UNSAT	* + **Step 8: Place MSIV 86A Control Switch to CLOSE**
	Standard: MSIV 86A control switch to CLOSE
SAT/UNSAT	* + **Step 9: Place MSIV 86B Control Switch to CLOSE**
	Standard: MSIV 86B control switch to CLOSE
SAT/UNSAT	* + **Step 10: Place MSIV 86C Control Switch to CLOSE**
	Standard: MSIV 86C control switch to CLOSE
SAT/UNSAT	* + **Step 11: Place MSIV 86D Control Switch to CLOSE**
	Standard: MSIV 86D control switch to CLOSE
SAT/UNSAT	**Step 12: Ensure the Containment Isolation Reset Permissive lights for Group I are lit.**
	Standard: Operator verifies that Group I lights (14A and 16 A) are on. Located on CRP 9-5 lower right side of vertical panel

---

Interim Cue: If asked, the Group I isolation signal is clear.

SAT/UNSAT	* + **Step 13: Reset the PCIS logic when the signal has cleared.**
	Standard: Group I isolation reset switch momentarily taken to the INBD and OTBD position and released. CRP 9-5 upper right side of horizontal panel
	TIME FINISH: _____
Terminating Cue:	Group I logic reset.

Evaluators Comments: _____
_____
_____

System: 223002 **K/A's:** K1.01 K1.17 K3.03 K3.06 K3.14 K4.06
K1.06 K2.01 K3.04 K3.09 K4.01 K6.03
K6.08
A1.01 A1.04 A2.04 A3.02 A3.04 A4.04
A1.02 A2.01 A3.01 A3.03 A4.01 A4.05
A1.03 A2.03 A4.03 A4.06

JPM 22301

Question 1:

A Group II isolation occurs. The isolation condition still exists. All Group II isolation valves (LRW-82, -83, -94, -95) control switches are placed in CLOSE. How will the containment isolation reset permissive lights for Group II respond to the control switch manipulations?

Answer:

The containment isolation reset permissive lights on CRP 9-5 will be lit. The lights are dependent on switch position for the affected group. The status of the isolation condition does not affect the lights logic circuit.

K/A: 223002 A3.01 RO: 3.4

IG: LOT-01-223

OBJ: 6

REF: CWD 1114, 1115, 1119
OP 2115

Open Reference Question

JPM 22301

Question 2:

After resetting the Group I isolation, the SCRO directs the BOP to reopen the MSIVs. After opening the OUTBD MSIVs, the operator equalizes across the INBD MSIVs. Explain how this action is performed by pointing out the control switches that will be operated and the instruments used to determine equal pressure has been established?

Answer:

OP 2113 provides the following guidance on reopening the MSIVs:

> Equalize ACROSS INBD MSIVs by opening the following valves: All valves are on CRP 9-3
>
> - OPEN MS-74
> - OPEN MS-77
> - OPEN MS-78
>
> Raise pressure regulator to CLOSE BYPASS VALVES. Bypass valves can be verified closed on CRP 9-7.
>
> When ≤ 50 psig OPEN INBD MSIVs. The following instruments are used to determine differential pressure is less than 50 psig:
>
> - Reactor Pressure PI 2-3-56A(B)
> - Main Steam Pressure PI-101-22

K/A: 239001 K: 4.09 RO: 3.3

IG: LOT-00-239

OBJ: 2

REF: OP 2113

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Terminate and Prevent all Injection into the RPV Except SLC, CRD, and RCIC
Reference: OE 3107, Appendix GG
Task Number: 2007450501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant _

Performance Expected Completion Time: 6.0 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/2/99
Operations Training Instructor — Date

Reviewed by: _____ 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: An ATWS occurred. Reactor Power is greater than 2% and RPV level is greater than 90"

Initiating Cues: The SCRO directs you to terminate and prevent all injection into the reactor vessel except boron injection systems, CRD, and RCIC per OE 3107, Appendix GG.

Task Standards: All injection into the reactor vessel terminated and prevented with the exception of boron injection systems, CRD, and RCIC IAW OE 3107, Appendix GG.

Required Materials: OE 3107, Appendix GG

Simulator Set-Up:
RD 12A 100%
RD 12B 100%
APP_P in Bypass
Insert a manual scram

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain OE 3107, Appendix GG, verify prerequisites**

Standard: Obtain OE 3107, Appendix GG and verify prerequisites.

SAT/UNSAT ***Step 2: Terminate and prevent HPCI.**

Standard: Place the HPCI Turbine Trip/Inhibit pushbutton on CRP 9-3 in Inhibit.

SAT/UNSAT **Step 3: Verify HPCI inhibited.**

Standard: Verify that annunciator 3-U-1, "HPCI INHIBITED", is lit.

SAT/UNSAT ***Step 4: Place the core spray pump control switches in Pull to Lock.**

Standard: CS pumps switches on CRP 9-3 horizontal in Pull-to-Lock

____ CS A
____ CS B

SAT/UNSAT **Step 5: Verify CS pumps secure**

Standard: CS pumps verified OFF by Green light ON and Red light OFF above control switch on CRP 9-3
____ CS A
____ CS B

SAT/UNSAT ***Step 6: Place the RHR pump control switches in Pull to Lock.**

Standard: RHR pump switches on CRP 9-3 horizontal in pull to lock position

____ RHR A
____ RHR C
____ RHR B
____ RHR D

Evaluation **Performance Steps**

SAT/UNSAT **Step 7: Verify RHR pumps secure**

Standard: RHR pumps verified OFF by Green light OFF AND Red light OFF above control switch on CRP 9-3

____ RHR A
____ RHR C
____ RHR B
____ RHR D

SAT/UNSAT ***Step 8: Place Feedwater Pump A, B, C Control Switches in Pull to Lock**

Standard: Control Switches for feedwater pumps in Pull to Lock on CRP 9-6.

____ Feedwater pump A
____ Feedwater Pump B
____ Feedwater Pump C

SAT/UNSAT **Step 9: Verify Feedwater Pump A, B, C are OFF**

Standard: Verify feedwater pump OFF by Green light ON and Red light OFF above control switch on CRP 9-6

____ Feedwater pump A
____ Feedwater Pump B
____ Feedwater Pump C

SAT/UNSAT ***Step 10: Close FDW-7A, HP heater outlet**

Standard: Place FDW-7A control switch to Close on CRP 9-6

SAT/UNSAT **Step 11: Verify FDW-7A Shut**

Standard: Verify FDW-7A shut by Green light ON and Red light OFF above control switch on CRP 9-6

SAT/UNSAT ***Step 12: Close FDW-7B, HP heater outlet**

Standard: Place FDW-7A control switch to Close on CRP 9-6

Evaluation **Performance Steps**

SAT/UNSAT **Step 13: Verify FDW-7B Shut**

Standard: Verify FDW-7A shut by Green light ON and Red light OFF above control switch on CRP 9-6

SAT/UNSAT **Step 14: Check closed FDW-5 HP heater bypass valve.**

Standard: Verify FDW-5 shut by Green light ON and Red light OFF above control switch on CRP 9-6

SAT/UNSAT **Step 15: Report lowering RPV Water Level**

Standard: Operator report RPV Water Level is lowering to the SCRO.

SAT/UNSAT **Step 16: Reports Appendix GG is complete**

Standard: Operator reports Appendix GG is complete to the SCRO.

Interim Cue: RCIC realignment is not required. The JPM is complete.

TIME FINISH: _____

Terminating Cue: All injection into the Reactor vessel terminated and prevented except Boron Injection Systems, CRD, & RCIC IAW OE 3107, Appendix GG.

Evaluators Comments: _____

_____

_____

System: 295037 **K/A's:** EK1.02 EK2.09 EK3.03 EA2.02

JPM 20018

Question 1:

During an ATWS, RPV water level is lowered to below 90 inches. What is the bases for reducing water level below 90 inches?

Answer:

Ninety inches is below the feedwater sparger. By reducing level below the feedwater sparger, this will allow steam heating of the injected water. This eliminates high core inlet subcooling. As a result, a reduction in reactivity should prevent or mitigate large neutron flux oscillations induced by neutronic/thermal-hydraulic instablities.

K/A: 295037 EK: 3.03 RO: 4.1

IG: LOT-00-610

OBJ: 3

REF: EOP Study Guide

Closed Reference Question

JPM 20018

Question 2:

During an ATWS, injection is terminated and prevented prior to performing an RPV-ED. Why is this action performed?

Answer:

This action prevents rapid injection of a large quantity of relatively cold, unborated water from low pressure systems as RPV pressure decreases. The associated positive reactivity addition could induce a power excursion large enough to damage the core.

K/A: 295037 EA: 2.06 RO: 4.0

IG: LOT-00-610

OBJ: 3

REF: EOP Study Guide

Closed Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Transfer of Station Load from the Startup Transformer to the Auxiliary Transformer (Main Transformer Phased to the System)
Reference: OP 2142, 4 KV Electrical System
Task Number: 2627280101

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 5 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: MD Harris 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: Plant SU in progress.
Reactor power ~ 25%.
Main Turbine on the grid.

Initiating Cues: The SCRO directs you to transfer station loads from the Startup to the Auxiliary transformer.

Task Standards: Station loads transferred to Auxiliary transformer in accordance with OP 2142 Section C.

Required Materials: OP 2142, 4 KV Electrical System

Simulator Setup: IC-7. House loads on startup transformers.

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain procedure, review Precautions, Administrative Limits, and Prerequisites.**

Standard: OP 2142 Section C obtained. Precautions, Administrative Limits, and Prerequisites, Reviewed.

Interim Cue: When asked all prerequisites are met.

SAT/UNSAT **Step 2: Check Auxiliary Transformer energized.**

Standard: Observes Main Generator tied to grid. MOD T-1, and ATBs 81-1T and 1T closed as indicated by red lights above their control switches on CRP 9-7 horizontal or CRP 9-8 horizontal.

SAT/UNSAT ***Step 3: Insert sync check handle in Bkr 12 socket and turn sync switch on.**

Standard: 4 KV switch installed in sync selector for breaker 12 on CRP 9-8 horizontal and positioned to ON.

SAT/UNSAT **Step 4: Verify Bus 1 in phase with Auxiliary Transformer.**

Standard: 1) Observes scope at 12:00 position on CRP 9-8 and white lights out indicating synchronism.

2) Red lights on both sides of sync scope on CRP 9-8 vertical on indicating voltage on running and incoming bus/machine.

SAT/UNSAT ***Step 5: Close breaker 12.**

Standard: Breaker handswitch on CRP 9-8 horizontal taken to CLOSE position then released.

SAT/UNSAT **Step 6: Verify breaker 12 closed.**

Standard: Verifies breaker 12 closed as indicated by red light above breaker control switch on CRP 9-8 horizontal.

Evaluation	Performance Steps
SAT/UNSAT	**Step 7: Check that breaker 13 opens when 12 switch is released.** Standard: Observes breaker 13 opened as indicated by green and amber lights above breaker control switch on CRP 9-8 horizontal.
SAT/UNSAT	**Step 8: Reset Breaker 13 amber light.** Standard: 13 Breaker handswitch on CRP 9-8 horizontal taken to OPEN then released.
SAT/UNSAT	**Step 9: Verify breaker 13 reset.** Standard: Indicates amber light above breaker 13 switch on CRP 9-8 horizontal is out.
SAT/UNSAT	***Step 10: Turn sync check handle OFF, remove it, insert in breaker 22 and turn it on.** Standard: Sync. check hand on CRP 9-8 horizontal positioned to off, removed from breaker 12 socket inserted in breaker 22 socket on CRP 9-8 horizontal and positioned to ON.
SAT/UNSAT	**Step 11: Verify Bus 2 in phase with Auxiliary Transformer.** Standard: 1) Observes scope at 12:00 position on CRP 9-8 and white lights out indicating synchronism. 2) Red lights on both sides of sync scope on CRP 9-8 vertical on indicating voltage on running and incoming bus.
SAT/UNSAT	***Step 12: Close breaker 22.** Standard: Breaker handswitch for breaker 22 on CRP 9-8 taken to CLOSE position then released.
SAT/UNSAT	**Step 13: Verify breaker 22 closed.** Standard: Verifies breaker 22 closed as indicated by red light above breaker control switch on CRP 9-8 horizontal.

Evaluation	Performance Steps
SAT/UNSAT	**Step 14: Check that breaker 23 opens when 22 switch is released.** Standard: Observes breaker 23 opened as indicated by green and amber lights above breaker control switch on CRP 9-8 horizontal.
SAT/UNSAT	**Step 15: Reset breaker 23 amber light.** Standard: 23 breaker handswitch on CRP 9-8 horizontal taken to OPEN then released.
SAT/UNSAT	**Step 16: Verify breaker 23 reset.** Standard: Indicate amber light above breaker 23 switch on CRP 9-8 horizontal is out.
SAT/UNSAT	**Step 17: Turn sync check off and remove it.** Standard: Sync switch on CRP 9-8 horizontal turned to OFF and removed from breaker 23 socket and placed on CRP 9-8.
SAT/UNSAT	**Step 18: Check computer points D-619 and D-620 and notify Maintenance Department, if necessary.** Standard: Computer checked, both points found to be in "NORM". Maintenance notification not necessary.

TIME FINISH: _____

Terminating Cue: **Station loads supplied from Auxiliary Transformer.**

Evaluators Comments: _____
_____
_____
_____

System: 262002 **K/A's:** K1.03 K2.01 K3.01 K4.05 K6.02
K1.05 K3.02 K6.03
K3.05

A1.03 A2.01 A4.01
A1.04 A2.03 A4.02
A1.05 A4.04
A4.05

JPM 26205

Question 1:

When the Turbine is being synched to the grid, the synchroscope is operating slow in the FAST direction. If the synchroscope speed is increased, how will the turbine respond when the breaker is closed?

Answer:

As synchroscope speed increases, the frequency difference between the grid and the turbine increase. When the output breaker closes, the turbine will assume a greater real load (KW) than if the synchroscope was rotating at a slower rate.

K/A: 262001 A: 4.04 RO: 3.6

IG: LOT-01-262

OBJ: 27

REF: OP 2142

Closed Reference Question

JPM 26205

Question 2:

During an outage work on the S/U transformers is planned. Using a P&ID, explain how off site power will be supplied to house loads.

Answer:
Using P&ID (G191298) and the procedure (OP 2142, form VYOPF 2142.01) for backfeeding, the operator should trace the flowpath of power. The operator should point out the breakers and disconnects operated during the evolution. The following should be included in the discussion/review of the evolution:

- BKR 12
- BKR 22
- ATBs 1T and 81-1T
- T-1 MOD
- GD-1 Disconnect

K/A: 295003 AA: 2.04 RO: 3.5

IG: LOT-00-262

OBJ: 2

REF: OP 2142, P&ID 191298

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Reset a Reactor Scram
Reference: OP 2134, Revision 11
Task Number: 2000330501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Operator Answering Questions: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/9/99
Operations Training Instructor Date

Reviewed by: MD Hanks 4/9/99
SRO Licensed/Certified Reviewer Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: A Reactor Scram has occurred. The condition causing the Scram has cleared. Reactor Mode Switch is in SHUTDOWN.

Initiating Cues: The SCRO directs you to reset the Reactor Scram IAW OP 2134.

Task Standards: Reactor Scram Reset

Required Materials: OP 2134

Simulator Setup: Any IC, post scram, no scram signals present, OT 3100 carried out RMS (5AS1) in SHUTDOWN

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain Procedure, review administrative limits, prerequisites, and precautions.**

Standard: OP 2134 Section D obtained, administrative limits, prerequisites, and precautions reviewed.

Interim Cue: If asked all prerequisites have been satisfied.

SAT/UNSAT **Step 2:** **Verify that all applicable Scram initiation conditions have cleared**

Standard: Operator verifies at CRP 9-5 that all applicable Scram initiation conditions have cleared, or are automatically bypassed.

SAT/UNSAT **Step 3:** **Verify that both RPS Buses are energized**

Standard: Operator verifies that both RPS buses are energized as follows:

1. Checks power available lights on and switches positioned to normal or alternate on CRP 9-15 and 9-17

or

2. Checks CRP 9-5 annunciator column K and L indicate RPS buses are both energized.

SAT/UNSAT **Step 4:** **Verify that APRM power is being supplied from RPS**

Standard: Operator verifies that APRM power is being supplied from RPS by ensuring annunciator CRP 5-M-6 is out.

Evaluation	Performance Steps
SAT/UNSAT	**Step 5: Check CRP 9-3 High Radiation Annunciators Alarm Status** Standard: Operator checks annunciators 3-E-1, 3-E-2, 3-E-3, 3-E-4, 3-E-5, 3-E-9, 3-F-2, 3-F-9 clear and if annunciator 3-F-1 is in it is due to being downscale after the scram as indicated on CRP 9-10 downscale lights on.
SAT/UNSAT	**Step 6: If High Radiation Alarms exist, evaluate the radiological impact of draining and venting the Scram discharge volume piping** Standard: No high radiation conditions exist, no evaluation is required.
SAT/UNSAT	***Step 7: Using the CRP 9-5 keylock Switch, bypass the Scram Discharge Volume High Level Scram** Standard: Scram discharge volume high level scram keylock bypass switch on CRP 9-5 placed in bypass.
SAT/UNSAT	**Step 8: Verify/place the Reactor Mode Switch in the SHUTDOWN or REFUEL position** Standard: Operator verifies RMS on CRP 9-5 is in SHUTDOWN.
SAT/UNSAT	***Step 9: Place the Scram Reset Switch to the "Group 2 and 3" position and then to the "Group 1 and 4" position** Standard: Operator places scram reset switch on CRP 9-5 to the group 2 and 3 position and the group 1 and 4 position.

Evaluation	Performance Steps

SAT/UNSAT **Step 10:** **If the TURB CTRL VLV FAST CLOSURE alarm (5-L-4) is energized, place the SCRAM RESET switch back to the Group 2 and 3 position.**

Standard: Operator places scram reset switch on CRP 9-5 to the group 2 and 3 position.

SAT/UNSAT **Step 11:** **Confirm that all control rods have settled from the overtravel position back into notch position 00.**

Standard: Operator verifies all rods at 00 on full core display.

TIME FINISH: _____

Terminating Cue: **Reactor Scram is reset.**

Evaluators Comments: _____
_____
_____
_____

System: 295006 **K/A's:** AK2.01 AA1.01 AA2.06
AK2.03 AA1.06

JPM 21203

Question 1:

OPEN ENDED

The reactor protection system provides protective action. Discuss the specific logic arrangement necessary to cause a full scram with the Main Steam Line Radiation Monitors.

Answer:
The logic arrangement is 1 out of 2 taken twice. The following provides a detailed explanation of the logic arrangement applied to the MSL monitors:

"A" RPS will trip resulting in a half scram if either:

- MSL Radiation Monitor "A" HI-HI or INOP Condition exists
  -OR-
- MSL Radiation Monitor "C" HI-HI or INOP Condition exists

"B" RPS will trip resulting in a half scram if either:

- MSL Radiation Monitor "B" HI-HI or INOP Condition exists
  -OR-
- MSL Radiation Monitor "D" HI-HI or INOP Condition exists

A half scram is the "1 out of 2" portion of the logic.

A full scram will require a trip of both "A" and "B" RPS

The full scram is the taken "twice" portion of the logic.

K/A: 212000 K: 5.02 RO: 3.3

IG: LOT-00-212

OBJ: 6

REF: Technical Specifications, CWDs 803, 805, 806, 808, 810, 812, 813, 815

Open Reference Question

JPM 21203

Question 2:

A full reactor scram can be initiated by depressing the scram pushbuttons on CRP 9-5. An individual control rod can be scrammed from CRP 9-16. How will the Scram Discharge Volume vent and drain valves respond to the two different conditions?

Answer:

SDV Vent and Drain valves close on a full scram.

SDV Vent and Drain valves remain open for individual control rod scrams.

K/A: 212000 A: 4.13 RO: 3.4

IG: LOT-01-201

OBJ: 3

REF: OE 3107 Appendix E

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Shift Turbine Pressure Regulating Control Modes (MPR/EPR)
Reference: OP 2160, Turbine Generator Support Systems Operation
Task Number: 2490020101

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: _____ 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

Normal Rx operation, 100% power. Replacement of filter units in the EPR oil filter system is complete.

Initiating Cues: SS directs you to swap the pressure regulator from MPR to EPR.

Task Standards: The EPR is controlling pressure.

Required Materials:

OP 2160, Turbine Generator Support Systems Operation

Simulator Setup: At power IC with MPR in service

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain Procedure OP 2160 and review Precautions**

Standard: OP 2160 obtained. Operator reviews precautions.

Interim Cue: Inform operator Prerequisites are SAT.

SAT/UNSAT **Step 2: Verify EPR is warmed and ready for service**

Standard: Operator verifies EPR has been warmed for greater than 20 minutes.

Interim Cue: EPR has been energized for 30 minutes.

SAT/UNSAT **Step 3: EPR CUTOUT SWITCH in NORMAL (ON)**

Standard: Operator verifies EPR CUTOUT SWITCH in NORMAL (ON).

SAT/UNSAT **Step 4: EPR Control PWR LOSS Annunciator 7-G-2 Clear**

Standard: Operator verifies alarm 7-G-2 is clear.

SAT/UNSAT **Step 5: Verify bulb for oncoming pressure regulator is sound**

Standard: Operator checks EPR light bulb by performing a visual check of the filament.

Evaluation	Performance Steps
SAT/UNSAT	*Step 6: **Slowly lower the EPR SETPOINT by going to LOWER until the EPR OUTPUT STROKE moves in the direction of the EPR OUTPUT STROKE setting.** Standard: Operator takes EPR SETPOINT switch to LOWER and observes EPR OUTPUT STROKE indication rises.
SAT/UNSAT	Step 7: **As the EPR OUTPUT STROKE increases, control the rate by adjusting the EPR SETPOINT switch such that it continues to increase slowly.** Standard: Operator monitors and controls rate of EPR OUTPUT STROKE.
SAT/UNSAT	*Step 8: **Continue to slowly lower the EPR SETPOINT until EPR begins to take control.** Standard: Operator intermittently takes EPR SETPOINT Switch to LOWER until EPR white light ONLY is lit. Operator monitors MPR and EPR white lights, and reactor pressure.
SAT/UNSAT	Step 9: **Verify EPR has pressure control:** **a. White light ON above EPR SETPOINT switch,** **b. White light OFF above MPR SETPOINT switch,** **c. Stable reactor pressure on CRP 9-5.** Standard: Operator observes indications for MPR, EPR lights and reactor pressure.
SAT/UNSAT	Step 10: **If either pressure regulator fails to control pressure, refer to OT 3115 or OT 3116.** Standard: Operator determines reactor pressure is being controlled properly.

Evaluation	Performance Steps
SAT/UNSAT	*Step 11: **Slowly RAISE the MPR SETPOINT by going to RAISE until the MPR OUTPUT STROKE is 10% below the EPR.** Standard: Operator takes MPR SETPOINT switch to RAISE and observes MPR OUTPUT STROKE indication lowers. Operator continues until indication reads 10% below EPR.
SAT/UNSAT	Step 12: **Adjust reactor pressure as necessary.** Standard: Operator observes reactor pressure and adjusts EPR SETPOINT as necessary to stabilize reactor pressure.

Interim Cue: If necessary, when reactor pressure is stable, indicate current pressure is the desired pressure.

TIME FINISH: _____

Terminating Cue: The EPR is in service controlling reactor pressure.

Evaluators Comments: _____

_____

_____

System: 241000 K/A's: K1.02 K3.02 K4.01
A1.14

JPM 24505

Question 1:

The reactor is operating at 100% power. The EPR is controlling reactor pressure. What is the effect of deenergizing the EPR by opening Vital AC ckt #5 on Distr Panel 9-45?

Answer:

Pressure control will be transferred to the MPR. Reactor pressure will be slightly higher because the MPR setpoint is set above the EPR.

K/A: 241000 A: 2.11 RO: 3.1

IG: LOT-00-249

OBJ: 3

REF: OP 2160

Open Reference Question

JPM 24505

Question 2:

The reactor is operating at 50% power. If 4 turbine bypass valves are opened with the turbine still on line, how will the RPS system respond to a turbine trip and why?

Answer:

Turbine first stage pressure will reduce. At < 153 psig (20-30 % power) alarm (5-K-8) should annunciate. This will bypass the control valve and stop valve RPS scram functions. Therefore, a reactor scram will not occur.

K/A: 212000 K: 1.10 RO: 3.2

IG: LOT-00-212

OBJ: 3

REF: (5-K-8)

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Shift FWLC from Single-Element to Three-Element Control
Reference: OP 2172, Feedwater System
Task Number: 2597130101

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/9/99
Operations Training Instructor — Date

Reviewed by: _____ 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: Reactor power is approximately75%. E & C has just completed work on FWLC system and ready to return to three element control.

Initiating Cues: The SS directs you to shift FWLC from single-element to three-element control.

Task Standards: FWLC in three-element, RPV level steady. (No abnormal level trends)

Required Materials: OP 2172, Feedwater System
OT 3113

Simulator Setup: At power IC, power ≈ 75%
FWLC in single-element
FW28F "D" Steam Flow Detector failure @ 0% on KEY 1

yEvaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain procedure, review administrative limits, precautions and prerequisites.**

Standard: Obtained OP 2172, Section C, administrative limits, precautions and prerequisites reviewed.

Interim Cue: If asked, inform operator that prerequisites are met.

SAT/UNSAT **Step 2: Balance the master level controller.**

Standard: Indicating needle is lined up with setpoint line on master controller on CRP 9-5 bench board using manual potentiometer.

SAT/UNSAT **Step 3: Switch master level controller to manual.**

Standard: Operator places master controller to manual position on CRP 9-5 benchboard.

SAT/UNSAT ***Step 4: Shift level control to three-element.**

Standard: Operator places single element/3 element control switch to three element on CRP 9-5 vertical panel.

SAT/UNSAT **Step 5: Balance the master level controller.**

Standard: Indicating needle is lined up with setpoint line on master controller on CRP 9-5 benchboard, using the manual potentiometer

Evaluation **Performance Steps**

SAT/UNSAT **Step 6: Switch master level controller to BAL position.**

Standard: Operator switches master controller to BAL position on CRP 9-5 benchboard

INSERT Malfunction KEY 1

SAT/UNSAT **Step 7: Monitor vessel level.**

Standard: Monitor vessel level on CRP 9-5 and observes lowering RPV water level.

SAT/UNSAT ***Step 8: Shift Rx Vessel Master Controller (FC-6-83) to MAN (OT 3113 Immediate Action).**

Standard: Operator shifts master controller to MAN

SAT/UNSAT **Step 9: Monitor Vessel Level.**

Standard: Operator monitors vessel level for abnormal trends

TIME FINISH: _____

Terminating Cue: FWLC IN THREE-ELEMENT MANUAL CONTROL, RPV LEVEL STEADY.

Evaluators Comments: _____
_____
_____
_____

System: 259002 **K/A's:**

K1.02	K3.01	K4.09	K5.01	K6.01
K1.02	K3.07	K4.10		K6.04
K1.04		K4.12		K6.05
		K4.14		
A1.01	A3.02	A4.01		
A1.02	A3.09	A4.02		
A1.04		A4.03		
		A4.06		
		A4.07		

JPM 25908F

Question 1:

A leak has developed in the "A" reference leg associated with the "A" feedwater level instrument (GEMAC). How will the feedwater level control system respond to this event? Assume the "A" GEMAC is selected for control and the system is operating in three-element control.

Answer:

A reference leg leak will result in a rise in indicated level. As a result, the FRVs will close down causing actual water level to lower.

K/A: 259001 A: 2.07 RO: 3.7

IG: LOT-01-259

OBJ: 5e

REF: OT 3114

Open Reference Question

JPM 25908F

Question 2:

During post-LOCA level control, condenser hotwell level lowers. In addition to the normal makeup, what methods are available to supply makeup to the hotwell?

Answer:

- Open Emergency Makeup valve C-31
- Cross connect Service Water and fill condenser hotwell using SW-55A/B

K/A: 256000 A: 2.06 RO: 3.2

IG: LOT-00-256

OBJ: 3

REF: RP 2170

Open Reference Question

(8)

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Isolate and Vent the Scram Air Header
Reference: OE 3107 OE Appendices, Appendix D
Task Number: 3101060504

Task Performance: AO/RO/SRO _X_ RO/SRO ___ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation _X_ Performance ___ Discuss ___

Setting: Classroom ___ Simulator ___ Plant _X_

Performance Expected Completion Time: 8 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: MD Hawke 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

Actions are being carried out IAW EOP-2 and all control rods have failed to insert.

Initiating Cues:

SS directs you to isolate and vent the Scram Air Header per OE 3107, Appendix D.

Task Standards:

Scram Air Header isolated and vented in accordance with OE 3107, Appendix D.

Required Materials:

OE 3107, OE Appendices, Appendix D

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT Step 1: Obtain Procedure

Standard: OE 3107 Appendix D obtained

SAT/UNSAT Step 2: If reactor pressure is <500 psi then OPEN/confirm OPEN CRD-56 charging water header isolation valve.

Standard: Operator verifies RPV pressure is greater than 500 psig.

Interim Cue: RPV Pressure is 900 psig

SAT/UNSAT *Step 3: Close CRD-A1, Air Filter Inlet Valve

Standard: Air filter inlet valve, CRD-A1, located to the right of CRD Hydraulic Station, handwheel taken to clockwise direction until the valve is shut.

Interim Cue: Valve handwheel rotates freely in the clockwise direction and the valve stem lowers until resistance is felt and the handwheel stops moving.

SAT/UNSAT *Step 4: Close CRD-A4, Air Filter Inlet Valve

Standard: Air filter inlet valve, CRD-A4 located to the right of CRD Hydraulic Station is shut, handwheel taken to clockwise direction.

Interim Cue: Valve handwheel rotates freely in the clockwise direction and the valve stem lowers until resistance is felt and the handwheel stops.

Evaluation **Performance Steps**

SAT/UNSAT **Step 5:** **Check open/open CRD-A2, Air Filter Outlet Valve**

Standard: Air filter outlet valve, CRD-A2 located to the right of the CRD Hydraulic Station is Open, handwheel taken to the clockwise direction, then counter-clockwise until full open.

Interim Cue: Valve moves freely in the clockwise direction, then counter-clockwise until resistance is felt and the handwheel stops moving. The valve stem moves first inward then outward while the valve is moving.

SAT/UNSAT **Step 6:** **Check open/open CRD-A3, Air Filter Outlet Valve**

Standard: Air filter outlet valve, CRD-A3 located to the right of the CRD Hydraulic Station is Open, handwheel taken to the clockwise direction, then counter-clockwise until full open.

Interim Cue: Valve handwheel rotates freely clockwise, then counter-clockwise until resistance is felt and the handwheel stops moving. The valve stem moves inward then outward while the valve is moving.

SAT/UNSAT ***Step 7:** **Open Air Filter Cartridge Drains CRD-A12 and CRD-A13**

Standard: Air Filter Cartridge drains, petcocks located on the underside of the air filters located between CRD A1 & A4 and CRD A2 & A3 are rotated counter-clockwise

Comment: Air Header should be blowing down through drain valves

---

Interim Cue: Valves rotate freely counter-clockwise until resistance is felt, they stop moving and the sound of air rushing out is heard.

Evaluation **Performance Steps**

SAT/UNSAT Step 8: Verify Scram Air header depressurizing.

Standard: Air pressure decreasing on PI-3-229, located on the wall near CRD flow control station.

Interim Cue: When the operator locates PI-3-229 inform him that the air pressure is decreasing.

SAT/UNSAT Step 9: Inform SCRO that the scram air header has been isolated and vented.

Standard: Inform SCRO, scram air header is isolated and vented.

Interim Cue: Report is acknowledged.

TIME FINISH: _____

Terminating Cue: Scram Air Header isolated and vented IAW OE 3107 Appendix D.

Evaluators Comments: _____
_____
_____

System: 295037 K/A's: EK2.01 EK2.03 EK2.05 EK2.12
EK3.07 EK3.08 EA1.01 EA1.05
EA1.08 EA2.05

System: 295015 K/A's: AK2.01 AK2.03 AK2.04 AK2.07
AK2.11 AA1.01 AA1.02 AA1.04
AA2.02

Generic K/A's:	2.1.10	2.2.25	2.1.28	2.1.30
	2.4.50	2.4.10	2.1.30	2.1.32
	2.4.1			

JPM 20015

Question 1:

What is the reason CRD-56 is opened when implementing OE 3107 Appendix D, Manual Isolation and Venting of the Scram Air Header, with reactor pressure less than 500 psig?

Answer:

Opening CRD-56 will allow the CRD pumps to recharge the CRD accumulators. Below 500 psig the accumulators will be needed as the motive force to SCRAM the control rod.

Not required for answer:
Above 500 psig, reactor pressure provides the motive force to scram the control rod.

K/A: 295037 EA: 1.05 RO: 3.9

IG: LOT-00-626

OBJ: 3

Reference: ON 3145, OE 3107 Appendix D

Open Reference Question

JPM 20015

Question 2:

How will the CRD Hydraulic System flow respond when OE 3107 Appendix D, MANUAL ISOLATION AND VENTING OF THE SCRAM AIR HEADER, is implemented?

Answer:

Venting air will result in the loss of air to the flow control valve causing the valve to fail closed. Drive and Cooling Water delta-P will decrease to zero.

K/A: 295019 AK: 2.01 RO: 3.8

IG: LOT-00-626

OBJ: 4

REF: OE 3107 Appendix D, ON 3146

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Lineup to Operate SRV-71 A and B From The RCIC Room
Reference: OP 3126, Appendix C, Shutdown Using Alternate Shutdown Methods
Task Number: 2007170501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation _X_ Performance ___ Discuss ___

Setting: Classroom ___ Simulator ___ Plant _X_

Performance Expected Completion Time: 20 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: _____ 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: Plant Shutdown is in progress, outside the Control Room. Rx depressurization required. Assume all immediate actions from Control Room are complete. Maintenance Electricians are not available to perform this procedure.

Initiating Cues: The SS directs you to lineup to operate SRV-71A and SRV-71B from the RCIC room per OP 3126, Appendix C.

Task Standards: SRV-71A and SRV-71B are aligned for operation from RCIC room.

Required Materials: OP 3126, Appendix C, Shutdown Using Alternate Shutdown Methods

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain Procedure, review administrative limits and precautions.**

Standard: OP 3126, Appendix C obtained. Precautions reviewed.

Interim Cue: If asked, inform operator that prerequisites are met.

SAT/UNSAT **Step 2:** **Verify Local SRV Switch for SRV-71A, SRV-71B are in the CLOSED Position (213')**

Standard: Operator indicates switches closed

SAT/UNSAT ***Step 3:** **Place the alternate shutdown transfer switch for SRV-71A and SRV-71B to EMERGENCY (232').**

Standard: Operator indicates that the switch is in the EMERGENCY position.

Interim Cue: When operator indicates he will reposition the switch, inform him the switch moves sharply to the 10 o'clock position.

SAT/UNSAT ***Step 4:** **Place the MTS-13-1 transfer switch to EMERGENCY position by turning counter-clockwise (213').**

Standard: Operator indicates that the switch is moved counter-clockwise to the EMERGENCY position.

Interim Cue: Switch moves smartly counter-clockwise the ARROW is positioned to 12 o'clock.

Evaluation **Performance Steps**

SAT/UNSAT ***Step 5:** **Place the transfer switches on the RCIC shutdown panel (CP-82-1) to EMER in the following sequence: SS1178A, SS1178B, SS1178C (213').**

Standard: The operator indicates that the transfer switches on the RCIC shutdown panel are placed in EMER in the following order: SS1178A, SS1178B, SS1178C.

Interim Cue: When operator indicates he is placing the transfer switches in EMER, inform him that the switch moves counter-clockwise to the 10 o'clock position.

SAT/UNSAT ***Step 6:** **Close the SRV Control Power knifeswitch in panel 1300BSII (213').**

Standard: Operator indicates the SRV control power knife switch is closed.

Interim Cue: When the operator indicates that he will close the knife switch, inform him the switch moves up and then comes to a hard stop.

SAT/UNSAT **Step 7:** **Notify SS that SRV Operation is Now Possible**

Standard: Operator notifies SS that SRV-71A and SRV-71B is ready for operation.

Interim Cue: When operator says he will call SS, inform him SS is informed.

TIME FINISH: _____

Terminating Cue: SRV-71A and SRV-71B are aligned for operation from RCIC room.

Evaluators Comments: _____

_____

_____

System: 295016 **K/A's:** K2.01 K2.02 K3.03

JPM 21804

Question 1:

With the reactor at 100% power, an SRV is opened. Predict the expected steady state tailpipe temperature. Use the following assumptions: Reactor Pressure 1000 psig and Torus Pressure is atmospheric.

Answer:

Using the Steam Tables at a reactor pressure of 1000 psig exhausting to atmosphere using a constant enthalpic process yields a temperature of approximately 300°F. An answer between 280°F and 320°F is acceptable.

K/A: 239002 A: 1.01 RO: 3.3

IG: LOT-00-133

OBJ: 21

REF: Steam Tables

Open Reference Question

JPM 21804

Question 2:

The ADS Appendix 'R' switch on CRP 9-3 is placed in Bypass prior to exiting the control room. How is the SRV/ADS logic affected?

Answer:

Appendix 'R' Switch in Bypass:

- Bypasses ADS auto actuation
- Bypasses manual operation from control room
- Isolates normal control power for all SRVs. Allows RV2-71A and RV2-71B alternate control power from RCIC Alt Shutdown control panel

Other affects to system not directly related. Not required for answer.

- Annunciates alarm ADS IN BYP (3-A-6)
- Does not affect over pressure relief actuation

K/A: 295016 AK: 3.03 RO: 3.5

IG: LOT-00-218

OBJ: 7

REF: CWD 752

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Open the Inside Reactor Building Railroad Airlock Door

Reference: OP 2116, Section D, Secondary Containment Integrity Control

Task Number: 2237140102

Task Performance: AO/RO/SRO X RO/SRO ___ SRO Only ___

Sequence Critical: Yes X No ___

Time Critical: Yes ___ No X

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation X Performance ___ Discuss ___

Setting: Classroom ___ Simulator ___ Plant X

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: ____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: _____ 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ 4-8-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: 100% Reactor Power

Initiating Cues: SS directs you to open the inside Reactor Building Railroad Airlock Door "A". The SS has notified security that the inside door will be opened. Another operator has verified the outside Reactor Building Railroad Airlock Door is locked and its seal is pressurized.

Note: If inside door is actually open, remind operator to simulate all actions regardless of actual door position.

Task Standards: Inside door open, secondary containment intact.

Required Materials: OP 2116, Section D, Secondary Containment Integrity Control
Stopwatch (wristwatch is acceptable)

Evaluation **Performance Steps**

TIME START: ____

SAT/UNSAT **Step 1:** **Obtain Procedure, review administrative limits, precautions and prerequisites.**

Standard: OP 2116, Section D obtained, administrative limits, precautions, and prerequisites reviewed.

Interim Cue: If asked, inform operator that prerequisites are done.

SAT/UNSAT **Step 2:** **Notify Security that RBRAD A wil be opened.**

Standard: Initial conditions presented by SS included this notification.

Interim Cue: If asked, inform operator SS has already notified security.

SAT/UNSAT **Step 3:** **If Secondary Containment is required, or is desired, verify RBRAD B is closed. Using RBRAD B seal pressure is between 15-20 psig.**

Standard: Initial conditions presented by SS included this information.

Interim Cue: If asked, the outside AO reports P1-105-31 reads 20 psig.

Evaluation	Performance Steps
SAT/UNSAT	**Step 4: Verify RBRAD B is closed.**
	Standard: Initial conditions presented by SS included this information.
Interim Cue:	If asked, Security reports RBRAD B is locked.
SAT/UNSAT	**Step 5: Verify path for the door is clear of obstructions.**
	Standard: Operator walks over and inspects the door track.
Interim Cue:	If door track is not clear when operator checks door track clear, tell him that it is clear. Note: SS gave order, so permission is granted.
SAT/UNSAT	**Step 6: Ensure the security and rad protection padlocks have been removed prior to opening the Rx Bldg railroad airlock door**
	Standard: Operator checks locks are removed.
SAT/UNSAT	**+*Step 7: Position SW-105-AA to deflate.**
	Standard: Operator turns the switch counter-clockwise to the deflate position.
Interim Cue:	The switch snaps smoothly to the 12 o'clock position.

Evaluation	Performance Steps
SAT/UNSAT	+Step 8: **Wait 2 minutes after seal pressure has decreased to 0 psig.**
	Standard: Operator observes pressure on PI-105-33 decrease to 0 psig and then checks time.
Interim Cue:	When operator indicates that PI-105-33 will go to 0 and he will wait 2 minutes, tell him that it has decreased to "0" psig and 2 minutes have elapsed.
SAT/UNSAT	+*Step 9: **Close breaker on panel AA.**
	Standard: 2 minutes after pressure decreases to 0 psig, the operator closes the local panel breaker. (Breaker position to ON or UP)
Interim Cue:	The breaker handle snaps smoothly into the UP position.
SAT/UNSAT	+*Step 10: **Open the door.**
	Standard: Operator depresses the OPEN pushbutton on the local panel.
Interim Cue:	Pushbutton is depressed. The door begins to open. The door fully opens.
SAT/UNSAT	Step 11: **Open breaker on panel AA.**
	Standard: Operator opens the local panel breaker when the door is fully opened.
Interim Cue:	The breaker snaps smoothly into the down position.
SAT/UNSAT	Step 12: **Close IA-605.**
	Standard: Operator turns valve fully clockwise.
Interim Cue:	The valve handle moves freely clockwise until resistance is felt and the handle stops.

TIME FINISH: ____

Terminating Cue: Inside Reactor Building Railroad access door open.

Evaluators Comments: _____
_____
_____

System: 290001 **K/A's:** K4.01 K6.08 A2.01

JPM 22309

Question 1:

What components are necessary to maintain Secondary Containment integrity?

Answer:

Secondary containment integrity means that the reactor building is intact and the following conditions are met:

1. At least one door in each access opening is closed.
2. The SBGT is operable.
3. All reactor building automatic ventilation system isolation valves are operable or are secured in the isolated position.

K/A: G 2.1.27 RO: 2.8

IG: LOT-02-224

OBJ: 6

REF: T.S., OP 2116

Closed Reference Question

JPM 22309

Question 2:

Several of the SBGT System automatic starts are based on process radiation monitor inputs. What process radiation monitors provide signals and what is the logic associated with these signals?

Answer:

SBGT initiates:

- High radiation signal for Reactor Bldg Vent exhaust (1 out of 2)
- High radiation signal for Refuel floor (1 out of 2)
- Downscale or INOP on both monitors for Rx BLDG vent exhaust (2 out of 2)
- Downscale or INOP on both monitors for Refuel flow radiation (2 out of 2)

K/A: 261000 K: 4.01 RO: 3.7

IG: LOT-00-261

OBJ: CRO 7

REF: OP 2117

Open Reference Question

Vermont Yankee Nuclear Power Corporation

Reactor Operator Initial Exam

May 1999

Simulator Scenarios

Simulation Facility: Vermont Yankee **Scenario No:** 2 **Op Test No:**

Examiners: _____ **Operators:** _____SCRO(Surrogate)
_____ _____CRO
_____ _____ACRO(Surrogate)

Objectives: Evaluate the CRO's ability to:

- recognize the downscale failure of an APRM channel
- insert a manual ½ scram to comply with tech specs
- Respond to a trip of a CRD pump and place the standby CRD pump in service per ON 3145
- Respond to a trip of a reactor recirc pump, evaluate operation in the instability region and reduce power using control rods to exit the region
- Recognize the upscale trip of an APRM channel, which results in an automatic scram failure and necessitates insertion of a manual scram.
- Recognize failure of control rods to fully insert necessitating manual insertion of control rods.
- Maintain RPV level following the scram.

Initial Conditions:

100% power, wintertime, end of cycle, rapid S/D sequence is latched, APRM C out of service and bypassed

Turnover: See attached "Shift Turnover" sheet

Event No.	Malf. No.	Event Type*	Event Description
1	NM05A	**I** CRO	APRM A fails downscale
2	RD01A	**C** CRO	Respond to A CRD pump trip/start B CRD pump
3	RR05B	**R** CRO	Recirc Pump B Drive Motor Breaker Trip/Drive rods to exit instablility region
4	NM05B RP01A	**C** CRO	APRM B fails upscale Failure of auto scram logic/Insert manual scram
5	RP01C	**C** CRO	ARI/RPT logic failure/manually trip A recirc pump
6	RD12A RD12B	**M** CRO	Control Rods fail to fully insert due to SDV blockage/manually insert control rods to fully shutdown reactor

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: _____ Scenario No.: 2 Event No.: 1

Event Description: **Downscale failure of APRM A**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize APRM A downscale indication by: ▪ CRP 9-5 recorder indication ▪ Downscale warning light lit on CRP 9-5 desk section Acknowledge annunciator 5-M-4 and consult ARS Report condition to SCRO
	SCRO	*Consult Tech Specs table 3.1.1 and 3.2.2 and direct that a ½ scram and ½ PCIS group isolation signals should be inserted*
	ACRO	When directed, insert a ½ scram on RPS channel A: ▪Depress the A manual scram pushbutton ▪Acknowledge CRP 9-5 annunciators as appropriate ▪Verify RPS A scram solenoid white lights on CRP 9-5 are OFF

Op-Test No.: _____ Scenario No.: 2 Event No.: 2

Event Description: **A CRD pump trip**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize A CRD pump trip by observing: ▪Annunciators 5-B-1, B-3, C-5 energized ▪System flow low ▪Drive water pressure low ▪Cooling water pressure low ▪A CRD pump green and amber lights ON and red light OFF on CRP 9-5 Report trip to SCRO Acknowledge CRP 9-5 annunciators and consult ARS 5-B-1, B-3, C-5: ▪ Recommend entering ON 3145 and starting B CRD pump per ARS Acknowledge and report CRD accumulator low pressure alarms as necessary
	SCRO	*Enter and direct actions IAW ON 3145, Loss of CRD Regulating Function* *Direct CRO to place B CRD pump in service per ON 3145*
	CRO	Place B CRD in service IAW ON 3145 as follows: ▪Place CRD flow controller FIC-3-301 to **MANUAL**, ▪Dial flow controller to **ZERO** (0 gpm) to close CRD-FCV-19A ▪Start the B CRD pump ▪Adjust CRD flow controller to establish 54-58 GPM ▪Balance flow controller and place in **BALANCE** ▪Direct AO to verify charging header pressure 1400-1500 psig

Op-Test No.: _____ Scenario No.: 2 Event No.: 3

Event Description: **B Reactor Recirc pump trip/Drive rods to exit instability region**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize and report trip of B recirc pump Recognize and report reduction in Rx power Perform OT 3118, Recirc Pump Trip, immediate actions as follows: ▪Shut discharge valve RV-53B ▪Reduce A recirc pump speed to 70%, maintaining Rx power reduction rate less than 10%/min ▪Evaluate and report combination of Rx power and core flow is in the "exclusion" region of COLR fig 2.4-1
	SCRO	*Enter and direct actions IAW OT 3118 and OT 3117, Reactor Instability* *Utilize process computer to evaluate core stability decay ratios*
	CRO	Monitor APRMs and LPRMs for indications of instability
	SCRO	*Direct Rx power reduction with control rods to exit exclusion and buffer regions*
	CRO	When directed insert control rods using rapid shutdown sequence as follows: ▪Verify rapid shutdown sequence is latched ▪Insert rods in reverse sequence using "continuous in" ▪Monitor APRM indication and report when below exclusion and buffer regions
	CRO	When directed, reopen B recirc discharge valve RV-53B

Op-Test No.: _____ Scenario No.: __2__ Event No.: __4__

Event Description: **APRM B upscale failure/ failure of automatic scram/failure of all rods to fully insert**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize APRM B upscale indication
		Recognize and report auto scram channel B and full scram failure
	****CT****	**INSERT MANUAL SCRAM**
		Observe and report the following: ▪ Scram occurs ▪ Inward rod motion ▪ Rx power less than 2% ▪ All control rods did not fully insert
		Place Rx mode switch to S/D when MSL flow permits
		Verify SDV vent and drain valves shut
	SCRO	*Enter and direct actions IAW OT 3100, Rx Scram, and EOP-2, ATWS RPV Control*

Op-Test No.: _____ Scenario No.: 2 Event No.: 5

Event Description: **ARI/RPT Logic failure**

Time	Position	Applicant's Actions or Behavior
	SCRO	*Direct CRO to manually initiate ARI/RPT per EOP-2, ATWS RPV Control*
	CRO	Insert ARI/RPT by depressing all 4 ARI/RPT pushbuttons Recognize failure of logic by: ▪Control rod positions unchanged ▪ARI/RPT annunciators 4-N-1, P-1, Q-1, R-1 NOT lit ▪A Recirc pump field breaker SHUT (red light ON, green OFF) Manually trip A recirc pump drive motor breaker Report failure to SCRO

Op-Test No.: _____ Scenario No.: 2 Event No.: 6

Event Description: **Control rods fail to fully insert/manually insert control rods**

Time	Position	Applicant's Action or Behavior
	SCRO	*Direct control rod insertion using OE 3107 appendix G or F*
	CRO **CT**	**INSERT CONTROL RODS AS DIRECTED** Using appendix G: ▪Verify 1 CRD pump running ▪Bypass RWM ▪Direct AO to shut CRD-56 ▪Manually insert control rods in spiral pattern Using appendix F: ▪Direct E&C to bypass scram and ARI/RPT signals ▪Reset scram and ARI/RPT ▪Insert manual scram (repeat until all rods are inserted)
	CRO	When directed, maintain RPV water level between –22" and 177" with reactor feed system
	CREW	*Verify Rx pressure controlled by MHC* *Verify fast transfer of house electrical loads to startup transformer*
	SCRO	*Direct cooldown via BPVs not to exceed 100F/hr*
	CREW	*Commence cooldown as directed*

SIMULATOR OPERATOR INSTRUCTIONS FOR SCENARIO #2

-- GENERAL REQUIREMENTS

- All chart recorders will be rolled forward.
- Paper from selected chart recorders will be saved for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be returned to their normal storage place and closed.
- All markable procedures, boards, etc will be erased.
- All paper used by the previous crew will be removed and kept for the examination team as requested.
- The simulator operator, or designated person, will keep a rough log of all communications into and out of the "control room" during the scenario as requested by the examination team.

-- INITIAL SETUP

- **IC 81**
- approximately 100% power
- APRM C Bypassed
- Rapid S/D sequence latched

Event No.	Malf. No.	Key	Severity	Event Type*		Event Description
1	NM05A	Key 1	0%	I	CRO	APRM A fails downscale
2	RD01A	Key 2	N/A	C	CRO	A CRD pump trip
3	RR05B	Key 3	N/A	R	CRO	B Recirc Drive Motor Breaker Trip
4	RP01A	Key 4	N/A	C	CRO	Failure of automatic scram
	NM05B	Key 5	100%			B APRM fails upscale
5	RP01C	Pre-insert	N/A	C	CRO	ARI/RPT logic failure
6	RD12A RD12B	Pre-insert	20%	M	CRO	Control Rods fail to fully insert due to SDV blockage

SIMULATOR OPERATOR INSTRUCTIONS FOR SCENARIO #2 (Continued)

-- **DURING THE SCENARIO**

- The examination team will determine when each event is to be inserted and when to "Freeze" and will inform the simulator operator.

- **EVENT 1** -- Insert Malfunction **KEY #1** shortly after the crew assumes the watch (or at evaluator's discretion). Support the crew's investigation into the APRM failure as E&C. No repair will be completed during the scenario.

- **EVENT 2** -- Insert malfunction **KEY #2** after the ½ scram is inserted (or at evaluator's discretion). AO and /or maintenance will report A CRD pump motor is hot to the touch and the breaker is tripped. When directed to secure recirc seal purge, place RF **RDR11** and **RDR12** to **0** after about 5 minutes. When asked to restore seal purge place **RDR11** and **RDR12** to **3** after about 5 minutes.

- **EVENT 3** -- Insert malfunction **KEY #3** after CRD parameters are stable (or at evaluator's discretion). Support crew as AO and Maintenance with troubleshooting and repair of B recirc drive breaker. No repair will be made during this scenario. Provide single loop R/CE support as requested. If directed control A recirc pump lube oil temperature using RF **SWR52**

- **EVENT 4** -- When Rx power has been **REDUCED** and is **OUTSIDE** the **exclusion and buffer** regions and is stable (or at evaluator's discretion) insert malfunction **KEY #4**, RP01A, **THEN** insert malfunction **KEY #5**.

  - If directed, place remote function **APP_F** to **bypass** auto scrams after approximately 10 minutes (or at evaluator's discretion)

  - If directed , place remote function **APP_G** to **0%** to shut CRD-56 after approximately 5 minutes (or at evaluator's discretion)

- **TERMINATION** -- The scenario may be terminated after all control rods are inserted and level is being maintained –22" to +177" (or at lead evaluator's discretion)

SHIFT TURNOVER (#2)

PLANT CONDITIONS:

- 100% Power
- Winter
- End of Cycle
- Rapid shutdown sequence latched
- APRM C bypassed

INOPERABLE EQUIPMENT/LCOs:

- APRM C failed last shift and was bypassed, resulting in an indefinite LCO per TS table 3.1.1

SCHEDULED EVOLUTIONS:

- Continue full power operations
- Support E&C troubleshooting and repair of APRM C

SURVEILLANCES DUE THIS SHIFT:

- None

ACTIVE CLEARANCES:

- None

GENERAL INFORMATION:

- N/A

Appendix D **Scenario # 1 Outline** ES-D-1

Simulation Facility: Vermont Yankee **Scenario No.:** #1 **Op Test No.:**

Examiners: _____ **Operators:** _____ SCRO(surr)

_____ _____ CRO(surr)

_____ _____ ACRO

Objectives: Evaluate the ACRO's ability to:

- Place the main generator on the grid and operate the plant during low power conditions,
- Respond to a loss of power to Bus 8
- Recognize a failure of the group 3 isolation to go to completion and take appropriate corrective actions
- Respond to increasing primary containment pressure and temperature
- Operate the drywell HVAC during a LOCA
- Recognize the failure of a primary containment spray valve
- Manually energize bus 8 following repair
- Operate the RHR system in containment spray and cooling modes

Initial Conditions: IC-82, 27%, ready to synch main turbine to the grid

Turnover: See Attached "Shift Turnover" Sheet

Event No.	Malf. No.	Event Type*	Event Description
1		N ACRO	Place the main generator on the grid
2	RP08A RP08B ED05C	I ACRO	PCIS Group 3 logic failure following bus 8 loss
3	MS06	M ACRO	Increasing Primary Containment Pressure and Temperature due to steam line break inside the drywell
4	RH11A	C ACRO	Primary containment spray valve, RHR-31A, fails to open/re-power bus 8/spray drywell

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op Test No.:	Scenario No.: #1	Event No.: 1
Event Description:	Synch the Main Generator to the Grid	

Time	Position	Applicant's Actions Or Behavior
	SCRO	*Direct ACRO to place main generator on the gird per OP 0105, Phase 3 beginning at Step C.7* *Notify Load Dispatcher*
	ACRO	Place main generator on the grid IAW OP 0105, Phase 3, Section C: ▪ Open Bkr 81-1T ▪ Open Bkr 1T ▪ Close T-1 MOD ▪ Place reclosure switches to "Off" for 81-1T and 1T ▪ Place breaker switch in synch scope and turn synch scope on ▪ Adjust generator output voltage to be equal or slightly higher than line voltage ▪ Adjust generator speed to achieve synch scope moving slowly in the "Fast" direction ▪ When synch scope between 5 min of 12 and 12, close Bkr 81-1T ▪ Immediately pick up 25-50 MWe load by going to "Raise" on speed/load changer ▪ When Bkr 81-1T closed and generator at desired load, synchronize and close Bkr 1T ▪ Turn off synch scope and remove breaker switch ▪ Per Velco, place reclosure switch for 1T to "Inst" and 81-1T to "Sync Ck" ▪ Remain at current load to allow exhaust hoods to cool (5 minutes) ▪ Close drains per Step C.10 ▪ Adjust voltage to maintain reactive load at minimum ▪ Monitor generator parameters
	CRO	*Monitor plant parameters/assist as necessary*

Op Test No.:	Scenario No.: #1	Event No.: 2

Event Description: PCIS Group 3 logic failure following loss of bus 8

Initial Automatic Actions: RPS A loss, ½ scram

Time	Position	Applicant's Actions Or Behavior
	CREW	*Recognize and report loss of bus 8*
	ACRO	Verify/confirm: ▪ Bus 8 @ 0 volts ▪ Breaker 38 and 88 tripped ▪ Acknowledge annunciators and refer to ARS as appropriate
	SCRO	*Refer to Tech Specs* *Direct troubleshooting/repair* *Direct ACRO to verify/backup group 3 isolation*
	ACRO ****CT****	Recognize failure of group 3 isolation logic: **MANUALLY INITIATE GROUP 3 ISOLATION:** ▪ Utilize posted operator aid to confirm automatic action required for group 3 isolation ▪ Place all group 3 valves in the isolated position ▪ start SGT fans A and B IAW OP 2117 as follows: - Place fan A switch to START - Check SGT-2A and 3A OPEN - OPEN SGT-1A - Check SGT-4A SHUT - Verify SGT flow - Repeat steps for fan B (unless otherwise directed by SCRO) Report failure to SCRO

Op Test No.:	Scenario No.: #1	Event No.: 2, continued
Event Description:	PCIS Group 3 logic failure following loss of bus 8	

Time	Position	Applicant's Actions Or Behavior
	SCRO	*Consult tech specs* *Coordinate troubleshooting/repair*
	CRO	*Monitor plant parameters/assist as necessary*

Op Test No.: **Scenario No.: #1** **Event No.: 3**

Event Description: Increasing Primary Containment Pressure and Temperature

Cause: Steam line break inside drywell

Initial Automatic Actions: LOCA signal

Time	Position	Applicant's Actions Or Behavior
	CREW	*Recognize rising drywell pressure and temperature*
	ACRO	Perform immediate actions of OT 3111, High Drywell Pressure: ▪ Maximize drywell cooling by starting all drwell RRU fans ▪ Confirm torus vent path isolated ▪ Verfy nitrogen make up is terminated When drywell ressure exceeds 2.5 psig perform the following: ▪ Verify RHR and CS pumps auto start ▪ Confirm HPCI injecting to RPV ▪ When directed, secure HPCI by rotating inhibit collar to the INHIBIT position
	SCRO	*Enter and direct actions IAW OT 3111; OT 3100, Reactor Scram procedure; EOP-1, RPV Control; EOP-3, Primary Containment Control* *Direct manual reactor scram*
	CRO	*Insert manual scram*
	ACRO	When directed by SCRO, perform the following actions: ▪ Backup PCIS group isolations as required ▪ restart drywell RRU's using MCA bypass keylock switch ▪ Spray the Torus using RHR IAW OP 2124, Appendix D ▪ Attempt to spray the drywell, recognize RHR-31A failure to open, and report ot SCRO
	SCRO	*When maintenance reports bus 8 repair is complete, direct ACRO to re-energize bus 8*

Op Test No.:	Scenario No.: #1	Event No.: 3 continued
Event Description: Increasing Primary Containment Pressure and Temperature		
Cause: Recirc rupture inside drywell		

	ACRO	Re-energize bus 8 as directed: ▪ Close breakers 38 and 88 *Or* ▪ Cross tie bus 8 and 9 by closing breakers 8T9 and 9T8
	SCRO	*When bus 8 is re-energized, ensure DWSIL indicates safe to spray, DW RRUs OFF, both recirc pumps OFF, then direct ACRO to spray drywell using RHR loop B*
	ACRO ****CT****	When directed, **Spray the drywell using OP 2124, appendix E** ▪ Bypass RHRSW LOCA trip signal ▪ Start RHRSW pump ▪ Verify RHR-89B automatically opens ▪ Establish RHRSW flow 2950-3050 GPM ▪ Ensure one RHR pump running ▪ Bypass RHR-B LOCA isolation signal (group 2B) ▪ Open RHR-26B & 31B ▪ Verify RHR flow approximately 7000 GPM ▪ Confirm drywell pressure lowering

SIMULATOR OPERATOR INSTRUCTIONS FOR SCENARIO # 1

-- GENERAL REQUIREMENTS

- All chart recorders will be rolled forward.
- Paper from selected chart recorders will be saved for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be returned to their normal storage place and closed.
- All markable procedures, boards, etc will be erased.
- All paper used by the previous crew will be removed and kept for the examination team as requested.
- The simulator operator, or designated person, will keep a rough log of all communications into and out of the "control room" during the scenario as requested by the examination team.

-- INITIAL SETUP

- IC-82, 27% power, ready to synch to the grid
- Place turbine RPM, ptid T005, on CRP 9-7 ERFIS digital display
- Preinsert malfunction AN17F3 to disable turbine excessive expansion alarm
- Place simulator in RUN, silence and clear RBM alarms

Event No.	Malf. No.	Key	Severity	Event Type*		Event Description
2	RP08A RP08B	Pre-insert	N/A	I	ACRO	Group 3 isolation logic failure
	ED05C	Key 1	N/A			Bus 8 de-energizes due to fault
3	MS06	Key 2	5 % @ 500sec	M	ACRO	Steam line break inside the drywell
4	RH11A	Pre-insert	N/A	C	ACRO	RHR-31A fails to open

-- DURING THE SCENARIO

- The examination team will determine when each event is to be inserted and when to "Freeze" and will inform the simulator operator.

- **EVENT 1** -- Support crew while placing generator on the grid. Keep them moving if they are slow in getting started.

- **EVENT 2** -- Insert malfunction **KEY #1** several minutes after the generator is on the grid (or at evaluator's discretion). Support troubleshooting as requested.

- **EVENT 3** -- Insert malfunction **KEY #2** after the plant is stable following event #3 (or at evaluator's discretion).

- **EVENT 4** -- After RHR-31A failure is discovered and reported, **REMOVE MALFUNCTION ED05C, BUS 8 FAULT,** then report as electrical maintenance that bus 8 fault has been repaired and it may be re-energized.

TERMINATION:

After drywell pressure drops below 2.5 psig following containment spray and containment spray valves are shut (or at evaluator's discretion).

SHIFT TURNOVER # 1

PLANT CONDITIONS:

-- Plant startup at 27% power, turbine ready to be synched to the grid
-- Sequence A2, Group 55

INOPERABLE EQUIPMENT/LCOs:

-- None

SCHEDULED EVOLUTIONS:

-- Continue plant startup and place the main generator on the grid. Currently in OP 0105, Phase 3, at Step C.7

SURVEILLANCES DUE THIS SHIFT:

-- OP 0105 startup surveillances

ACTIVE CLEARANCES:

-- None

GENERAL INFORMATION:

-- N/A

Vermont Yankee Nuclear Power Corporation

Reactor Operator Initial Exam

May 1999

Simulator Scenarios

OPERATING TEST NO.:

Applicant Type	Evolution Type	Minimum Number	Scenario Number	
			1	**2**
RO	Reactivity	1	0	1
	Normal	1	1	0
	Instrument	2	1	1
	Component	2	1	1
	Major	1	1	1

Competencies	Applicant #1 **RO**	
	SCENARIO	
	1	**2**
Understand and Interpret Annunciators and Alarms	**YES**	**YES**
Diagnose Events and Conditions	**YES**	**YES**
Understand Plant and System Response	**YES**	**YES**
Comply With and Use Procedures (1)	**YES**	**YES**
Operate Control Boards (2)	**YES**	**YES**
Communicate and Interact With the Crew	**YES**	**YES**
Demonstrate Supervisory Ability (3)	**N/A**	**N/A**
Comply With and Use Tech. Specs. (3)	**N/A**	**N/A**

Notes: 1 RO Applicant, 2 scenarios

(1) Includes Technical Specification compliance for an RO.
(2) Optional for an SRO-U.
(3) Only applicable to SROs.

Simulation Facility: Vermont Yankee **Scenario No:** 2 **Op Test No:**

Examiners: _____ **Operators:** _____SCRO(Surrogate)
_____ _____CRO
_____ _____ACRO(Surrogate)

Objectives: Evaluate the CRO's ability to:

- recognize the downscale failure of an APRM channel
- insert a manual ½ scram to comply with tech specs
- Respond to a trip of a CRD pump and place the standby CRD pump in service per ON 3145
- Respond to a trip of a reactor recirc pump, evaluate operation in the instability region and reduce power using control rods to exit the region
- Recognize the upscale trip of an APRM channel, which results in an automatic scram failure and necessitates insertion of a manual scram.
- Recognize failure of control rods to fully insert necessitating manual insertion of control rods.
- Maintain RPV level following the scram.

Initial Conditions:

100% power, wintertime, end of cycle, rapid S/D sequence is latched, APRM C out of service and bypassed

Turnover: See attached "Shift Turnover" sheet

Event No.	Malf. No.	Event Type*	Event Description
1	NM05A	I CRO	APRM A fails downscale
2	RD01A	C CRO	Respond to A CRD pump trip/start B CRD pump
3	RR05B	R CRO	Recirc Pump B Drive Motor Breaker Trip/Drive rods to exit instablility region
4	NM05B RP01A	C CRO	APRM B fails upscale Failure of auto scram logic/Insert manual scram
5	RP01C	C CRO	ARI/RPT logic failure/manually trip A recirc pump
6	RD12A RD12B	M CRO	Control Rods fail to fully insert due to SDV blockage/manually insert control rods to fully shutdown reactor

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: _____ Scenario No.: 2 Event No.: 1

Event Description: **Downscale failure of APRM A**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize APRM A downscale indication by: ▪ CRP 9-5 recorder indication ▪ Downscale warning light lit on CRP 9-5 desk section Acknowledge annunciator 5-M-4 and consult ARS Report condition to SCRO
	SCRO	*Consult Tech Specs table 3.1.1 and 3.2.2 and direct that a ½ scram and ½ PCIS group isolation signals should be inserted*
	ACRO	When directed, insert a ½ scram on RPS channel A: ▪Depress the A manual scram pushbutton ▪Acknowledge CRP 9-5 annunciators as appropriate ▪Verify RPS A scram solenoid white lights on CRP 9-5 are OFF

Op-Test No.: _____ Scenario No.: 2 Event No.: 2

Event Description: **A CRD pump trip**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize A CRD pump trip by observing: ▪ Annunciators 5-B-1, B-3, C-5 energized ▪ System flow low ▪ Drive water pressure low ▪ Cooling water pressure low ▪ A CRD pump green and amber lights ON and red light OFF on CRP 9-5 Report trip to SCRO Acknowledge CRP 9-5 annunciators and consult ARS 5-B-1, B-3, C-5: ▪ Recommend entering ON 3145 and starting B CRD pump per ARS Acknowledge and report CRD accumulator low pressure alarms as necessary
	SCRO	*Enter and direct actions IAW ON 3145, Loss of CRD Regulating Function* *Direct CRO to place B CRD pump in service per ON 3145*
	CRO	Place B CRD in service IAW ON 3145 as follows: ▪ Place CRD flow controller FIC-3-301 to **MANUAL**, ▪ Dial flow controller to **ZERO** (0 gpm) to close CRD-FCV-19A ▪ Start the B CRD pump ▪ Adjust CRD flow controller to establish 54-58 GPM ▪ Balance flow controller and place in **BALANCE** ▪ Direct AO to verify charging header pressure 1400-1500 psig

Op-Test No.: _____ Scenario No.: 2 Event No.: 3

Event Description: **B Reactor Recirc pump trip/Drive rods to exit instability region**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize and report trip of B recirc pump Recognize and report reduction in Rx power Perform OT 3118, Recirc Pump Trip, immediate actions as follows: ▪Shut discharge valve RV-53B ▪Reduce A recirc pump speed to 70%, maintaining Rx power reduction rate less than 10%/min ▪Evaluate and report combination of Rx power and core flow is in the "exclusion" region of COLR fig 2.4-1
	SCRO	*Enter and direct actions IAW OT 3118 and OT 3117, Reactor Instability* *Utilize process computer to evaluate core stability decay ratios*
	CRO	Monitor APRMs and LPRMs for indications of instability
	SCRO	*Direct Rx power reduction with control rods to exit exclusion and buffer regions*
	CRO	When directed insert control rods using rapid shutdown sequence as follows: ▪Verify rapid shutdown sequence is latched ▪Insert rods in reverse sequence using "continuous in" ▪Monitor APRM indication and report when below exclusion and buffer regions
	CRO	When directed, reopen B recirc discharge valve RV-53B

Op-Test No.: _____ Scenario No.: 2 Event No.: 4

Event Description: **APRM B upscale failure/ failure of automatic scram/failure of all rods to fully insert**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize APRM B upscale indication Recognize and report auto scram channel B and full scram failure
	CT	**INSERT MANUAL SCRAM**
		Observe and report the following: ▪Scram occurs ▪Inward rod motion ▪Rx power less than 2% ▪All control rods did not fully insert Place Rx mode switch to S/D when MSL flow permits Verify SDV vent and drain valves shut
	SCRO	*Enter and direct actions IAW OT 3100, Rx Scram, and EOP-2, ATWS RPV Control*

Op-Test No.: _____ Scenario No.: 2 Event No.: 5

Event Description: **ARI/RPT Logic failure**

Time	Position	Applicant's Actions or Behavior
	SCRO	*Direct CRO to manually initiate ARI/RPT per EOP-2, ATWS RPV Control*
	CRO	Insert ARI/RPT by depressing all 4 ARI/RPT pushbuttons Recognize failure of logic by: ▪Control rod positions unchanged ▪ARI/RPT annunciators 4-N-1, P-1, Q-1, R-1 NOT lit ▪A Recirc pump field breaker SHUT (red light ON, green OFF) Manually trip A recirc pump drive motor breaker Report failure to SCRO

Op-Test No.: _____ Scenario No.: 2 Event No.: 6

Event Description: **Control rods fail to fully insert/manually insert control rods**

Time	Position	Applicant's Action or Behavior
	SCRO	*Direct control rod insertion using OE 3107 appendix G or F*
	CRO **CT**	**INSERT CONTROL RODS AS DIRECTED** Using appendix G: ▪Verify 1 CRD pump running ▪Bypass RWM ▪Direct AO to shut CRD-56 ▪Manually insert control rods in spiral pattern Using appendix F: ▪Direct E&C to bypass scram and ARI/RPT signals ▪Reset scram and ARI/RPT ▪Insert manual scram (repeat until all rods are inserted)
	CRO	When directed, maintain RPV water level between –22" and 177" with reactor feed system
	CREW	*Verify Rx pressure controlled by MHC* *Verify fast transfer of house electrical loads to startup transformer*
	SCRO	*Direct cooldown via BPVs not to exceed 100F/hr*
	CREW	*Commence cooldown as directed*

SIMULATOR OPERATOR INSTRUCTIONS FOR SCENARIO #2

-- GENERAL REQUIREMENTS

- All chart recorders will be rolled forward.
- Paper from selected chart recorders will be saved for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be returned to their normal storage place and closed.
- All markable procedures, boards, etc will be erased.
- All paper used by the previous crew will be removed and kept for the examination team as requested.
- The simulator operator, or designated person, will keep a rough log of all communications into and out of the "control room" during the scenario as requested by the examination team.

-- INITIAL SETUP

- **IC 81**
- approximately 100% power
- APRM C Bypassed
- Rapid S/D sequence latched

Event No.	Malf. No.	Key	Severity	Event Type*		Event Description
1	NM05A	Key 1	0%	I	CRO	APRM A fails downscale
2	RD01A	Key 2	N/A	C	CRO	A CRD pump trip
3	RR05B	Key 3	N/A	R	CRO	B Recirc Drive Motor Breaker Trip
4	RP01A	Key 4	N/A	C	CRO	Failure of automatic scram
	NM05B	Key 5	100%			B APRM fails upscale
5	RP01C	Pre-insert	N/A	C	CRO	ARI/RPT logic failure
6	RD12A RD12B	Pre-insert	20%	M	CRO	Control Rods fail to fully insert due to SDV blockage

-- **DURING THE SCENARIO**

- The examination team will determine when each event is to be inserted and when to "Freeze" and will inform the simulator operator.

- **EVENT 1** -- Insert Malfunction **KEY #1** shortly after the crew assumes the watch (or at evaluator's discretion). Support the crew's investigation into the APRM failure as E&C. No repair will be completed during the scenario.

- **EVENT 2** -- Insert malfunction **KEY #2** after the ½ scram is inserted (or at evaluator's discretion). AO and /or maintenance will report A CRD pump motor is hot to the touch and the breaker is tripped. When directed to secure recirc seal purge, place RF **RDR11** and **RDR12** to **0** after about 5 minutes. When asked to restore seal purge place **RDR11** and **RDR12** to **3** after about 5 minutes.

- **EVENT 3** -- Insert malfunction **KEY #3** after CRD parameters are stable (or at evaluator's discretion). Support crew as AO and Maintenance with troubleshooting and repair of B recirc drive breaker. No repair will be made during this scenario. Provide single loop R/CE support as requested. If directed control A recirc pump lube oil temperature using RF **SWR52**

- **EVENT 4** -- When Rx power has been **REDUCED** and is **OUTSIDE** the **exclusion and buffer** regions and is stable (or at evaluator's discretion) insert malfunction **KEY #4**, RP01A, **THEN** insert malfunction **KEY #5**.

  - If directed, place remote function **APP_F** to **bypass** auto scrams after approximately 10 minutes (or at evaluator's discretion)

  - If directed , place remote function **APP_G** to **0%** to shut CRD-56 after approximately 5 minutes (or at evaluator's discretion)

- **TERMINATION** -- The scenario may be terminated after all control rods are inserted and level is being maintained –22" to +177" (or at lead evaluator's discretion)

SHIFT TURNOVER (#2)

PLANT CONDITIONS:

- 100% Power
- Winter
- End of Cycle
- Rapid shutdown sequence latched
- APRM C bypassed

INOPERABLE EQUIPMENT/LCOs:

- APRM C failed last shift and was bypassed, resulting in an indefinite LCO per TS table 3.1.1

SCHEDULED EVOLUTIONS:

- Continue full power operations
- Support E&C troubleshooting and repair of APRM C

SURVEILLANCES DUE THIS SHIFT:

- None

ACTIVE CLEARANCES:

- None

GENERAL INFORMATION:

- N/A

Simulation Facility: Vermont Yankee **Scenario No.:** #1 **Op Test No.:**

Examiners: _____ **Operators:** _____ SCRO(surr)

_____ _____ CRO(surr)

_____ _____ ACRO

Objectives: Evaluate the ACRO's ability to:

- Place the main generator on the grid and operate the plant during low power conditions,
- Respond to a loss of power to Bus 8
- Recognize a failure of the group 3 isolation to go to completion and take appropriate corrective actions
- Respond to increasing primary containment pressure and temperature
- Operate the drywell HVAC during a LOCA
- Recognize the failure of a primary containment spray valve
- Manually energize bus 8 following repair
- Operate the RHR system in containment spray and cooling modes

Initial Conditions: IC-82, 27%, ready to synch main turbine to the grid

Turnover: See Attached "Shift Turnover" Sheet

Event No.	Malf. No.	Event Type*	Event Description
1		N ACRO	Place the main generator on the grid
2	RP08A RP08B ED05C	I ACRO	PCIS Group 3 logic failure following bus 8 loss
3	MS06	M ACRO	Increasing Primary Containment Pressure and Temperature due to steam line break inside the drywell
4	RH11A	C ACRO	Primary containment spray valve, RHR-31A, fails to open/re-power bus 8/spray drywell

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op Test No.:	Scenario No.: #1	Event No.: 1
Event Description:	Synch the Main Generator to the Grid	

Time	Position	Applicant's Actions Or Behavior
	SCRO	*Direct ACRO to place main generator on the gird per OP 0105, Phase 3 beginning at Step C.7* *Notify Load Dispatcher*
	ACRO	Place main generator on the grid IAW OP 0105, Phase 3, Section C: ▪ Open Bkr 81-1T ▪ Open Bkr 1T ▪ Close T-1 MOD ▪ Place reclosure switches to "Off" for 81-1T and 1T ▪ Place breaker switch in synch scope and turn synch scope on ▪ Adjust generator output voltage to be equal or slightly higher than line voltage ▪ Adjust generator speed to achieve synch scope moving slowly in the "Fast" direction ▪ When synch scope between 5 min of 12 and 12, close Bkr 81-1T ▪ Immediately pick up 25-50 MWe load by going to "Raise" on speed/load changer ▪ When Bkr 81-1T closed and generator at desired load, synchronize and close Bkr 1T ▪ Turn off synch scope and remove breaker switch ▪ Per Velco, place reclosure switch for 1T to "Inst" and 81-1T to "Sync Ck" ▪ Remain at current load to allow exhaust hoods to cool (5 minutes) ▪ Close drains per Step C.10 ▪ Adjust voltage to maintain reactive load at minimum ▪ Monitor generator parameters
	CRO	*Monitor plant parameters/assist as necessary*

Op Test No.:	Scenario No.: #1	Event No.: 2

Event Description: PCIS Group 3 logic failure following loss of bus 8

Initial Automatic Actions: RPS A loss, ½ scram

Time	Position	Applicant's Actions Or Behavior
	CREW	*Recognize and report loss of bus 8*
	ACRO	Verify/confirm: ▪ Bus 8 @ 0 volts ▪ Breaker 38 and 88 tripped ▪ Acknowledge annunciators and refer to ARS as appropriate
	SCRO	*Refer to Tech Specs* *Direct troubleshooting/repair* *Direct ACRO to verify/backup group 3 isolation*
	ACRO **CT**	Recognize failure of group 3 isolation logic: **MANUALLY INITIATE GROUP 3 ISOLATION:** ▪ Utilize posted operator aid to confirm automatic action required for group 3 isolation ▪ Place all group 3 valves in the isolated position ▪ start SGT fans A and B IAW OP 2117 as follows: - Place fan A switch to START - Check SGT-2A and 3A OPEN - OPEN SGT-1A - Check SGT-4A SHUT - Verify SGT flow - Repeat steps for fan B (unless otherwise directed by SCRO) Report failure to SCRO

Op Test No.:	Scenario No.: #1	Event No.: 2, continued
Event Description:	PCIS Group 3 logic failure following loss of bus 8	

Time	Position	Applicant's Actions Or Behavior
	SCRO	*Consult tech specs* *Coordinate troubleshooting/repair*
	CRO	*Monitor plant parameters/assist as necessary*

Op Test No.: **Scenario No.: #1** **Event No.: 3**

Event Description: Increasing Primary Containment Pressure and Temperature

Cause: Steam line break inside drywell

Initial Automatic Actions: LOCA signal

Time	Position	Applicant's Actions Or Behavior
	CREW	*Recognize rising drywell pressure and temperature*
	ACRO	Perform immediate actions of OT 3111, High Drywell Pressure: ▪ Maximize drywell cooling by starting all drwell RRU fans ▪ Confirm torus vent path isolated ▪ Verfy nitrogen make up is terminated When drywell ressure exceeds 2.5 psig perform the following: ▪ Verify RHR and CS pumps auto start ▪ Confirm HPCI injecting to RPV ▪ When directed, secure HPCI by rotating inhibit collar to the INHIBIT position
	SCRO	*Enter and direct actions IAW OT 3111; OT 3100, Reactor Scram procedure; EOP-1, RPV Control; EOP-3, Primary Containment Control* *Direct manual reactor scram*
	CRO	*Insert manual scram*
	ACRO	When directed by SCRO, perform the following actions: ▪ Backup PCIS group isolations as required ▪ restart drywell RRU's using MCA bypass keylock switch ▪ Spray the Torus using RHR IAW OP 2124, Appendix D ▪ Attempt to spray the drywell, recognize RHR-31A failure to open, and report ot SCRO
	SCRO	*When maintenance reports bus 8 repair is complete, direct ACRO to re-energize bus 8*

Op Test No.:	Scenario No.: #1	Event No.: 3 continued

Event Description: Increasing Primary Containment Pressure and Temperature

Cause: Recirc rupture inside drywell

	ACRO	Re-energize bus 8 as directed: ▪ Close breakers 38 and 88 *Or* ▪ Cross tie bus 8 and 9 by closing breakers 8T9 and 9T8
	SCRO	*When bus 8 is re-energized, ensure DWSIL indicates safe to spray, DW RRUs OFF, both recirc pumps OFF, then direct ACRO to spray drywell using RHR loop B*
	ACRO **CT**	When directed, **Spray the drywell using OP 2124, appendix E** ▪ Bypass RHRSW LOCA trip signal ▪ Start RHRSW pump ▪ Verify RHR-89B automatically opens ▪ Establish RHRSW flow 2950-3050 GPM ▪ Ensure one RHR pump running ▪ Bypass RHR-B LOCA isolation signal (group 2B) ▪ Open RHR-26B & 31B ▪ Verify RHR flow approximately 7000 GPM ▪ Confirm drywell pressure lowering

SIMULATOR OPERATOR INSTRUCTIONS FOR SCENARIO # 1

-- GENERAL REQUIREMENTS

- All chart recorders will be rolled forward.
- Paper from selected chart recorders will be saved for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be returned to their normal storage place and closed.
- All markable procedures, boards, etc will be erased.
- All paper used by the previous crew will be removed and kept for the examination team as requested.
- The simulator operator, or designated person, will keep a rough log of all communications into and out of the "control room" during the scenario as requested by the examination team.

-- INITIAL SETUP

- IC-82, 27% power, ready to synch to the grid
- Place turbine RPM, ptid T005, on CRP 9-7 ERFIS digital display
- Preinsert malfunction AN17F3 to disable turbine excessive expansion alarm
- Place simulator in RUN, silence and clear RBM alarms

Event No.	Malf. No.	Key	Severity	Event Type*		Event Description
2	RP08A RP08B	Pre-insert	N/A	I	ACRO	Group 3 isolation logic failure
	ED05C	Key 1	N/A			Bus 8 de-energizes due to fault
3	MS06	Key 2	5 % @ 500sec	M	ACRO	Steam line break inside the drywell
4	RH11A	Pre-insert	N/A	C	ACRO	RHR-31A fails to open

-- DURING THE SCENARIO

- The examination team will determine when each event is to be inserted and when to "Freeze" and will inform the simulator operator.

- <u>EVENT 1</u> -- Support crew while placing generator on the grid. Keep them moving if they are slow in getting started.

- **EVENT 2** -- Insert malfunction **KEY #1** several minutes after the generator is on the grid (or at evaluator's discretion). Support troubleshooting as requested.

- **EVENT 3** -- Insert malfunction **KEY #2** after the plant is stable following event #3 (or at evaluator's discretion).

- **EVENT 4** -- After RHR-31A failure is discovered and reported, **REMOVE MALFUNCTION ED05C, BUS 8 FAULT,** then report as electrical maintenance that bus 8 fault has been repaired and it may be re-energized.

TERMINATION:

After drywell pressure drops below 2.5 psig following containment spray and containment spray valves are shut (or at evaluator's discretion).

SHIFT TURNOVER # 1

PLANT CONDITIONS:

-- Plant startup at 27% power, turbine ready to be synched to the grid
-- Sequence A2, Group 55

INOPERABLE EQUIPMENT/LCOs:

-- None

SCHEDULED EVOLUTIONS:

-- Continue plant startup and place the main generator on the grid. Currently in OP 0105, Phase 3, at Step C.7

SURVEILLANCES DUE THIS SHIFT:

-- OP 0105 startup surveillances

ACTIVE CLEARANCES:

-- None

GENERAL INFORMATION:

-- N/A

VERMONT YANKEE
NUCLEAR POWER CORPORATION

185 Old Ferry Road, Brattleboro, VT 05301-7002
(802) 257-5271

Copy

April 12, 1999
BVY 99-050
TDL 99-007

Regional Administrator, Region 1
ATTN: Mr. Julian H. Williams
United States Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406-1415

References: (a) License No. DPR-28 (Docket No. 50-271)

Subject: Reactor and Senior Reactor Operator Licensing Examinations – Vermont Yankee, May 1999

correctione mae correctione mae

Enclosed, as Attachment I, for NRC review are the written examinations and operating tests intended to be given to the license candidates at Vermont Yankee the week of May 10, 1999. Enclosed within Attachment I are the applicable quality assurance checklists per NUREG 1021, Interim Rev. 8.

The enclosed materials are to be withheld from public disclosure until after the related licensing examination is complete.

If you have any questions, please contact Mr. Michael Gosekamp, Operations Training Supervisor, in our Brattleboro office at (802) 258-4161.

Sincerely,

VERMONT YANKEE NUCLEAR POWER CORPORATION

Michael Gosekamp
Operations Training Supervisor

Attachment I - Withhold from Public Disclosure per NUREG 1021, Interim Rev. 8

c: USNRC Resident Inspector – VYNPS (Attachment I – Withhold from Public Disclosure)
USNRC Project Manager – VYNPS (Attachment I – Withhold from Public Disclosure)
Document Control Desk (Attachment I – Withhold from Public Disclosure)
VT Department of Public Service (Attachment I – Withhold from Public Disclosure)

Record #	K/A #	RO importance	Cog Level	Source	Old rec #	Answer	Ref Provided
3473	295005 AK3.01	3.8	H	New	n/a	A	
3474	295006 AK3.01	3.8	L	New	n/a	B	
3475	295009 AA1.02	4.0	H	Modified	1053	D	
3476	295015 G2.4.49	4.0	H	New	n/a	C	
3477	295015 AK1.03	3.8	L	New	n/a	B	
3478	295024 G2.4.20	3.3	L	New	n/a	C	
3479	295025 EA1.03	4.4	H	Modified	493	D	
3480	295037 EK1.04	3.4	H	Modified	3220	A	
3481	295037 G2.4.01	4.3	L	New	n/a	B	
3482	295031 EA2.04	4.6	H	New	n/a	C	
3483	295001 AA2.03	3.3	H	New	n/a	A	
3484	295001 AK1.02	3.3	H	Modified	3311	D	COLR fig 2.4-1
3485	295001 AK2.01	3.6	L	Modified	1422	B	
3486	295002 AK3.01	3.7	L	New	n/a	C	
3487	295016 AA2.03	4.3	H	New	n/a	D	OP3126, App C, fig 1
3488	295016 AK3.01	4.1	L	New	n/a	D	
3489	295003 AA1.01	3.7	L	Modified	1280	A	
3490	295003 AK2.04	3.4	L	Modified	2702	B	
3491	295004 AK2.03	3.3	H	New	n/a	C	
3492	295008 G2.4.11	3.4	H	Modified	3434	D	
3493	295008 AA1.07	3.4	H	Modified	479	A	
3494	295012 AK1.01	3.3	L	New	n/a	B	
3495	295026 G2.4.6	3.1	L	New	n/a	C	
3503	295028 EA1.02	3.9	H	Modified	1252	D	
3504	295033 EA1.01	3.9	L	New	n/a	D	
3505	295019 AK2.03	3.2	H	Modified	1583	B	
3506	295019 AA2.02	3.6	L	New	n/a	C	
3507	295018 G2.4.24	3.3	L	New	n/a	D	
3508	295022 AA2.01	3.5	H	New	n/a	A	OP2450, fig IV
3509	295007 AK3.02	3.7	H	New	n/a	D	
3510	295009 AK2.02	3.9	H	New	n/a	C	
3511	295024 EK2.18	3.3	H	New	n/a	B	

TOTALS	
A answers	23
B answers	26
C answers	24
D answers	27

Modified	42
New	58

Higher Level	56
Lower Level	44

Record #	K/A #	RO importance	Cog Level	Source	Old rec #	Answer	Ref Provided
3470	201001 A2.11	2.6	H	Modified	1665	C	
3465	201002 A1.03	3	L	Modified	1084	C	
3472	201002 G2.1.32	3.4	L	New	n/a	B	
3459	202002 A2.03	2.6	L	New	n/a	A	
3500	203000 K3.03	4.2	L	New	n/a	A	
3501	203000 A3.01	4.2	H	Modified	366	D	
3498	206000 A4.02	4	H	Modified	2964	D	
3499	206000 A1.08	4.1	H	Modified	1196	B	
3468	209000 G2.1.32	3.4	L	Modified	2935	B	
3469	209001 K4.09	3.0	L	Modified	1206	C	
3461	211000 K2.02	3.1	H	Modified	481	B	
3463	212000 K5.02	3.3	H	Modified	982	A	
3464	212000 A.4.07	4	H	Modified	3254	D	
3467	215003 K3.02	3.6	L	Modified	1256	D	
3458	215004 A1.05	3.6	L	Modified	3154	D	
3460	215004 A4.07	3.4	H	Modified	1242	C	
3471	215005 K1.04	3.6	H	Modified	2968	D	
3466	215005 K1.01	4	H	Modified	2948	A	
3457	216000 A2.07	3.4	L	Modified	2926	B	
3518	217000 K2.01	2.8	H	New	n/a	D	
3462	218000 K5.01	3.8	H	New	n/a	C	
3497	223002 K1.01	3.8	H	Modified	141	A	
3513	239002 K6.02	3.4	L	New	n/a	B	
3515	241000 K3.02	4.2	H	Modified	1789	C	
3512	259001 K6.05	2.7	L	New	n/a	A	
3516	259001 A3.01	3.3	H	Modified	343	C	
3514	261000 A1.01	2.9	H	Modified	301	C	
3517	264000 K4.07	3.3	H	Modified	3421	D	
3519	295032 EK3.01	3.5	L	Modified	3202	B	
3520	295036 EA2.02	3.1	L	Modified	1299	A	
3502	295021 AA1.04	3.7	L	New	n/a	A	
3496	295021 AA2.04	3.6	H	Modified	1363	D	

Record #	K/A #	RO importance	Cog Level	Source	Old rec #	Answer	Ref Provided
3544	0 2.1.19	3.0	L	New	n/a	D	
3545	0 2.1.20	4.3	L	New	n/a	C	
3541	0 2.1.01	3.7	L	New	n/a	D	
3542	0 2.1.02	3.0	L	New	n/a	A	
3543	0 2.1.02	3.0	L	New	n/a	A	
3555	0 2.2.22	3.4	L	New	n/a	B	
3546	0 2.2.13	3.6	L	New	n/a	C	
3549	0 2.3.10	2.9	H	New	n/a	C	ON 3152 Fig 1
3548	0 2.3.09	2.5	L	New	n/a	B	
3550	0 2.3.11	2.7	H	New	n/a	A	
3553	0 2.4.29	2.6	L	Modified	188	A	
3552	0 2.4.21	3.7	L	Modified	1290	C	
3551	0 2.4.17	3.1	L	New	n/a	D	
3521	0 2.4.11	3.4	L	New	n/a	D	
3454	201003 K1.01	3.2	H	Modified	219	B	
3537	201006 K5.12	3.5	H	New	n/a	B	
3453	202001 A2.24	3.1	L	Modified	1659	B	
3522	204000 A2.07	2.5	L	New	n/a	A	Print 191178
3557	205000 K5.02	2.8	H	New	n/a	C	
3523	215002 K6.05	2.8	H	New	n/a	D	
3524	219000 A4.02	3.7	H	New	n/a	B	
3554	233000 A2.02	3.1	H	New	n/a	A	Print 191173
3535	234000 K4.01	3.3	H	New	n/a	A	
3556	245000 A1.05	3.5	H	New	n/a	B	
3526	262001 A3.02	3.2	L	New	n/a	D	
3527	262002 K4.01	3.1	L	New	n/a	C	
3529	263000 K3.03	3.4	H	New	n/a	B	
3528	263000 K4.01	3.1	H	New	n/a	D	
3530	271000 K1.01	3.1	H	New	n/a	B	
3531	272000 K6.03	2.8	H	New	n/a	D	
3538	272000 A1.01	3.2	H	Modified	1128	C	
3540	300000 K2.01	2.8	H	Modified	173	A	
3539	286000 A3.01	3.4	H	Modified	1186	C	
3533	288000 K6.03	2.7	H	New	n/a	B	
3532	290003 A3.01	3.3	H	New	n/a	A	
3534	290002 K1.10	3.1	H	New	n/a	B	

Facility: Vermont Yankee Date of Exam: 05/10/99 Exam Level: RO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	2	2	3				2	1			3	13
	2	2	4	2				4	4			3	19
	3			1				1	2				4
	Tier Totals	4	6	6				7	7			6	36
2. Plant Systems	1	3	2	3	2	2	2	4	3	2	3	2	28
	2	2	1	1	2	2	2	2	2	3	1	1	19
	3	1			1		1		1				4
	Tier Totals	6	3	4	5	4	5	6	6	5	4	3	51
3. Generic Knowledge and Abilities		Cat 1			Cat 2			Cat 3			Cat 4		
		5			2			3			3		13

Note:
- Attempt to distribute topics among all K/A Categories: select at least one topic from every K/A category within each tier.
- Actual point totals must match those specified in the table.
- Select topics from many systems: avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
- Systems/evolutions within each group are identified on the associated outline.
- The shaded areas are not applicable to the category/tier.

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 1								ES-401-2	
Number #	Name	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts.
295005	Main Turbine Generator Trip			X				AK3.01 Reactor scram	3.8	1
295006	SCRAM			X				AK3.01 Reactor water level response	3.8	1
295007	High Reactor Pressure			X				AK3.02 HPCI operation: Plant-Specific	3.7	1
295009	Low Reactor Water Level				X			AA1.02 Reactor water level control	4.0	1
295009	Low Reactor Water Level		X					AK2.02 Reactor water level control	3.9	1
295010	High Drywell Pressure									
295014	Inadvertent Reactivity Addition									
295015	Incomplete SCRAM	X						AK1.03 Reactivity effects	3.8	1
295015	Incomplete SCRAM						X	2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls	4.0	1
295024	High Drywell Pressure						X	2.4.20 Knowledge of operational implications of EOP warnings, cautions, and notes	3.3	1
295024	High Drywell Pressure		X					EK2.18 Ventilation	3.3	1
295025	High Reactor Pressure				X			EA1.03 Safety/relief valves: Plant-Specific	4.4	1
295031	Reactor Low Water Level					X		EA2.04 Adequate core cooling	4.6	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown						X	2.4.1 Knowledge of EOP entry conditions and immediate action steps	4.3	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	X						EK1.04 Hot shutdown boron weight: Plant-Specific	3.4	1
500000	High Containment Hydrogen Concentration									
	K/A Category Point Totals:	2	2	3	2	1	3	Group Point Total:		13

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2							ES-401-2		
Number #	Name	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts.
295001	Partial or Complete Loss of Forced Core Flow Circulation		X					AK2.01 Recirculation system	3.6	1
295001	Partial or Complete Loss of Forced Core Flow Circulation	X						AK1.02 Power/flow distribution	3.3	1
295001	Partial or Complete Loss of Forced Core Flow Circulation					X		AA2.03 Actual core flow	3.3	1
295002	Loss of Main Condenser Vacuum			X				AK3.01 Reactor SCRAM: Plant-Specific	3.7	1
295003	Partial or Complete Loss of A.C. Power				X			AA1.01 A.C. electrical distribution system	3.7	1
295003	Partial or Complete Loss of A.C. Power		X					AK2.04 A.C. electrical loads	3.4	1
295004	Partial or Complete Loss of D.C. Power		X					AK2.03 D.C. bus loads	3.3	1
295008	High Reactor Water Level						X	2.4.11 Knowledge of abnormal condition procedures	3.4	1
295008	High Reactor Water Level				X			AA1.07 Main turbine: Plant-Specific	3.4	1
295011	High Containment Temperature (Mark III Containment Only)									
295012	High Drywell Temperature	X						AK1.01 Pressure/temperature relationship	3.3	1
295013	High Suppression Pool Temperature									
295016	Control Room Abandonment			X				AK3.01 Reactor SCRAM	4.1	1
295016	Control Room Abandonment					X		AA2.03 Reactor pressure	4.3	1
295017	High Off-Site Release Rate									
295018	Partial or Complete Loss of Component Cooling Water						X	2.4.24 Knowledge of loss of cooling water procedures	3.3	1
295019	Partial or Complete Loss of Instrument Air					X		AA2.02 Status of safety-related instrument air system loads (see AK2.1 – AK2.19)	3.6	1
295019	Partial or Complete Loss of Instrument Air		X					AK2.03 Reactor feedwater	3.2	1
295020	Inadvertent Containment Isolation									
295022	Loss of CRD Pumps					X		AA2.01 Accumulator pressure	3.5	1
295026	Suppression Pool High Water Temperature						X	2.4.6 Knowledge symptom based EOP mitigation strategies	3.1	1
295027	High Containment Temperature (Mark III Containment Only)									
295028	High Drywell Temperature				X			EA1.02 Drywell ventilation system	3.9	1

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2								ES-401-2	
Number #	Name	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts.
295029	High Suppression Pool Water Level									
295030	Low Suppression Pool Water Level									
295033	High Secondary Containment Area Radiation Levels				X			EA1.01 Area radiation monitoring system	3.9	1
295034	Secondary Containment Ventilation High Radiation									
295038	High Off-Site Release Rate									
600000	Plant Fire On Site									
	K/A Category Point Totals:	2	4	2	4	4	3	Group Point Total:		19

ES-401	BWR RO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 3							ES-401-2		
Number #	Name	K1	K2	K3	A1	A2	G	K/A Topic(s)	Imp.	Pts.
295021	Loss of Shutdown Cooling				X			AA1.04 Alternate heat removal methods	3.7	1
295021	Loss of Shutdown Cooling					X		AA2.04 Reactor water temperature	3.6	1
295023	Refueling Accidents									
295032	High Secondary Containment Area Temperature			X				EK3.01 Emergency/normal depressurization	3.5	1
295035	Secondary Containment High Differential Pressure									
295036	Secondary Containment High Sump/Area Water Level					X		EA2.02 Water level in the affected area	3.1	1
	K/A Category Point Totals:	0	0	1	1	2	0	Group Point Total:		4

ES-401	BWR RO Examination Outline Plant Systems – Tier 2/Group 1												ES-401-2	
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
201001	Control Rod Drive Hydraulic System								X				A2.11 Valve openings	2.6	1
201002	Reactor Manual Control System							X					A1.03 Rod movement sequence lights	3.0	1
201002	Reactor Manual Control System											X	2.1.32 Ability to explain and apply system limits and precautions	3.4	1
201005	Rod Control and Information System														
202002	Recirculation Flow Control System								X				A2.03 Loss of DC	2.6	1
203000	RHR/LPCI: Injection Mode (Plant Specific)			X									K3.03 Automatic depressurization logic	4.2	1
203000	RHR/LPCI: Injection Mode (Plant Specific)									X			A3.01 Valve operation	3.8	1
206000	High Pressure Coolant Injection System										X		A4.02 Flow controller: BWR-2, 3, 4	4.0	1
206000	High Pressure Coolant Injection System							X					A1.08 System lineup: BWR-2, 3, 4	4.1	1
209001	Low Pressure Core Spray System											X	2.1.32 Ability to explain and apply system limits and precautions	3.4	1
209001	Low Pressure Core Spray System				X								K4.09 Load sequencing	3.3	1
209002	High Pressure Core Spray System (HPCS)														
211000	Standby Liquid Control System		X										K2.02 Explosive valves	3.1	1
212000	Reactor Protection System					X							K5.02 Specific logic arrangements	3.3	1
212000	Reactor Protection System										X		A4.07 System status lights and alarms	4.0	1
215003	Intermediate Range Monitor (IRM) System			X									K3.02 Reactor manual control	3.6	1
215004	Source Range Monitor (SRM) System							X					A1.05 SCRAM, rod block, and period alarm trip setpoints	3.6	1
215004	Source Range Monitor (SRM) System										X		A4.07 Verification of proper functioning/operability	3.4	1

ES-401	BWR RO Examination Outline Plant Systems – Tier 2/Group 1												ES-401-2	
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
215005	Average Power Range Monitor/Local Power Range Monitor System	X											K1.04 LPRM channels	3.6	1
215005	Average Power Range Monitor/Local Power Range Monitor System	X											K1.01 RPS	4.0	1
216000	Nuclear Boiler Instrumentation								X				A2.07 Reference leg flashing	3.4	1
217000	Reactor Core Isolation Cooling System (RCIC)		X										K2.01 Motor operated valves	2.8	1
218000	Automatic Depressurization System					X							K5.01 ADS logic operation	3.8	1
223001	Primary Containment System and Auxiliaries														
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off	X											K1.01 Main steam system	3.8	1
239002	Relief/Safety Valves						X						K6.02 Air (Nitrogen) supply; Plant Specific	3.4	1
241000	Reactor/Turbine Pressure Regulating System			X									K3.02 Reactor pressure	4.2	1
259001	Reactor Feedwater System						X						K6.05 Component cooling water systems	2.7	1
259001	Reactor Feedwater System									X			A3.01 RFP auto start; Plant-Specific	3.3	1
259002	Reactor Water Level Control System														
261000	Standby Gas Treatment System							X					A1.01 System flow	2.9	1
264000	Emergency Generators (Diesel/Jet)				X								K4.07 Local operation and control	3.3	1
	K/A Category Point Totals:	3	2	3	2	2	2	4	3	2	3	2	Group Point Total:		28

ES-401	BWR RO Examination Outline Plant Systems – Tier 2/Group 2												ES-401-2	
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
201003	Control Rod and Drive Mechanism	X											K1.01 Control rod drive hydraulic system	3.2	1
201003	Control Rod and Drive Mechanism											X	2.4.11 Knowledge of abnormal condition procedures	3.4	1
201004	Rod Sequence Control System (Plant Specific)														
201006	Rod Worth Minimizer System (RWM) (Plant Specific)					X							K5.12 Withdraw block: Plant-Specific (Not-BWR6)	3.5	1
202001	Recirculation System								X				A2.24 Valve opening	3.1	1
204000	Reactor Water Cleanup System								X				A2.07 Loss of plant air systems	2.5	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode)					X							K5.02 Valve operation	2.8	1
214000	Rod Position Information System														
215002	Rod Block Monitor System						X						K6.05 LPRM detectors: BWR-3, 4, 5	2.8	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode										X		A4.02 Valve lineup	3.7	1
226001	RHR/LPCI: Containment Spray System Mode														
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode														
239001	Main and Reheat Steam System														
245000	Main Turbine Generator and Auxiliary Systems							X					A1.05 Reactor pressure	3.5	1
256000	Reactor Condensate System														
262001	A.C. Electrical Distribution									X			A3.02 Automatic bus transfer	3.2	1
262002	Uninterruptable Power Supply (A.C./D.C.)				X								K4.01 Transfer from preferred power to alternate power supplies	3.1	1
263000	D.C. Electrical Distribution				X								K4.01 Manual/automatic transfers of control: Plant Specific	3.1	1
263000	D.C. Electrical Distribution			X									K3.03 Systems with D.C. components (i.e. valves, motors, solenoids, etc.)	3.4	1

ES-401	BWR RO Examination Outline Plant Systems – Tier 2/Group 2												K/A Topic(s)	Imp.	ES-401-2 Pts.
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G			
271000	Offgas System	X											K1.01 Condenser air removal system	3.1	1
272000	Radiation Monitoring System						X						K6.03 A.C. power	2.8	1
272000	Radiation Monitoring System							X					A1.01 Lights, alarms, and indications associated with normal operations	3.2	1
286000	Fire Protection System									X			A3.01 Fire water pump start	3.4	1
290001	Secondary Containment														
290003	Control Room HVAC									X			A3.01 Initiation/reconfiguration	3.3	1
300000	Instrument Air System (IAS)		X										K2.01 Instrument air compressors	2.8	1
400000	Component Cooling Water system (CCWS)														
	K/A Category Point Totals:	2	1	1	2	2	2	2	2	3	1	1	Group Point Total:		19

ES-401	BWR RO Examination Outline Plant Systems – Tier 2/Group 3												ES-401-2		
Number #	Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	K/A Topic(s)	Imp.	Pts.
215001	Traversing In-Core Probe														
233000	Fuel Pool Cooling and Clean-up								X				A2.02 Low pool level	3.1	1
234000	Fuel Handling Equipment				X								K4.01 Prevention of core alteration during control rod movements	3.3	1
239003	MSIV Leakage Control System														
268000	Radwaste														
288000	Plant Ventilation Systems						X						K6.03 Plant air systems	2.7	1
290002	Reactor Vessel Internals	X											K1.10 CRD hydraulic system	3.1	1
	K/A Category Point Totals:	1	0	0	1	0	1	0	1	0	0	0	Group Point Total:		4

Facility: Vermont Yankee		Date of Exam: 05/10/99		Exam Level: RO
Category	KA#	KA Topic	Imp.	Points
Conduct of Operations	2.1.01	Knowledge of conduct of operations requirements	3.7	1
	2.1.02	Knowledge of Operator responsibilities during all modes of plant operation	3.0	1
	2.1.02	Knowledge of Operator responsibilities during all modes of plant operation	3.0	1
	2.1.19	Ability to use plant computer to obtain and evaluate parametric information on system or component status	3.0	1
	2.1.20	Ability to execute procedure steps	4.3	1
		Total Points		5
Equipment Control	2.2.13	Knowledge of tagging and clearance procedures	3.6	1
	2.2.22	Knowledge of limiting conditions for operations and safety limits	3.4	1
		Total Points		2
Radiation Control	2.3.10	Ability to perform procedures to reduce excessive levels of radiation	2.9	1
	2.3.11	Ability to control radiation releases	2.7	1
	2.3.09	Knowledge of the process for performing a containment purge	2.5	1
		Total Points		3
Emergency Procedures	2.4.17	Knowledge of EOP terms and definitions	3.1	1
	2.4.21	Knowledge of the parameters and logic used to assess the status of safety functions including: 1. Reactivity control 2. Core cooling and heat removal 3. Reactor coolant system integrity 4. Containment conditions 5. Radioactivity release control	3.7	1
	2.4.29	Knowledge of the emergency plan	2.6	1
		Total Points		3
Tier 3 Target Point Total (RO/SRO)				13

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 4 Exam Bank Question No.: 3476 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-610 Objective: CRO 1

****

Select the correct answer:

The following plant conditions exist:

SLC System 1 injecting to the RPV
RPV pressure is 1100 psig and dropping slowly
4 SRVs open
RWCU in service
all rods at position 48
MSIVs closed

The CRO must immediately:

a. drive control rods.

b. initiate ARI/RPT.

c. isolate RWCU.

d. start SLC System 2.

****

Answer

c. isolate RWCU.

****

References: EOP-2
Justification: Higher Level
A is incorrect, Must wait for SCRO direction to drive control rods;
B is incorrect, no ARI auto signal, so must wait for direction;
C is correct, RWCU should be isolated automatically;
D is incorrect, it is possible that the RWCU isolation failure was caused by the SLC switch and using SLC 2 might work, but it would require securing SLC injection which is undesirable.
Last Revised: 5/4/99 11:03:04 AM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 5 Exam Bank Question No.: 3477 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-610 Objective: CRO 2

****

Select the correct answer:

In order to preclude localized fuel failure, EOP-2, ATWS RPV Control, directs:

a. boron injection if power is greater than 2% and torus temperature reaches 110°F.

b. boron injection if power oscillations are greater than 25% peak to peak.

c. lowering RPV water level if power is greater than 2% and torus temperature exceeds 110°F.

d. RPVED if RPV water level cannot be maintained above TAF.

****

Answer

b. boron injection if power oscillations are greater than 25% peak to peak.

****

References: PP 7018 Att 9, Rev 8
Justification: a is incorrect, this is done to reduce the challenge to Primary Containment;
b is correct per AP 7018 Att 9, Rev 8;
c is incorrect, same as a;
d is incorrect, the minimum level is -22" in EOP-2
Last Revised: 5/4/99 2:22:46 PM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 9 Exam Bank Question No.: 3481 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-610 Objective: Cro 1

****

Select the correct answer:

The plant is operating at power when a spurious Group I isolation occurs.

All control rods remain at their original positions.
APRMs indicate approximately 96% power.
All 4 SRVs have opened automatically and RPV pressure is >1200 psig.
Core flow is 45 mlb/hr.

The CRO attempts a manual scram which fails to insert control rods and scram air header pressure remains at 75 psig.

Without direction the CRO must immediately:

a. drive control rods.

b. initiate ARI/RPT.

c. inject boron.

d. lower RPV water level.

****

Answer

b. initiate ARI/RPT.

****

References: EOP-2, Rev 0
Justification:
B is correct, conditions indicate automatic ARI/RPT failed, CRO required by DP 0166 to manually initiate ARI/RPT; all others require SRO direction
Last Revised: 5/3/99 8:45:49 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 25 Exam Bank Question No.: 3504 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-601 Objective: CRO

****

Select the correct answer:

Reactor Building Area Radiation Monitors indicating above their MAX NORMAL value indicates a potential primary coolant leak:

a. inside primary containment.

b. inside the steam tunnel.

c. outside secondary containment.

d. inside secondary containment.

****

Answer

d. inside secondary containment.

****

References: PP 7018 Att 9, Rev 8
Jusitfication: d is correct, definition of max normal per PP 7018 Att 9 Rev 8; b is incorrect, no ARMs inside steam tunnel; c is incorrect, RB ARMS are inside SC; a is incorrect, leak inside PC not likely to cause RB ARMS to rise
Last Revised: 5/4/99 2:23:03 PM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 28 Exam Bank Question No.: 3507 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-276 Objective: CRO 2, 5

****

Select the correct answer:

In the event of a loss of service water as a result of a Vernon Dam failure, Alternate Cooling provides cooling to which of the following components?

a. RWCU non-regenerative heat exchanger

b. RBCCW heat exchanger

c. CRD pump motor coolers

d. RHRSW pump motor coolers

****

Answer

d. RHRSW pump motor coolers

****

References: OP 2181 Rev
Justification:
A is incorrect, alt cooling not configured to provide cooling to this component/see OP 2181;
B is incorrect, alternate cooling uses RBCCW piping to cool loads normally cooled by RBCCW, but the heat exchanger is valved out;
C is incorrect, original design provided CRD pump cooling but was later disconnected;
D is correct, alt cooling uses RHRSW pumps to provide flow, pump cooling is provided from discharge of RHRSW pump per OP 2181
Last Revised: 5/3/99 8:55:26 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 35 Exam Bank Question No.: 3472 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-301 Objective: 4

****

Select the correct answer:

During a reactor startup following a refueling outage, the SCRO directs the CRO to record when a discernible response of the nuclear instrumentation is not observed during each control rod withdrawal.

The bases for performing this evolution is to detect which one of the following problems?

a. A stuck control rod that is coupled

b. A stuck control rod that is uncoupled

c. A moveable control rod that is coupled

d. A moveable control rod that is uncoupled

****

Answer

b. A stuck control rod that is uncoupled

****

References: OP 0105 App "D"
Justification:Tech Specs and OP 0105 require only after RFO or when CR maintenance on first time operation to ensure the control rod is coupled to its drive and to detect a stuck CR that has the potential for a dropped control rod. If the rod is movable, neutron response should be observed independent of coupling. The uncoupled moveable rod is detected at the overtravel position. If the rod is stuck and coupled the rod and drive will not move.
Last Revised: 5/4/99 8:02:34 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 48 Exam Bank Question No.: 3460 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-129 Objective: 13

****

Select the correct answer:

A reactor start-up is in progress, the reactor is slightly super critical. "C" SRM is reading 5000 cps. The CRO determines count rate doubles in 2 minutes. Calculate the reactor's stable period.

a. 120 sec

b. 144 sec

c. 173 sec

d. 288 sec

****

Answer

c. 173 sec

****

References: LOI EB 1242
OP 0150
Justification: Higher Level
Doubling time in seconds (120) times 1.445 = period.
Last Revised: 5/3/99 9:01:08 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 51 Exam Bank Question No.: 3457 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-216 Objective: 11c

****

Select the correct answer:

As a result of a small steam leak in the DW, Reference Leg Temperature is 260°F. Indicated vessel level will be:

a. the same as actual level.

b. higher than actual level.

c. lower than actual level.

d. significantly lower than actual level.

****

Answer

b. higher than actual level.

****

References: LOI EB 2926
Design Basis Calc VYC-332
LOR Exam Record 8
Justification: Due to the density change in the reference leg, the D/P will decrease resulting in indicating level > actual level. AT 260°F, indicated water level wil be affected. The minimum indicating level figure in the EOPs supports this effect.
Last Revised: 5/4/99 2:23:48 PM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 56 Exam Bank Question No.: 3515 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-249 Objective: CRO 4

****

Select the correct answer:

The plant is operating normally at 100% power when the Speed Load Changer is taken to lower and held there.

What is the effect on reactor pressure, control valves and bypass valves?

a. Reactor pressure will rise. The control valves close and the bypass valves remain as-is.

b. Reactor pressure will lower. The control valves remain as-is and the bypass valves open.

c. Reactor pressure will remain constant. The control valves close and the bypass valves open.

d. Reactor pressure will remain constant. The control valves and bypass valves remain as-is.

****

Answer

c. Reactor pressure will remain constant. The control valves close and the bypass valves open.

****

References: LOI EB 1789
GEK 5585 VYNPC Turbine Tech Manual
Justification: Higher Order
Observed plant response is for the bypass valves to open and the control valves to close and RPV pressure remains approximately constant.
Last Revised: 5/3/99 9:03:56 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 58 Exam Bank Question No.: 3516 Revision: 3 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-259 Objective: CRO 3

****

Select the correct answer:

The reactor is operating at 40% power when Reactor Feedwater Pump "A" trips as a result of an electrical fault. No operator action is performed.

What is the procedure directed control switch positions for the "B" and "C" Reactor Feedwater Pumps and how will feedwater system respond one minute after the fault?

a. Both RFP control switches are in AUTO. Both RFPs will auto start.

b. Both RFP control switches are in Pull-to-lock. No RFPs will be running.

c. One pump control switch are in AUTO and the other pump control switch in Pull-to-lock. The pump in AUTO will auto start.

d. One pump control switch are in AUTO and the other pump control switch in Pull-to-lock. No RFPs will be running.

****

Answer

c. One pump control switch are in AUTO and the other pump control switch in Pull-to-lock. The pump in AUTO will auto start.

****

References: LOI EB 343
OP 2172 Rev 20
Justification: Higher Order
Procedure direction is to maintain only 1 pump in AUTO/OFF making a/b incorrect. An electrical fault will enable the auto start feature of the standby pump making c correct and d incorrect.
Last Revised: 5/3/99 9:04:45 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 61 Exam Bank Question No.: 3519 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-611 Objective: CRO 3

****

Select the correct answer:

A leak into the Secondary Containment has resulted in entry into EOP-4, Secondary Containment Control. Two area temperatures have exceeded their Maximum Safe Operating Limit. As a result, the SCRO has directed an RPV-ED.

What is the basis for performing an RPV-ED?

a. Precludes further area temperature increases, which will prevent operator access required for safe shutdown of the plant.

b. Precludes further area temperature increases, which will pose a threat to environmental qualifications of equipment required for safe shutdown.

c. Rejects heat to the main condenser in preference to the secondary containment.

d. Rejects heat to the main condenser in preference to the primary containment.

****

Answer

b. Precludes further area temperature increases, which will pose a threat to environmental qualifications of equipment required for safe shutdown.

****

References: LOI EB 3202
VY EOP Study Guide
Justification: EOP Study Guide supports 'b' as the correct answer. Operator access is not a reason for RPV-ED. Heat is rejected to suppression pool in preference to outside primary containment. The main condenser should not be used for an RPV-ED. The main condenser is a credible distractor because it may have been used in the "anticipate" phase prior to the RPV-ED.
Last Revised: 5/4/99 8:03:20 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 62 Exam Bank Question No.: 3520 Revision: 2 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-611 Objective: 1

****

Select the correct answer:

A fire protection header rupture has resulted in 5 inches of water in the RCIC Room.

Entry into EOP-4 is:

a. required immediately.

b. required when water level reaches 12 inches.

c. not required because only one area was affected.

d. not required because the Fire Protection System is not a primary system.

****

Answer

a. required immediately.

****

References: LOI EB 1299
VY EOP Man Vol 4
Justification: Water level is above max Normal Operating Water Level of 1" in the RCIC room, which is an EOP-4 entry condition. The "not required" distractors support other EOP decisions in EOP-4 but do not directly effect entry conditions.
Last Revised: 5/4/99 8:04:01 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 65 Exam Bank Question No.: 3544 Revision: 1 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-283 Objective: CRO 7

****

Select the correct answer:

I & C is working on an RPV water level instrument and have removed the data point from ERFIS. If you looked at this point on the ERFIS screen it should be:

a. green.

b. white.

c. red.

d. purple.

****

Answer

d. purple.

****

References: Justification: Green - dynamic information in normal range; White - primary static display information and some dynamic digital; Red - abnormal or beyond alarm; Purple - questionable data including removed from screen
Last Revised: 5/3/99 9:09:29 AM by Hallonquist, Nora E.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 66 Exam Bank Question No.: 3545 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-01-400 Objective: CRO 1

****

Select the correct answer:

The SCRO has entered EOP-1 "RPV Control". He has directed the CRO to use the SRVs to control pressure from 800-1000 psig. The CRO cycles SRVs without prior reference to procedure OP 2122 "Auto Blowdown System" (a Reference Use procedure). In this situation the CRO's procedural usage is:

a. incorrect. The procedure imust be in hand and referenced for each step.

b. incorrect. The procedure must be nearby and referenced periodically.

c. correct. The procedure should be referenced as time permits.

d. correct. The procedure need never be referenced.

****

Answer

c. correct. The procedure should be referenced as time permits.

****

References: AP 37 Rev 10; DP-166 Rev 0
Justification: A continuous use procedure requires it to be in hand. Normally a reference use procedure requires periodic checks. If opening SRVs for the EOPs, it can be done from memory and the procedure referenced later.
Last Revised: 5/4/99 3:29:19 PM by Fagan, Frank N.

Vermont Yankee Licensed Operator Initial Examination Answer Key

Reactor Operator Initial Exam

****

Question No. 75 Exam Bank Question No.: 3553 Revision: 0 Point Value: 1
SRO Only: No Instructor Guide: LOT-00-900 Objective: 3

****

Select the correct answer:

During a General Emergency, the _____ will be an assembly area for off-shift operators. The _____ will assist in accident assessment and provide advice.

a. Ops Support Center, Tech Support Center

b. Ops Support Center, Emergency OPS Facility

c. Control Room, Tech Support Center

d. Control Room, Emergency OPS Facility

****

Answer

a. Ops Support Center, Tech Support Center

****

References: LOI EB 188
VY Emergency Plan
Justification:
Last Revised: 5/3/99 9:19:15 AM by Hallonquist, Nora E.

Facility: Vermont Yankee Date of Examination: _____ Examination Level (circle one): RO / SRO Operating Test Number: _____

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Plant Parameter Verification	JPM – Calculate Drywell Temperature Profile.
A.1	Reactor Plant Startup	Question – When withdrawing rods to achieve criticality, describe the required actions for a short SRM period.
		Question – With rods withdrawn, describe the requirements to bypass the RWM.
A.2	Tagging and Clearances	JPM – Hang white tag on control room circuit breaker
A.3	Exiting the RCA	Question – Which items must be frisked and by whom?
		Question – What is the appropriate monitor to use for a whole body frisk and what should be done upon an alarm?
A.4	Emergency Communications	Question – Determine the allowable time to notify the states.
		Question – What system should be used to notify the states when the Nuclear Alert System is inoperable.

ADMIN QUESTIONS

CANDIDATE:_____ **DOCKET:**_____ **DATE:**_____

TOPIC: EXITING THE RCA

QUESTION: A.3, #1

You are leaving the RCA with a pen light, a clipboard and a valve wrench. The pen light was the only item brought into a contaminated area but remained under you PCs.

a. Which item(s) must be frisked with a hand or tool frisker (RM-14 or ITM-2H) prior to leaving the RCA?

b. Who may perform the required survey(s)?

ANSWER:

a. The clipboard and valve wrench must be frisked with a hand/tool frisker.

b. The clipboard may be frisked by the individual and an RP must perform the frisk of the valve wrench.

Examiner Note: The pen light, although in a contaminated area, is thought of as an article of clothing and is considered frisked when a whole body frisk is completed with the PCM-1B.

RESPONSE:

SAT_____ **UNSAT** _____ **K/A NUMBER:** 2.3.4

REFERENCE USE ALLOWED: YES

REFERENCES: AP-0516, Rev 10

ADMIN QUESTIONS

CANDIDATE:_____ **DOCKET:**_____ **DATE:**_____

TOPIC: EXITING THE RCA

QUESTION: A.3, #2

You are leaving the RCA. There are two whole body monitors (PCM-1B) and one hand frisker (RM-14) in the area. The portal monitors are currently in use by other personnel. The hand frisker shows a background reading of 200 cpm.

a. May you use the hand frisker to frisk out?

b. While frisking out your monitor alarms. How many additional times, if any, may a survey be attempted before an RP must be contacted?

ANSWER:

a. No

b. Once

Examiner Note: The hand frisker may be used if background counts are less than 300 cpm AND there are no operable PCM-1Bs. Regardless of the monitor, one more attempt is allowed after an alarm.

RESPONSE:

SAT_____ **UNSAT** _____ **K/A NUMBER:** 2.3.5

REFERENCE USE ALLOWED: YES

REFERENCES: AP-0516, Rev 10

ADMIN QUESTIONS

CANDIDATE:_____ **DOCKET:**_____ **DATE:**_____

TOPIC: EMERGENCY COMMUNICATIONS

QUESTION: A.4, #1

The Shift Supervisor (SS) has declared an Alert at 10:00 AM. At 10:05 AM the SS appoints you as Emergency Communicator and directs you to notify the states of the event. State the latest time that you can complete these notifications?

ANSWER:

Any one of the following is acceptable:

- 10:15 AM
- 10 minutes from your appointment as the Emergency Communicator
- 15 minutes from the point the SS declared the event.

RESPONSE:

SAT_____ **UNSAT** _____ **K/A NUMBER:** 2.4.39

REFERENCE USE ALLOWED: YES

REFERENCES: OP-3504, Rev. 31, VYOPF 3504.03

ADMIN QUESTIONS

CANDIDATE:_____ **DOCKET:**_____ **DATE:**_____

TOPIC: EMERGENCY COMMUNICATIONS

QUESTION: A.4, #2

As the Emergency Communicator, you are attempting to notify the states of an Alert condition. You are attempting to use the Nuclear Alert System (NAS) phone but the phone appears dead and none of the states are answering. How should the states be notified?

ANSWER:

Utilize the commercial telephone system.

RESPONSE:

SAT_____ **UNSAT** _____ **K/A NUMBER:** 2.4.43

REFERENCE USE ALLOWED: YES

REFERENCES: OP-3504, Rev. 31, VYOPF 3504.03

Facility: _____ Date of Examination: _____

Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No: _____

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G – Importance – Description
1. RPV Venting via RCIC M, S	4	a. RCIC system operation – valve logic 217000 A2.12 3.0
		b. CST low level 217000 K6.04 3.5
2. Reset a GPI isolation D, S	5	a. PCIS IOPL 223002 A3.01 3.4
		b. MSIV Closure 239001 A2.03 4.0
3. Terminate and Prevent Injection during ATWS D, S	1	a. RPV Water Level (90") Bases 295037 EK3.03 4.1
		b. T&P during an RPVED 295037 EA2.06 4.0
4. Transfer Station Loads from S/U to Aux D, S, L	6	a. Parallel Operation 262001 A4.04 3.6
		b. Outage Operation 295003 AA2.04 3.5
5. Reactor Scram Reset D, S	7	a. RPS Logic 212000 K5.02 3.3
		b. Individual Control Rod Scram 212000 A4.13 3.4
6. Transfer Press Control MPR to EPR N, S	3	a. EPR Power Supply Loss 241000 A2.11 3.1
		b. 1st Stage Press/RPS Bypass 241000 K4.05 3.7
7. FWLC Shift N, S, A	2	a. FWLC with a reference leg leak 259001 A2.07 3.7
		b. Condenser Hotwell Makeup 256000 A2.06 3.2
8. Isolate/Vent Scram Air Header D, P, R	1	a. Bases for CRD-56 Operation 295037 EA1.05 3.9
		b. CRD System Response to Vent 295019 AK2.01 3.8
9. Operate SRV from RCIC Room D, P, R	3	a. Tailpipe Temp Predictions 239002 A1.01 3.3
		b. Appendix R Bypass Switch Logic 295016 AK3.03 3.5
10. Open Rx Bldg RR Door D, P, R	5	a. Secondary Containment Definition G.2.1.27 2.8
		b. SBGT System Initiation Logic 261000 K4.01 3.7

* 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

JPM 22301

Question 2:

A single MSIV closed at 100% power. Predict the initial effect this will have on:

- Reactor pressure
- Reactor power
- Individual Steam line flows

Justify your answers.

Answer:

- Reactor pressure would increase
- Reactor power would increase
- The steam line with the closed MSIV would have no flow and the others would have increased flow

The closure of one MSIV isolates the entire steam line. The reduction in area causes pressure to increase. The increase in pressure causes voids to collapse. The collapse of voids causes power to increase.

- Not required for credit: A Group I isolation may occur on high flow causing a Rx scram.

K/A: 239001 A: 2.03 RO: 4.0

IG: LOT-00-239

OBJ: 2

REF: OP 2113

Open Reference Question

JPM 21203

Question 1:

The reactor protection system provides protective action. Using the Main Steam Line Radiation Monitors as examples, state the combinations necessary to cause a half and a full scram.

Answer:
The logic arrangement is 1 out of 2 taken twice. The following provides a detailed explanation of the logic arrangement applied to the MSL monitors:

"A" RPS will trip resulting in a half scram if either:

- MSL Radiation Monitor "A" HI-HI or INOP Condition exists
  -OR-
- MSL Radiation Monitor "C" HI-HI or INOP Condition exists

"B" RPS will trip resulting in a half scram if either:

- MSL Radiation Monitor "B" HI-HI or INOP Condition exists
  -OR-
- MSL Radiation Monitor "D" HI-HI or INOP Condition exists

A half scram is the "1 out of 2" portion of the logic.

A full scram will require a trip of both "A" and "B" RPS

The full scram is the taken "twice" portion of the logic.

K/A: 212000 K: 5.02 RO: 3.3

IG: LOT-00-212

OBJ: 6

REF: Technical Specifications, CWDs 803, 805, 806, 808, 810, 812, 813, 815

Open Reference Question

JPM 24505

Question 1:

The reactor is operating at 100% power. The EPR is controlling reactor pressure. What is the effect of deenergizing the EPR by opening Vital AC ckt #5 on Distr Panel 9-45?

Answer:

Pressure control will be transferred to the MPR. Reactor pressure will be slightly higher because the MPR setpoint is set above the EPR.

K/A: 241000 A: 2.11 RO: 3.1

IG: LOT-00-249

OBJ: 3

REF: OP 2160

Closed Reference Question

JPM 25908F

Question 2:

During post-LOCA level control, condenser hotwell level lowers. In addition to the normal makeup, what methods are available to supply makeup to the hotwell?

Answer:

- Open Emergency Makeup valve C-31
- Cross connect Service Water and fill condenser hotwell using SW-55A/B

K/A: 256000 A: 2.06 RO: 3.2

IG: LOT-00-256

OBJ: 3

REF: RP 2170

Closed Reference Question

JPM 20015

Question 1:

What is the reason CRD-56 is opened when implementing OE 3107 Appendix D, Manual Isolation and Venting of the Scram Air Header, with reactor pressure less than 500 psig?

Answer:

Opening CRD-56 will allow the CRD pumps to recharge the CRD accumulators. Below 500 psig the accumulators will be needed as the motive force to SCRAM the control rod.

Not required for answer:
Above 500 psig, reactor pressure provides the motive force to scram the control rod.

K/A: 295037 EA: 1.05 RO: 3.9

IG: LOT-00-626

OBJ: 3

Reference: ON 3145, OE 3107 Appendix D

Closed Reference Question

JPM 22309

Question 1:

Define Secondary Containment Integrity.

Answer:

Secondary containment integrity means that the reactor building is intact and the following conditions are met:

1. At least one door in each access opening is closed.
2. The SBGT is operable.
3. All reactor building automatic ventilation system isolation valves are operable or are secured in the isolated position.

K/A: G 2.1.27 RO: 2.8

IG: LOT-02-224

OBJ: 6

REF: T.S., OP 2116

Closed Reference Question

JPM 22309

Question 2:

Several of the SBGT System automatic starts are based on process radiation monitor inputs. What process radiation monitors provide signals and what is the logic associated with these signals?

Answer:

SBGT initiates:

- High radiation signal for Reactor Bldg Vent exhaust (1 out of 2)
- High radiation signal for Refuel floor (1 out of 2)
- Downscale or INOP on both monitors for Rx BLDG vent exhaust (2 out of 2)
- Downscale or INOP on both monitors for Refuel flow radiation (2 out of 2)

K/A: 261000 K: 4.01 RO: 3.7

IG: LOT-00-261

OBJ: CRO 7

REF: OP 2117

Closed Reference Question

As Given Operating

REVISED
As Given Operating

Facility: Vermont Yankee Date of Examination: _____ Examination Level (circle one): RO / SRO Operating Test Number: _____

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1	Plant Parameter Verification	JPM – Calculate Drywell Temperature Profile.
A.1	Reactor Plant Startup	Question – When withdrawing rods to achieve criticality, describe the required actions for a short SRM period.
		Question – With rods withdrawn, describe the requirements to bypass the RWM.
A.2	Tagging and Clearances	JPM – Hang white tag on control room circuit breaker
A.3	Exiting the RCA	Question – Which items must be frisked and by whom?
		Question – What is the appropriate monitor to use for a whole body frisk and what should be done upon an alarm?
A.4	Emergency Communications	Question – Determine the allowable time to notify the states.
		Question – What system should be used to notify the states when the Nuclear Alert System is inoperable.

A070

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Drywell Temperature Profile

Reference: OP -4115

Task Number: 2997170301

Task Performance: AO/RO/SRO __ RO/SRO _X_ Only __ SE Only __

Sequence Critical: Yes __ No _X_

Time Critical: Yes __ No _X_

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation __ Performance __ Discuss __

Setting: Classroom __ Simulator _X_ Plant __

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS __ FAIL __ Time Required: ____

Prepared by: _____ 4/8/99
Operations Training Instructor — Date

Reviewed by: _____ 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

The plant is at normal full power operations. You are the CRO and, after having received a high drywell temperature alarm, are performing OP-4115, section E, "Drywell Temperature Profile". You have obtained all the required data points and are ready to proceed.

Initiating Cues:

Review the previously obtained data, complete form VYOPF 4115.05 and Section E of OP 4115 "Drywell Temperature Profile".

(Examiner Note: Provide examinee partially completed form VYOPF 4115.05)

Task Standards:

Form VYOPF 4115.05 complete and supervision informed of results.

Required Materials:

Procedure OP-4115.
Filled in data points for form VYOP 4115.05 (see attached).
Calculator.

Simulator Setup:

Any 100% Power IC.
Insert malfunction to energize annunciator CRP 9-5, F-2, "Drywell Trouble".

Evaluation **Performance Steps**

TIME START: ____

Interim Cue: If asked, work orders are submitted for all INOP temperature sensors.

SAT/UNSAT **Step 1: Calculate Average Temperature for Elevation < 270 ft.**

Standard: Averages temperature data for 10 operable points, obtains 160.5 (160 - 161) and records on form.

SAT/UNSAT ***Step 2: Recognize Temperature Outside Acceptance Criteria.**

Standard: Informs SCRO that temperature outside acceptance criteria.

Note: Examanee may inform SCRO at a latter point.

T/UNSAT **Step 3: Calculate Average Temperature for Elevation 270 – 315 ft.**

Standard: Averages temperature data for 6 operable points, obtains 140.1 (140 – 141) and records on form

---

Note: The average in the above step will be within the acceptance criteria. The average in the next step need not be computed as the minimum sensors are not available.

SAT/UNSAT ***Step 4: Recognize Insufficient Sensors for Elevation > 315 ft.**

Standard: Informs SCRO that minimum number of sensors is not available.

SAT/UNSAT **Step 5: Completes Form.**

Standard: Places signature, date and time on form. Indicates on form that average for > 315 ft. doesn't meet minimum sensors.

---

erim Cue: If asked, inform examinee to insert a note on form concerning the number of operable sensors.

SAT/UNSAT **Step 6: Inform SCRO of Required Notifications**

Standard: Informs SCRO that Duty and Call Officer and the Operations Manager is to be notified..

Interim Cue: Tell examanee you will notify the DCO and OM.

SAT/UNSAT **Step 7 Inform SCRO of Required Event Report**

Standard: Informs SCRO of requirement to generate and Event Report.

TIME FINISH: ____

Terminating Cue: SCRO notified of out of spec readings, required notifications and event report.

Evaluators Comments: _____
_____
_____

Generic K/A's: 2.1.7 3.7/4.4

DRYWELL TEMPERATURE PROBE LOCATIONS

NOTE

Identify any out of service temperature probe with INOP and ensure a WOR is submitted.

CRP 9-25 TR 1-149

Point			Place a		Mark If RRU In Operation	
1.	RRU 1 Return	155 °F	5. RRU 1 Disch	110 °F	RRU 1 A X	B
2.	RRU 2 Return	158 °F	6. RRU 2 Disch	112 °F	RRU 2 A X	B
3.	RRU 3 Return	154 °F	7. RRU 3 Disch	108 °F	RRU 3 A X	B
4.	RRU 4 Return	154 °F	8. RRU 4 Disch	110 °F	RRU 4 A X	B

RBCCW HX IN SERVICE (A or B) A RBCCW HEAT EXCH OUTLET 85 °F (M008 or M009)

A. Calculate the average temperature for each drywell elevation.

DW Elev.	Min. # of Sensors	Avg. Acceptance Criteria
<270'	10	≤ 150°F
270'-315'	6	≤ 185
>315'	4	≤ 270

$T_{AVG} = \frac{A}{B}$

A = Sum of all operable sensors

B = number of all operable sensors

1. DRYWELL TEMPERATURE FOR ELEV. BELOW 270'

COMPUTER POINT

MO-20	Inop °F	MO-22	166 °F	CHANNEL 1	164 °F	T	=	=
MO-21	155 °F	MO-23	158 °F	2	162 °F	AVG		
		MO-24	162 °F	3	157 °F	(<270')		
				4	159 °F			

STEAM LEAK DETECTION TOUCHSCREEN MONITOR IN CRP 9-21 (DRYWELL SCREEN)

Acceptance Criteria: Max. Avg.≤150°F

TI-16-19-30B(DW) 160°F TR-16-19-45 (DW) 162 °F

2. DRYWELL TEMPERATURE FOR ELEV. 270' TO 315'

COMPUTER POINT

MO-14	140 °F	CHANNEL 15	137 °F	T	=	=	
MO-15	138 °F	16	140 °F	AVG			
MO-16	142 °F	17	142 °F	(270'-315')			
MO-17	142 °F						

STEAM LEAK DETECTION TOUCHSCREEN MONITOR IN CRP 9-21 (DRYWELL SCREEN)

Acceptance Criteria: Max. Avg.≤185°F

3. DRYWELL TEMPERATURES ABOVE ELEV. 315'

COMPUTER POINT

MO-12	Inop°F	CHANNEL 5	139 °F	T	=	=	
MO-13	140 °F	6	138 °F	AVG			
		7	Inop °F	(>315')			

STEAM LEAK DETECTION TOUCHSCREEN MONITOR IN CRP 9-21 (DRYWELL SCREEN)

Acceptance Criteria: Max. Avg.≤270°F

erformed By_____ Date/Time_____/_____

Reviewed By_____ Date_____
Shift Supervisor

CANDIDATE:_____ DOCKET:_____ DATE:_____

TOPIC: REACTOR STARTUP

A.1.Q#1.a A reactor startup is underway. The last rod withdrawn was 42-23 to position 48 (see attached pull sheet). The next rod is selected and the RWM generates a select block, withdraw block and insert block. The RWM can not be reinitialized regardless of which rod is selected.

Can the startup continue? Justify your answer.

ANSWER:

No.

Only ten rods have been withdrawn. One requirement to bypass the RWM is that 12 or more rods have been withdrawn.

(NOTE: The following is additional information but not required for full credit.)

With reactor power below 20%, the RWM is required to be operable. However, it may be bypassed if all of the following conditions are satisfied:

1) Notification of the Reactor Engineering Manager.

2) Authorization obtained from the Operations Manager, Operations Superintendent or Plant Manager.

3) At least 12 control rods are withdrawn.

4) A second licensed operator is monitoring and documenting further rod motion.

5) The rod select template is in place.

RESPONSE:

SAT_____ UNSAT_____ K/A NUMBER: 2.1.23 2.8/4.0

REFERENCE USE ALLOWED: YES

REFERENCES: AP-105, Rev 4, page 5.

INPUT DATE: 5-May-1998 16:12:14
Sequence 20-A-2(1)

Template II Page 1

Group	Array	Insert Limit	With-Draw Limit	Rods	Out	In	Out	In	Out	In	Out	In
1	1	0	48									
				2623	J.D.							
				1807	J.D.							
				0223	J.D.							
				1839	J.D.							
				3431	J.D.							
				3415	J.D.							
				1015	J.D.							
				1031	J.D.							
				2639	J.D.							
				4223	J.D.							
				2607								
				1823								
2	2	0	48									
				3439								
				3407								
				1007								
				1039								
				3423								
				1023								
				2631								
				1815								
				1831								
				2615								

VYOPF 2404.01

CANDIDATE:_____ DOCKET:_____ DATE:_____

TOPIC: REACTOR STARTUP

A.1.Q1.b The plant is performing a startup and the reactor is subcritical. After a control rod notch withdrawal the operator observes the following:

- SRM and IRM count rate steadily increasing
- Reactor period stable at 25 seconds

What actions shall the operator take?

ANSWER:

Use Emergency In to turn the period. Insert rods until the reactor is subcritical and then inform the SCRO/SS.

NOTE: The following is additional information but not required for full credit.

If the sustained period becomes shorter than 30 seconds:

f. Notify the Shift Supervisor, Operations Manager, and Reactor Engineering Manager.

g. Obtain permission from Shift Supervisor prior to recommencing the startup after ensuring cause of the short period is understood and precautions taken to prevent recurrence.

RESPONSE:

SAT_____ UNSAT_____ K/A NUMBER: 2.1.23 2.8/4.0

REFERENCE USE ALLOWED: YES

REFERENCES: AP-105, Rev 4, page 15

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Hanging a White Tag

Reference: AP 0140

Task Number: 2997270301 *

Task Performance: AO/RO/SRO ___ RO/SRO _X_ Only ___ SE Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Individual Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance ___ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: ____

Prepared by: _____ 4/8/99
Operations Training Instructor — Date

Reviewed by: _____ 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

The plant is at normal full power operations. Electrical Maintenance is working on a plant modification to upgrade the suppression pool temperature recorders.

Initiating Cues:

The SCRO has directed you to hang the white tag for deenergizing the Suppression Pool Temperature Recorder. Prior to hanging the tag you are to verify ckt # 45, 120 V Instrument AC Dist (43-72) on CRP 9-46 is closed.

(Hand examinee the tag and the switchman's copy of the tagout)

Task Standards:

The breaker has been opened and the white tag has been hung.

Required Materials:

Switchman's copy of tagout and white tag. Roll of masking tape or duct tape for hanging tag.

Simulator Setup:

Any 100% Power IC.

Insure attached copy of Switching and Tagging Order is current.
Change tagout's and tag's date/time as required to make it current.
Write (or stamp) "SWITCHMAN'S COPY" in the table that contains the work party leaders information.
Write Examinee's name in the "Order Executed By" section.

Evaluation **Performance Steps**

TIME START: ____

Interim Cue: If asked, a peer check is not required.

SAT/UNSAT **Step 1: Verifies Post Accident Panel is energized**

Standard: Opens 120V Instrument AC Dist. panel (43-72) and verifies breaker # 45 is "ON" (Closed).

SAT/UNSAT ***Step 2: Opens breaker #32.**

Standard: Opens 120V Inst AC Dist. panel (1-42) places breaker #32 to the "OFF" position (Open).

SAT/UNSAT **Step 4: Initials tag.**

Standard: Places initials in the "Tagged By" section of tag.

Interim Cue: If asked (or operator starts looking for tape) provide operator with a section of tape.

SAT/UNSAT ***Step 5: Places tag on breaker #32.**

Standard: Attaches tag to breaker #32.

SAT/UNSAT **Step 6: Reports tagout complete.**

Standard: Verbally reports that tagout is complete **OR** returns the Switchman's copy of the Switching and Tagging Order.

TIME FINISH: ____

Terminating Cue: Verbally reports that tagout is complete **OR** return of the Switchman's copy of Switching and Tagging Order.

Evaluators Comments: _____
_____
_____

Generic K/A's: 2.2.13

** TAGS ON ** **Vermont Yankee Generating Station** ** TAGS ON **
Switching And Tagging Order

Switching And Tagging Order Number: **99-0256**

Primary Component Protection (ID NO) **Temp. Recorder**	Description **Suppression Pool Temp. Recorder**

Reason for Tagging: **Plant Mod 99-1234**

Component Worked On: **Suppression Pool Temp. Recorder (TR-16-19-40)**

Tags Requested By: **Doe, John**
Authorized Person

TECH. SPECS./SAFETY EQUIPMENT __X__ YES _____ NO

TAGS ON / PLACEMENT

P.R.	E.O.	SEQ	Component	Position	Location
		1	IAC (CRP 9-46), CKT 32	OPEN	CRB 272/Control Rm on CRP 9-46

_____ Continued On Continuation Sheet

_____ Ground Tags Issued _____ Local Permissive Test Tags Issued

_____ Switching And Tagging Order Change _____ Sys Drained, Depress'd, Vented (UND94006OP2)

Secondary Containment Second Level Review By: **N/A**

Order Issued By: **Goeskamp, Mike** / _____ / _____
Control Authority Date Time

Order Executed By: _____

Safety Supervisor: **N/A** Maintenance Rule Entry _____ Yes __X__ No

_____ Workmen Notified _____ Verification Complete _____ Block Tagging Order

WORK PARTY LEADERS	COMPONENT WORKED ON	SIGNATURE (WORK START)	DATE	SIGNATURE * (WORK COMPLTD.)	DATE
Doe, John	**S.P. Temp Rec.**	**XXXXXXXX**	**XXXXXX**		

Remarks/Special Conditions Relative To Clearance:

Switchman - Verify ckt #45, 120 V Instrument AC Dist

43-72) on CRP 9-46 is CLOSED prior to hanging tagout.

* Note if Tags Are Double Cleared

Instructor note: The following is for printout and attachment to the white tag.

Order #: **99-0256** Date:

Component Tagged: **IAC (CRP 9-46) CKT 32**

Description: **SUPPRESSION POOL TEMP. RECORDER**

Position: **OPEN**

Tagged For: **DOE, JOHN**

Apparatus Protected: **S.P. TEMP. RECORDER (TR-16-19-40)**

Safety Supervisor: **N/A**

Tagged By: _____ Checked By: _____

ADMIN QUESTIONS

CANDIDATE:_____ **DOCKET:**_____ **DATE:**_____

TOPIC: EXITING THE RCA

QUESTION: A.3, #1

You are leaving the RCA with a pen light, a clipboard and a valve wrench. The pen light was the only item brought into a contaminated area but remained under you PCs.

a. Which item(s) must be frisked with a hand or tool frisker (RM-14 or ITM-2H) prior to leaving the RCA?

b. Who may perform the required survey(s)?

ANSWER:

a. The clipboard and valve wrench must be frisked with a hand/tool frisker.

b. The clipboard may be frisked by the individual and an RP must perform the frisk of the valve wrench.

Examiner Note: The pen light, although in a contaminated area, is thought of as an article of clothing and is considered frisked when a whole body frisk is completed with the PCM-1B.

RESPONSE:

SAT_____ **UNSAT** _____ **K/A NUMBER:** 2.3.4

REFERENCE USE ALLOWED: YES

REFERENCES: AP-0516, Rev 10

ADMIN QUESTIONS

CANDIDATE:_____ **DOCKET:**_____ **DATE:**_____

TOPIC: EXITING THE RCA

QUESTION: A.3, #2

You are leaving the RCA. There are two whole body monitors (PCM-1B) and one hand frisker (RM-14) in the area. The portal monitors are currently in use by other personnel. The hand frisker shows a background reading of 200 cpm.

a. May you use the hand frisker to frisk out?

b. While frisking out your monitor alarms. How many additional times, if any, may a survey be attempted before an RP must be contacted?

ANSWER:

a. No

b. Once

Examiner Note: The hand frisker may be used if background counts are less than 300 cpm AND there are no operable PCM-1Bs. Regardless of the monitor, one more attempt is allowed after an alarm.

RESPONSE:

SAT_____ **UNSAT** _____ **K/A NUMBER:** 2.3.5

REFERENCE USE ALLOWED: YES

REFERENCES: AP-0516, Rev 10

ADMIN QUESTIONS

CANDIDATE:_____ **DOCKET:**_____ **DATE:**_____

TOPIC: EMERGENCY COMMUNICATIONS

QUESTION: A.4, #1

The Shift Supervisor (SS) has declared an Alert at 10:00 AM. At 10:05 AM the SS appoints you as Emergency Communicator and directs you to notify the states of the event. State the latest time that you can complete these notifications?

ANSWER:

Any one of the following is acceptable:

- 10:15 AM
- 10 minutes from your appointment as the Emergency Communicator
- 15 minutes from the point the SS declared the event.

RESPONSE:

SAT_____ **UNSAT** _____ **K/A NUMBER:** 2.4.39

REFERENCE USE ALLOWED: YES

REFERENCES: OP-3504, Rev. 31, VYOPF 3504.03

ADMIN QUESTIONS

CANDIDATE:_____ **DOCKET:**_____ **DATE:**_____

TOPIC: EMERGENCY COMMUNICATIONS

QUESTION: A.4, #2

As the Emergency Communicator, you are attempting to notify the states of an Alert condition. You are attempting to use the Nuclear Alert System (NAS) phone but the phone appears dead and none of the states are answering. How should the states be notified?

ANSWER:

Utilize the commercial telephone system.

RESPONSE:

SAT_____ **UNSAT** _____ **K/A NUMBER:** 2.4.43

REFERENCE USE ALLOWED: YES

REFERENCES: OP-3504, Rev. 31, VYOPF 3504.03

NEW NEW

Facility: _____ Date of Examination: _____

Exam Level (circle one): RO / SRO(I) / SRO(U) Operating Test No: _____

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G – Importance – Description
1. RPV Venting via RCIC M, S	4	a. RCIC system operation – valve logic 217000 A2.12 3.0 D
		b. CST low level 217000 K6.04 3.5 C
2. Reset a GPI isolation D, S	5	a. PCIS IOPL 223002 A3.01 3.4 D
		b. MSIV Closure 239001 A2.03 4.0 D
3. Terminate and Prevent Injection during ATWS D, S	1	a. RPV Water Level (90") Bases 295037 EK3.03 4.1 C
		b. T&P during an RPVED 295037 EA2.06 4.0 C
4. Transfer Station Loads from S/U to Aux D, S, L	6	a. Parallel Operation 262001 A4.04 3.6 C
		b. Outage Operation 295003 AA2.04 3.5 D
5. Reactor Scram Reset D, S	7	a. RPS Logic 212000 K5.02 3.3 D
		b. Individual Control Rod Scram 212000 A4.13 3.4 D
6. Transfer Press Control MPR to EPR N, S	3	a. EPR Power Supply Loss 241000 A2.11 3.1 C
		b. 1st Stage Press/RPS Bypass 241000 K4.05 3.7 D
7. FWLC Shift N, S, A	2	a. FWLC with a reference leg leak 259001 A2.07 3.7 D
		b. Condenser Hotwell Makeup 256000 A2.06 3.2 C
8. Isolate/Vent Scram Air Header D, P, R	1	a. Bases for CRD-56 Operation 295037 EA1.05 3.9 C
		b. CRD System Response to Vent 295019 AK2.01 3.8 D
9. Operate SRV from RCIC Room D, P, R	3	a. Tailpipe Temp Predictions 239002 A1.01 3.3 D
		b. Appendix R Bypass Switch Logic 295016 AK3.03 3.5 D
10. Open Rx Bldg RR Door D, P, R	5	a. Secondary Containment Definition G.2.1.27 2.8 C
		b. SBGT System Initiation Logic 261000 K4.01 3.7 C

* 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

11-D
9-C

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: RPV Venting via RCIC

Reference: OE 3107 Appendix FF

Task Number: 2007760501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant _

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: MD Hanbo 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: A plant transient has occurred and the SCRO has entered EOP 5 and is performing RPV/ED.

Initiating Cues: The SCRO directs you to depressurize the RPV defeating interlocks using RCIC per OE 3107 Appendix FF. E&C is standing by to assist.

Task Standards: The reactor vented through RCIC to the main condenser per Appendix FF.

Required Materials: OE 3107 Appendix FF

Simulator Setup: Any IC. RCIC-15 and RCIC-16 Shut

When requested by the examinee, place remote function RPR25 to BYPASS.

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain Procedure OE 3107 Appendix FF and review prerequisites.**

Standard: • Operator obtains procedure and reviews prerequisites.

Interim Cue: When the operator asks inform him that the prerequisites are met.

SAT/UNSAT ***Step 2: Defeat the RCIC-131 auto-open signal.**

NOT CRITICAL

Standard: Direct E&C to lift lead AA-41 in CRP 9-30.

Interim Cue: E&C has lifted the lead. E&C has initialed their form and will transfer initials on to master form after completing the task.

SAT/UNSAT **Step 3: Verify RCIC-131 closed**

Standard: On CRP 9-4 verify RCIC-131 SHUT by Green light ON and the Red light OFF.

SAT/UNSAT ***Step 4: Defeat PCIS Group 6 isolation interlocks for RCIC-15.**

NOT CRITICAL

Standard: Direct E&C to perform the following:

Lift leads: CRP 9-33, CC-52
CRP 9-30, AA-19

Install jumpers: CRP 9-30, AA-15 to AA-16

Interim Cue: E&C has lifted the leads and installed the jumper. E&C has initialed their form and will transfer initials on to master form after completing the task.

Evaluation | Performance Steps

SAT/UNSAT ***Step 5: Defeat PCIS Group 6 isolation interlocks for RCIC-16.**

Not crit, ca

Standard: Direct I&C to perform the following:

Lift leads: CRP 9-33, CC-53
CRP 9-30, AA-24

Install jumper: CRP 9-30, AA-20 to AA-21

Interim Cue: E&C has lifted the leads and installed the jumper. E&C has initialed their form and will transfer initials on to master form after completing the task.

SAT/UNSAT ***Step 6: OPEN RCIC-15.**

Standard: On CRP 9-4 place control switch for RCIC-15 to OPEN

SAT/UNSAT **Step 7: Verify RCIC-15 Open.**

Standard: On CRP 9-4 verify RCIC-15 Open by Red light ON and Green light OFF.

SAT/UNSAT ***Step 8: OPEN RCIC-16.**

Standard: On CRP 9-4 place control switch for RCIC-16 to OPEN

SAT/UNSAT **Step 9: Verify RCIC-16 Open.**

Standard: On CRP 9-4 verify RCIC-16 Open by Red light ON and Green light OFF.

SAT/UNSAT ***Step 10: Open RCIC-32**

Standard: On CRP 9-4 place control switch for RCIC-32 to OPEN

SAT/UNSAT **Step 11: Verify RCIC-32 Open.**

Standard: On CRP 9-4 verify RCIC-32 Open by Red light ON and Green light OFF.

Evaluation	Performance Steps

SAT/UNSAT **Step 12: Verify RCIC-34 Open.**

Standard: On CRP 9-4 verify RCIC-34 Open by Red light ON and Green light OFF.

SAT/UNSAT **Step 13: Verify RCIC-35 Open.**

Standard: On CRP 9-4 verify RCIC-35 Open by Red light ON and Green light OFF.

TIME FINISH: _____

Terminating Cue: The reactor vented through RCIC to the main condenser per Appendix FF.

Evaluators Comments: _____
_____
_____

System: 217000 **K/A's:** K2.01 K3.03 A3.01 A2.12

JPM 20046

Question 1:

During the implementation of OE 3107 Appendix FF, RPV VENTING VIA RCIC STEAM LINE DRAINS, the operator fails to perform Step 1. The AA-41 lead in CRP 9-30 has not been lifted. Predict the effect on the operator's ability to implement the procedure both with and without an initiation signal present.

Answer:

WITHOUT a RCIC initiation signal present: There will be no effect on the operator's ability to implement the procedure.

WITH a RCIC initiation signal present: RCIC-131 will be open preventing the opening of the RCIC Steam Line Drains RCIC-34, RCIC-35. The procedure can not be implemented.

K/A: 217000 A: 2.12 RO: 3.0

IG: LOT-00-217

OBJ: 10

REF: CWD 1197, OE 3107 Appendix FF

Open Reference Question

JPM 20046

Question 2:

RCIC initiates on low-low RPV water level. OP 2121 directs the operator to monitor RPV water level and CST level. How will the RCIC system respond to a lowering CST water level?

Answer:

At a low CST tank level, Torus suction valve, RCIC-39 and RCIC-41 open automatically and CST suction RCIC-18 closes automatically.

K/A: 217000 K: 6.04 RO: 3.5

IG: LOT-00-217

OBJ: 10, 22

REF: OP 2121

Close Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Reset a Group I Isolation
Reference: OP 2115, Primary Containment
Task Number: 2000030501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes _X_ No ___

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant _

Performance Expected Completion Time: 2 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/9/99
Operations Training Instructor — Date

Reviewed by: MO Hanlon 4/9/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: A Group I isolation has occurred due to low main steam line pressure, OT 3100, scram procedure has been carried out, mode switch is in shutdown.

Initiating Cues: The SCRO directs you to reset the Group I logic per OP 2115, Section G.

Task Standards: Group I Logic reset

Required Materials: OP 2115, Primary Containment

Simulator Setup: Any power IC.
Insert malfunction RP03, then delete
Complete OT 3100 actions
Control pressure using SRVs 800-1000 psi

Valuation **Performance Steps**

TIME START: _____

NOTE: **Steps 4-11 can be completed in any order, but must be completed before completing Step 13.**

SAT/UNSAT **Step 1: Obtain procedure, review administrative limits, precautions, and prerequisites**

Standard: OP 2115 obtained, Section G administrative limits, precautions, and prerequisites reviewed

---

Interim Cue: If asked, inform operator that prerequisites are met.

SAT/UNSAT **Step 2: Verify RV 39 Control Switch is in CLOSE Position**

Standard: Verify RV 39 control switch in CLOSE

SAT/UNSAT **Step 3: Verify RV 40 Control Switch is in CLOSE Position**

Standard: Verify RV 40 control switch into CLOSE

SAT/UNSAT *** + Step 4: Place MSIV 80A Control Switch to CLOSE**

Standard: MSIV 80A control switch to CLOSE

SAT/UNSAT *** + Step 5: Place MSIV 80B Control Switch to CLOSE**

Standard: MSIV 80B control switch to CLOSE

SAT/UNSAT *** + Step 6: Place MSIV 80C Control Switch to CLOSE**

Standard: MSIV 80C control switch to CLOSE

SAT/UNSAT *** + Step 7: Place MSIV 80D Control Switch to CLOSE**

Standard: MSIV 80D control switch to CLOSE

Evaluation	Performance Steps
SAT/UNSAT	* + **Step 8: Place MSIV 86A Control Switch to CLOSE**
	Standard: MSIV 86A control switch to CLOSE
SAT/UNSAT	* + **Step 9: Place MSIV 86B Control Switch to CLOSE**
	Standard: MSIV 86B control switch to CLOSE
SAT/UNSAT	* + **Step 10: Place MSIV 86C Control Switch to CLOSE**
	Standard: MSIV 86C control switch to CLOSE
SAT/UNSAT	* + **Step 11: Place MSIV 86D Control Switch to CLOSE**
	Standard: MSIV 86D control switch to CLOSE
SAT/UNSAT	**Step 12: Ensure the Containment Isolation Reset Permissive lights for Group I are lit.**
	Standard: Operator verifies that Group I lights (14A and 16 A) are on. Located on CRP 9-5 lower right side of vertical panel

Interim Cue: If asked, the Group I isolation signal is clear.

SAT/UNSAT	* + **Step 13: Reset the PCIS logic when the signal has cleared.**
	Standard: Group I isolation reset switch momentarily taken to the INBD and OTBD position and released. CRP 9-5 upper right side of horizontal panel

TIME FINISH: _____

Terminating Cue: Group I logic reset.

Evaluators Comments: _____

_____

_____

System: 223002 **K/A's:**

K1.01	K1.17	K3.03	K3.06	K3.14	K4.06
K1.06	K2.01	K3.04	K3.09	K4.01	K6.03
					K6.08
A1.01	A1.04	A2.04	A3.02	A3.04	A4.04
A1.02	A2.01	A3.01	A3.03	A4.01	A4.05
A1.03	A2.03			A4.03	A4.06

JPM 22301

Question 1:

A Group II isolation occurs. The isolation condition still exists. All Group II isolation valves (LRW-82, -83, -94, -95) control switches are placed in CLOSE. How will the containment isolation reset permissive lights for Group II respond to the control switch manipulations?

Answer:

The containment isolation reset permissive lights on CRP 9-5 will be lit. The lights are dependent on switch position for the affected group. The status of the isolation condition does not affect the lights logic circuit.

K/A: 223002 A3.01 RO: 3.4

IG: LOT-01-223

OBJ: 6

REF: CWD 1114, 1115, 1119
OP 2115

Open Reference Question

NEW

JPM 22301

Question 2:

A single MSIV closed at 100% power. Predict the initial effect this will have on:

- Reactor pressure
- Reactor power
- Individual Steam line flows

Justify your answers.

Answer:

- Reactor pressure would increase
- Reactor power would increase
- The steam line with the closed MSIV would have no flow and the others would have increased flow

The closure of one MSIV isolates the entire steam line. The reduction in area causes pressure to increase. The increase in pressure causes voids to collapse. The collapse of voids causes power to increase.

- Not required for credit: A Group I isolation may occur on high flow causing a Rx scram.

K/A: 239001 A: 2.03 RO: 4.0

IG: LOT-00-239

OBJ: 2

REF: OP 2113

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Terminate and Prevent all Injection into the RPV Except SLC, CRD, and RCIC
Reference: OE 3107, Appendix GG
Task Number: 2007450501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant _

Performance Expected Completion Time: 6.0 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/8/99
Operations Training Instructor — Date

Reviewed by: _____ 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: An ATWS occurred. Reactor Power is greater than 2% and RPV level is greater than 90"

Initiating Cues: The SCRO directs you to terminate and prevent all injection into the reactor vessel except boron injection systems, CRD, and RCIC per OE 3107, Appendix GG.

Task Standards: All injection into the reactor vessel terminated and prevented with the exception of boron injection systems, CRD, and RCIC IAW OE 3107, Appendix GG.

Required Materials: OE 3107, Appendix GG

Simulator Set-Up:
RD 12A 100%
RD 12B 100%
APP_P in Bypass
Insert a manual scram

Valuation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain OE 3107, Appendix GG, verify prerequisites**

Standard: Obtain OE 3107, Appendix GG and verify prerequisites.

SAT/UNSAT ***Step 2: Terminate and prevent HPCI.**

Standard: Place the HPCI Turbine Trip/Inhibit pushbutton on CRP 9-3 in Inhibit.

SAT/UNSAT **Step 3: Verify HPCI inhibited.**

Standard: Verify that annunciator 3-U-1, "HPCI INHIBITED", is lit.

SAT/UNSAT ***Step 4: Place the core spray pump control switches in Pull to Lock.**

Standard: CS pumps switches on CRP 9-3 horizontal in Pull-to-Lock

____ CS A
____ CS B

SAT/UNSAT **Step 5: Verify CS pumps secure**

Standard: CS pumps verified OFF by Green light ON and Red light OFF above control switch on CRP 9-3
____ CS A
____ CS B

SAT/UNSAT ***Step 6: Place the RHR pump control switches in Pull to Lock.**

Standard: RHR pump switches on CRP 9-3 horizontal in pull to lock position

____ RHR A
____ RHR C
____ RHR B
____ RHR D

Evaluation **Performance Steps**

SAT/UNSAT **Step 7: Verify RHR pumps secure**

Standard: RHR pumps verified OFF by Green light OFF AND Red light OFF above control switch on CRP 9-3

____ RHR A
____ RHR C
____ RHR B
____ RHR D

SAT/UNSAT ***Step 8: Place Feedwater Pump A, B, C Control Switches in Pull to Lock**

Standard: Control Switches for feedwater pumps in Pull to Lock on CRP 9-6.

____ Feedwater pump A
____ Feedwater Pump B
____ Feedwater Pump C

SAT/UNSAT **Step 9: Verify Feedwater Pump A, B, C are OFF**

Standard: Verify feedwater pump OFF by Green light ON and Red light OFF above control switch on CRP 9-6

____ Feedwater pump A
____ Feedwater Pump B
____ Feedwater Pump C

SAT/UNSAT ***Step 10: Close FDW-7A, HP heater outlet**

Standard: Place FDW-7A control switch to Close on CRP 9-6

SAT/UNSAT **Step 11: Verify FDW-7A Shut**

Standard: Verify FDW-7A shut by Green light ON and Red light OFF above control switch on CRP 9-6

SAT/UNSAT ***Step 12: Close FDW-7B, HP heater outlet**

Standard: Place FDW-7A control switch to Close on CRP 9-6

Evaluation **Performance Steps**

SAT/UNSAT **Step 13: Verify FDW-7B Shut**

Standard: Verify FDW-7A shut by Green light ON and Red light OFF above control switch on CRP 9-6

SAT/UNSAT **Step 14: Check closed FDW-5 HP heater bypass valve.**

Standard: Verify FDW-5 shut by Green light ON and Red light OFF above control switch on CRP 9-6

SAT/UNSAT **Step 15: Report lowering RPV Water Level**

Standard: Operator report RPV Water Level is lowering to the SCRO.

SAT/UNSAT **Step 16: Reports Appendix GG is complete**

Standard: Operator reports Appendix GG is complete to the SCRO.

Interim Cue: RCIC realignment is not required. The JPM is complete.

TIME FINISH: _____

Terminating Cue: All injection into the Reactor vessel terminated and prevented except Boron Injection Systems, CRD, & RCIC IAW OE 3107, Appendix GG.

Evaluators Comments: _____

_____

_____

System: 295037 K/A's: EK1.02 EK2.09 EK3.03 EA2.02

JPM 20018

Question 1:

During an ATWS, RPV water level is lowered to below 90 inches. What is the bases for reducing water level below 90 inches?

Answer:

Ninety inches is below the feedwater sparger. By reducing level below the feedwater sparger, this will allow steam heating of the injected water. This eliminates high core inlet subcooling. As a result, a reduction in reactivity should prevent or mitigate large neutron flux oscillations induced by neutronic/thermal-hydraulic instablities.

K/A: 295037 EK: 3.03 RO: 4.1

IG: LOT-00-610

OBJ: 3

REF: EOP Study Guide

Closed Reference Question

JPM 20018

Question 2:

During an ATWS, injection is terminated and prevented prior to performing an RPV-ED. Why is this action performed?

Answer:

This action prevents rapid injection of a large quantity of relatively cold, unborated water from low pressure systems as RPV pressure decreases. The associated positive reactivity addition could induce a power excursion large enough to damage the core.

K/A: 295037 EA: 2.06 RO: 4.0

IG: LOT-00-610

OBJ: 3

REF: EOP Study Guide

Closed Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Transfer of Station Load from the Startup Transformer to the Auxiliary Transformer (Main Transformer Phased to the System)

Reference: OP 2142, 4 KV Electrical System

Task Number: 2627280101

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 5 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: MD Harris 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: Plant SU in progress.
Reactor power ~ 25%.
Main Turbine on the grid.

Initiating Cues: The SCRO directs you to transfer station loads from the Startup to the Auxiliary transformer.

Task Standards: Station loads transferred to Auxiliary transformer in accordance with OP 2142 Section C.

Required Materials: OP 2142, 4 KV Electrical System

Simulator Setup: IC-7. House loads on startup transformers.

Evaluation | **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1: Obtain procedure, review Precautions, Administrative Limits, and Prerequisites.**

Standard: OP 2142 Section C obtained. Precautions, Administrative Limits, and Prerequisites, Reviewed.

Interim Cue: When asked all prerequisites are met.

SAT/UNSAT **Step 2: Check Auxiliary Transformer energized.**

Standard: Observes Main Generator tied to grid. MOD T-1, and ATBs 81-1T and 1T closed as indicated by red lights above their control switches on CRP 9-7 horizontal or CRP 9-8 horizontal.

SAT/UNSAT ***Step 3: Insert sync check handle in Bkr 12 socket and turn sync switch on.**

Standard: 4 KV switch installed in sync selector for breaker 12 on CRP 9-8 horizontal and positioned to ON.

SAT/UNSAT **Step 4: Verify Bus 1 in phase with Auxiliary Transformer.**

Standard: 1) Observes scope at 12:00 position on CRP 9-8 and white lights out indicating synchronism.

2) Red lights on both sides of sync scope on CRP 9-8 vertical on indicating voltage on running and incoming bus/machine.

SAT/UNSAT ***Step 5: Close breaker 12.**

Standard: Breaker handswitch on CRP 9-8 horizontal taken to CLOSE position then released.

SAT/UNSAT **Step 6: Verify breaker 12 closed.**

Standard: Verifies breaker 12 closed as indicated by red light above breaker control switch on CRP 9-8 horizontal.

Evaluation	Performance Steps
SAT/UNSAT	**Step 7: Check that breaker 13 opens when 12 switch is released.** Standard: Observes breaker 13 opened as indicated by green and amber lights above breaker control switch on CRP 9-8 horizontal.
SAT/UNSAT	**Step 8: Reset Breaker 13 amber light.** Standard: 13 Breaker handswitch on CRP 9-8 horizontal taken to OPEN then released.
SAT/UNSAT	**Step 9: Verify breaker 13 reset.** Standard: Indicates amber light above breaker 13 switch on CRP 9-8 horizontal is out.
SAT/UNSAT	***Step 10: Turn sync check handle OFF, remove it, insert in breaker 22 and turn it on.** Standard: Sync. check hand on CRP 9-8 horizontal positioned to off, removed from breaker 12 socket inserted in breaker 22 socket on CRP 9-8 horizontal and positioned to ON.
SAT/UNSAT	**Step 11: Verify Bus 2 in phase with Auxiliary Transformer.** Standard: 1) Observes scope at 12:00 position on CRP 9-8 and white lights out indicating synchronism. 2) Red lights on both sides of sync scope on CRP 9-8 vertical on indicating voltage on running and incoming bus.
SAT/UNSAT	***Step 12: Close breaker 22.** Standard: Breaker handswitch for breaker 22 on CRP 9-8 taken to CLOSE position then released.
SAT/UNSAT	**Step 13: Verify breaker 22 closed.** Standard: Verifies breaker 22 closed as indicated by red light above breaker control switch on CRP 9-8 horizontal.

Evaluation	Performance Steps
SAT/UNSAT	**Step 14: Check that breaker 23 opens when 22 switch is released.** Standard: Observes breaker 23 opened as indicated by green and amber lights above breaker control switch on CRP 9-8 horizontal.
SAT/UNSAT	**Step 15: Reset breaker 23 amber light.** Standard: 23 breaker handswitch on CRP 9-8 horizontal taken to OPEN then released.
SAT/UNSAT	**Step 16: Verify breaker 23 reset.** Standard: Indicate amber light above breaker 23 switch on CRP 9-8 horizontal is out.
SAT/UNSAT	**Step 17: Turn sync check off and remove it.** Standard: Sync switch on CRP 9-8 horizontal turned to OFF and removed from breaker 23 socket and placed on CRP 9-8.
SAT/UNSAT	**Step 18: Check computer points D-619 and D-620 and notify Maintenance Department, if necessary.** Standard: Computer checked, both points found to be in "NORM". Maintenance notification not necessary.

TIME FINISH: _____

Terminating Cue: **Station loads supplied from Auxiliary Transformer.**

Evaluators Comments: _____
_____
_____
_____

System: 262002 K/A's: K1.03 K2.01 K3.01 K4.05 K6.02
K1.05 K3.02 K6.03
K3.05

A1.03 A2.01 A4.01
A1.04 A2.03 A4.02
A1.05 A4.04
A4.05

JPM 26205

Question 1:

When the Turbine is being synched to the grid, the synchroscope is operating slow in the FAST direction. If the synchroscope speed is increased, how will the turbine respond when the breaker is closed?

Answer:

As synchroscope speed increases, the frequency difference between the grid and the turbine increase. When the output breaker closes, the turbine will assume a greater real load (KW) than if the synchroscope was rotating at a slower rate.

K/A: 262001 A: 4.04 RO: 3.6

IG: LOT-01-262

OBJ: 27

REF: OP 2142

Closed Reference Question

JPM 26205

Question 2:

During an outage work on the S/U transformers is planned. Using a P&ID, explain how off site power will be supplied to house loads.

Answer:
Using P&ID (G191298) and the procedure (OP 2142, form VYOPF 2142.01) for backfeeding, the operator should trace the flowpath of power. The operator should point out the breakers and disconnects operated during the evolution. The following should be included in the discussion/review of the evolution:

- BKR 12
- BKR 22
- ATBs 1T and 81-1T
- T-1 MOD
- GD-1 Disconnect

K/A: 295003 AA: 2.04 RO: 3.5

IG: LOT-00-262

OBJ: 2

REF: OP 2142, P&ID 191298

Open Reference Question

FOR REFERENCE ONLY

345KV NORTH BUS (NO.1 BUS)

COOLIDGE 340 — SCOBIE 379 — NORTHFIELD 381

AUTO TRANSFORMER NO.4 (T-4-1A)

H-X 240/320/400MVA, OA/FA/FOA, 30.60HZ, 55°C RISE.
H-Y 32.5/64.1/105.0MVA
H-S 253/338/440MVA OA/FA/FOA, 65°C RISE
H-Y 73/101.4/136.0MVA
363/353.75/345/336/327.75-115-13.8KV
BIL H=1050KV, X=450KV, Y=150KV
BIL H=450 KV; X=175 KV
Z=7.6 % ON 240MVA BASE
MORGAN EDISON CO.

NOTES:

1. 115KV OCB CONTAINS TWO SHOT AUTO RECLOSER & LOCKOUT EXCEPT AUTO TRANSFORMER OCB WITH IS SINGLE SHOT.
2. ALL 345KV ACB'S CONTAIN A MULTI-SHOT AUTO RECLOSER. PCB'S 1 & 2 RECLOSE ON HIGH SPEED. PCB'S 1 & 2 RECLOSE VIA SYNCH. CHECK.
3. DETAILS APPLY TO NORTHFIELD LINE ONLY. SCOBIE HAS DIRECTIONAL COMPARISON
4. SCOBIE LINE HAS TWO LINE TRAPS.
   4A - SINGLE FREQUENCY - SECONDARY RELAYING
   4B - TWO FREQUENCY - PRIMARY RELAYING
5. BREAKERS 3V & 4V CANNOT BE CLOSED IF BUS 3 & 4 ARE ENERGIZED.
6. COOLIDGE LINE HAS TWO LINE TRAPS.
   6A - TWO FREQUENCY - SECONDARY RELAYING
   6B - SINGLE FREQUENCY - PRIMARY RELAYING
7. NET GENERATION ALSO TELEMETERED TO RUTLAND, VT.
8. FOR RELAY LEGEND AND PHASOR DIAGRAM SEE G-191298 SHEET 2 OF 2.

REFERENCE DWG'S:

AUXILIARY ONE LINE WIRING DIAGRAM ——— G-191299
POWER DISTRIBUTION & MOTOR DATA (DRAWING SERIES) ——— G-191300
CONTROL WIRING DIAGRAMS (DRAWING SERIES) ——— G-191301

LEGEND:

G - GENERATOR
MT - MAIN TRANSFORMER
AT - AUTO TRANSFORMER
ST - START-UP TRANSFORMER
DG - DIESEL GENERATOR
UT - UNIT AUXILIARY TRANSFORMER
MR - MULTI RATED
S - SYNCHRONIZING
O - ON CONTROL ROOM PANEL
V - VOLTMETER
A - AMMETER
W - WATTMETER
VAR - VARMETER
WH - WATTHOUR METER
PF - POWER FACTOR
F - FREQUENCY METER
T - TEMPERATURE INDICATION
ETM - ELEASED TIME METER
T - TELEMETERED TO N.E.W.V.E.C.
TR - TRANSDUCER FOR COMPUTER DATA SYSTEM
A - ALARM ONLY
ENFIS COMPUTER DATA SYSTEM
SAFETY CLASS
NON-SAFETY
SAFETY CLASS BOUNDARY
I - INSTRUMENTATION
R - RELAY

345KV SOUTH BUS (NO.2 BUS)

(OLD) MAIN TRANSFORMER (T-1-1A) GENERAL ELECTRIC
550MVA, FOA, 30, 60HZ, 55°C RISE
616MVA, 65°C RISE
363/353.75/345/336/327.75-20.9KV
BIL H=1050KV, X=150KV
Z=13.00% ON 550MVA BASE
(STORED ON SITE)

MAIN TRANSFORMER NO.1 (T1-1-1A) (NEI PEEBLES)
550MVA, FOA, 30, 60HZ, 55°C RISE
650MVA, 65°C RISE
363/353.75/345/336/327.75-20.9KV
BIL H=1050KV, X=150KV
Z=13.00% ON 550MVA BASE

UNIT AUXILIARY TRANFORMER NO.2 (T-2-1A)
H=35MVA, X=17.5MVA, Y=17.5MVA
FOA, 30, 60HZ, 55°C RISE.
H=39.2, X=19.6, Y=19.6, 65°C RISE.
21-38/21-43/20-30/
20.58/19.85-4.16KV
BIL H=150KV, X=75KV, Y=75KV
Z=6.32%, Z=6.37%, Z=15.85%
ON 17.5MVA BASE
GENERAL ELECTRIC CO.

GENERATOR NO.1 (TG-1-1A)
626MVA, 0.9PF, 45 PSIG H2, 16.500AMP, 22KV, 30, 60HZ
1800RPM, 0.585CR
Xd=1.81, I2F =0.345 I2F, Xd=0.225,
X2=0.229, X0=0.150 ON 626MVA BASE
ARM: WATER COOLED / FIELD: GAS COOLED
GENERAL ELECTRIC CO.

MAIN EXCITER

4160V SWGR BUS NO.5A

4160V SWGR BUS NO.5B
(FOR EQUIPMENT SEE DWG. G-191299)

4160V SWGR BUS NO.1 3000/2000A

4160V SWGR BUS NO.2 3000/2000A

115KV BUS

START-UP TRANSFORMERS T-3A & T-3B (GENERAL ELEC. CO.)
15/20/25 MVA, OA/FA/FOA; 30, 60 HZ; 55°C RISE
28 MVA, FOA; 65°C RISE
121/110/115/112/109-4.16 KV
BIL H=450 KV; X=75 KV
Z=7.6 % ON 15 MVA BASE

T-3B — T-3A

4160V SWGR BUS NO.3 1200 AMPS-SI

4160V SWGR BUS NO.4 1200 AMPS-SII

DIESEL DRIVEN GENERATOR DG-1-1B
3000KW, 4160V, 3Ø, 60HZ
SEE DWG. G-191299

DIESEL DRIVEN GENERATOR DG-1-1A
3000KW, 4160V, 3Ø, 60HZ
SEE DWG. G-191299

GROUNDING TRANSFORMER 10KVA, 1Ø, 60HZ 4160-120/240V. Z=2.2% CONNECTED FOR 240V CONTINUOUS DUTY

THIS DWG. AFFECTS FSAR FIG. 8.1-1

REV	DESCRIPTION	BY	CHKD.	APPD.
24	REVISED PER EDCR 97-421 AND C.U.	PMR	TLM	6-23-98 / 6-24-98 / MM
23	REVISED PER EDCR 96-402	PMR	TLM	12-19-96 / 12-23-96 / 12-30-96 / KMH
25	REVISED PER C.U. 98-277			8-3-98

YANKEE ATOMIC ELECTRIC COMPANY
580 MAIN STREET BOLTON, MA.
NUCLEAR SERVICES DIVISION
VERMONT YANKEE NUCLEAR POWER STATION
VERNON, VERMONT

DRAWING TITLE: MAIN ONE LINE WIRING DIAGRAM
JOB NO.
DRAWING NO. G-191298 SHEET 1 OF 2

e:\cadd\dgn\vy4000\dgn98\a.dgn

FOR REFERENCE ONLY

345KV NORTH BUS (NO.1 BUS)

345KV SOUTH BUS (NO.2 BUS)

COOLIDGE 340 SCOBIE 379 NORTHFIELD 381

AUTO TRANSFORMER NO.4 (T-4-1A)

START-UP TRANSFORMERS T-3A & T-3B (GENERAL ELEC. CO.)

(OLD) MAIN TRANSFORMER (T-1-1A) GENERAL ELECTRIC

MAIN TRANSFORMER NO.1 (T1-1-1A) (NEI PEEBLES)

UNIT AUXILIARY TRANFORMER NO.2 (T-2-1A)

GENERATOR NO.1 (TG-1-1A)

MAIN EXCITER

4160V SWGR BUS NO.1 3000/2000A

4160V SWGR BUS NO.2 3000/2000A

4160V SWGR BUS NO.3 1200 AMPS-SI

4160V SWGR BUS NO.4 1200 AMPS-SII

4160V SWGR BUS NO.5A

4160V SWGR BUS NO.5B

115KV BUS

DIESEL DRIVEN GENERATOR DG-1-1B

DIESEL DRIVEN GENERATOR DG-1-1A

NOTES:

1. 115KV OCB CONTAINS TWO SHOT AUTO RECLOSER & LOCKOUT EXCEPT AUTO TRANSFORMER OCB WITCH IS SINGLE SHOT.
2. ALL 345KV ACB'S CONTAIN A MULTI-SHOT AUTO RECLOSER. POS'S 1 & 4 RECLOSE ON HIGH SPEED. POS'S 1 & 2 RECLOSE VIA SYNCH. CHCK.
3. DETAILS APPLY TO NORTHFIELD LINE ONLY. SCOBIE HAS DIRECTIONAL COMPARISON
4. SCOBIE LINE HAS TWO LINE TRAPS.
   - 86 - SINGLE FREQUENCY - SECONDARY RELAYING
   - 186 - TWO FREQUENCY - PRIMARY RELAYING
5. BREAKERS 3V & 4V CANNOT BE CLOSED IF BUS 3 & 4 ARE ENERGIZED.
6. COOLIDGE LINE HAS TWO LINE TRAPS.
   - 86 - TWO FREQUENCY - SECONDARY RELAYING
   - 186 - SINGLE FREQUENCY - PRIMARY RELAYING
7. NET GENERATION ALSO TELEMETERED TO RUTLAND, VT.
8. FOR RELAY LEGEND AND PHASOR DIAGRAM SEE G-191298 SHEET 2 OF 2.

REFERENCE DWG'S:

AUXILIARY ONE LINE WIRING DIAGRAM ——— G-191299

POWER DISTRIBUTION & MOTOR DATA (DRAWING SERIES) ——— G-191300

CONTROL WIRING DIAGRAMS (DRAWING SERIES) ——— G-191301

LEGEND:

G - GENERATOR
MT - MAIN TRANSFORMER
AT - AUTO TRANSFORMER
ST - START-UP TRANSFORMER
UT - UNIT AUXILIARY TRANSFORMER
MB - MULTI BUSS
S - SYNCHRONIZING
C - ON CONTROL ROOM PANEL
V - VOLTMETER
A - AMMETER
W - WATTMETER
VAR - VARMETER
WH - WATTHOUR METER
PF - POWER FACTOR
F - FREQUENCY METER
T - TEMPERATURE INDICATION
ETM - ELEASED TIME METER
T - TELEMETERED TO N.E.M.V.E.C.
TM - TRANSDUCER FOR COMPUTER DATA SYSTEM
A - ALARM ONLY
EMFIS COMPUTER DATA SYSTEM
SAFETY CLASS
NON-SAFETY
SAFETY CLASS BOUNDARY
(I) INSTRUMENTATION
(R) RELAY

THIS DWG. AFFECTS FSAR FIG. 8.1-1

REV	DESCRIPTION	BY	CHKD.	APPD.
24	REVISED PER EDCR 97-421 AND C.U.	PMR	TLM	MM
23	REVISED PER EDCR 96-402	PMR	TLM	KMH
25	REVISED PER C.U. #98-277			

6-23-98 6-23-98 6-24-98
12-19-96 12-23-96 12-30-96
6-5-98

YANKEE ATOMIC ELECTRIC COMPANY
580 MAIN STREET BOLTON, MA.
NUCLEAR SERVICES DIVISION
VERMONT YANKEE NUCLEAR POWER STATION
VERNON, VERMONT

DRAWING TITLE: MAIN ONE LINE WIRING DIAGRAM

JOB NO.

DRAWING NO. G-191298 SHEET 1 OF 2

e:\cadd\dgn\vy4202grf1298.dgn

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Reset a Reactor Scram
Reference: OP 2134, Revision 11
Task Number: 2000330501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Operator Answering Questions: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/9/99
Operations Training Instructor Date

Reviewed by: MD Hanks 4/9/99
SRO Licensed/Certified Reviewer Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: A Reactor Scram has occurred. The condition causing the Scram has cleared. Reactor Mode Switch is in SHUTDOWN.

Initiating Cues: The SCRO directs you to reset the Reactor Scram IAW OP 2134.

Task Standards: Reactor Scram Reset

Required Materials: OP 2134

Simulator Setup: Any IC, post scram, no scram signals present, OT 3100 carried out RMS (5AS1) in SHUTDOWN

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain Procedure, review administrative limits, prerequisites, and precautions.**

Standard: OP 2134 Section D obtained, administrative limits, prerequisites, and precautions reviewed.

Interim Cue: If asked all prerequisites have been satisfied.

SAT/UNSAT **Step 2:** **Verify that all applicable Scram initiation conditions have cleared**

Standard: Operator verifies at CRP 9-5 that all applicable Scram initiation conditions have cleared, or are automatically bypassed.

SAT/UNSAT **Step 3:** **Verify that both RPS Buses are energized**

Standard: Operator verifies that both RPS buses are energized as follows:

1. Checks power available lights on and switches positioned to normal or alternate on CRP 9-15 and 9-17

or

2. Checks CRP 9-5 annunciator column K and L indicate RPS buses are both energized.

SAT/UNSAT **Step 4:** **Verify that APRM power is being supplied from RPS**

Standard: Operator verifies that APRM power is being supplied from RPS by ensuring annunciator CRP 5-M-6 is out.

Evaluation	Performance Steps
SAT/UNSAT	**Step 5: Check CRP 9-3 High Radiation Annunciators Alarm Status** Standard: Operator checks annunciators 3-E-1, 3-E-2, 3-E-3, 3-E-4, 3-E-5, 3-E-9, 3-F-2, 3-F-9 clear and if annunciator 3-F-1 is in it is due to being downscale after the scram as indicated on CRP 9-10 downscale lights on.
SAT/UNSAT	**Step 6: If High Radiation Alarms exist, evaluate the radiological impact of draining and venting the Scram discharge volume piping** Standard: No high radiation conditions exist, no evaluation is required.
SAT/UNSAT	***Step 7: Using the CRP 9-5 keylock Switch, bypass the Scram Discharge Volume High Level Scram** Standard: Scram discharge volume high level scram keylock bypass switch on CRP 9-5 placed in bypass.
SAT/UNSAT	**Step 8: Verify/place the Reactor Mode Switch in the SHUTDOWN or REFUEL position** Standard: Operator verifies RMS on CRP 9-5 is in SHUTDOWN.
SAT/UNSAT	***Step 9: Place the Scram Reset Switch to the "Group 2 and 3" position and then to the "Group 1 and 4" position** Standard: Operator places scram reset switch on CRP 9-5 to the group 2 and 3 position and the group 1 and 4 position.

/aluation | Performance Steps

SAT/UNSAT **Step 10:** **If the TURB CTRL VLV FAST CLOSURE alarm (5-L-4) is energized, place the SCRAM RESET switch back to the Group 2 and 3 position.**

Standard: Operator places scram reset switch on CRP 9-5 to the group 2 and 3 position.

SAT/UNSAT **Step 11:** **Confirm that all control rods have settled from the overtravel position back into notch position 00.**

Standard: Operator verifies all rods at 00 on full core display.

TIME FINISH: _____

Terminating Cue: **Reactor Scram is reset.**

Evaluators Comments:

_____
_____
_____
_____

System: 295006 **K/A's:** AK2.01 AA1.01 AA2.06
AK2.03 AA1.06

NEW

JPM 21203

Question 1:

The reactor protection system provides protective action. Using the Main Steam Line Radiation Monitors as examples, state the combinations necessary to cause a half and a full scram.

Answer:

The logic arrangement is 1 out of 2 taken twice. The following provides a detailed explanation of the logic arrangement applied to the MSL monitors:

"A" RPS will trip resulting in a half scram if either:

- MSL Radiation Monitor "A" HI-HI or INOP Condition exists

  -OR-
- MSL Radiation Monitor "C" HI-HI or INOP Condition exists

"B" RPS will trip resulting in a half scram if either:

- MSL Radiation Monitor "B" HI-HI or INOP Condition exists

  -OR-
- MSL Radiation Monitor "D" HI-HI or INOP Condition exists

A half scram is the "1 out of 2" portion of the logic.

A full scram will require a trip of both "A" and "B" RPS

The full scram is the taken "twice" portion of the logic.

K/A: 212000 K: 5.02 RO: 3.3

IG: LOT-00-212

OBJ: 6

REF: Technical Specifications, CWDs 803, 805, 806, 808, 810, 812, 813, 815

Open Reference Question

JPM 21203

Question 2:

A full reactor scram can be initiated by depressing the scram pushbuttons on CRP 9-5. An individual control rod can be scrammed from CRP 9-16. How will the Scram Discharge Volume vent and drain valves respond to the two different conditions?

Answer:

SDV Vent and Drain valves close on a full scram.

SDV Vent and Drain valves remain open for individual control rod scrams.

K/A: 212000 A: 4.13 RO: 3.4

IG: LOT-01-201

OBJ: 3

REF: OE 3107 Appendix E

Open Reference Question

(6)

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Shift Turbine Pressure Regulating Control Modes (MPR/EPR)
Reference: OP 2160, Turbine Generator Support Systems Operation
Task Number: 2490020101

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: _____ 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ 4-9-99
Operations Training Supervisor — Date

irections: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

Normal Rx operation, 100% power. Replacement of filter units in the EPR oil filter system is complete.

Initiating Cues: SS directs you to swap the pressure regulator from MPR to EPR.

Task Standards: The EPR is controlling pressure.

Required Materials:

OP 2160, Turbine Generator Support Systems Operation

Simulator Setup: At power IC with MPR in service

Valuation	Performance Steps

TIME START: _____

SAT/UNSAT **Step 1: Obtain Procedure OP 2160 and review Precautions**

Standard: OP 2160 obtained. Operator reviews precautions.

Interim Cue: Inform operator Prerequisites are SAT.

SAT/UNSAT **Step 2: Verify EPR is warmed and ready for service**

Standard: Operator verifies EPR has been warmed for greater than 20 minutes.

Interim Cue: EPR has been energized for 30 minutes.

SAT/UNSAT **Step 3: EPR CUTOUT SWITCH in NORMAL (ON)**

Standard: Operator verifies EPR CUTOUT SWITCH in NORMAL (ON).

SAT/UNSAT **Step 4: EPR Control PWR LOSS Annunciator 7-G-2 Clear**

Standard: Operator verifies alarm 7-G-2 is clear.

SAT/UNSAT **Step 5: Verify bulb for oncoming pressure regulator is sound**

Standard: Operator checks EPR light bulb by performing a visual check of the filament.

Evaluation	Performance Steps
SAT/UNSAT	*Step 6: **Slowly lower the EPR SETPOINT by going to LOWER until the EPR OUTPUT STROKE moves in the direction of the EPR OUTPUT STROKE setting.** Standard: Operator takes EPR SETPOINT switch to LOWER and observes EPR OUTPUT STROKE indication rises.
SAT/UNSAT	Step 7: **As the EPR OUTPUT STROKE increases, control the rate by adjusting the EPR SETPOINT switch such that it continues to increase slowly.** Standard: Operator monitors and controls rate of EPR OUTPUT STROKE.
SAT/UNSAT	*Step 8: **Continue to slowly lower the EPR SETPOINT until EPR begins to take control.** Standard: Operator intermittently takes EPR SETPOINT Switch to LOWER until EPR white light ONLY is lit. Operator monitors MPR and EPR white lights, and reactor pressure.
SAT/UNSAT	Step 9: **Verify EPR has pressure control:** **a. White light ON above EPR SETPOINT switch,** **b. White light OFF above MPR SETPOINT switch,** **c. Stable reactor pressure on CRP 9-5.** Standard: Operator observes indications for MPR, EPR lights and reactor pressure.
SAT/UNSAT	Step 10: **If either pressure regulator fails to control pressure, refer to OT 3115 or OT 3116.** Standard: Operator determines reactor pressure is being controlled properly.

Valuation	Performance Steps	
SAT/UNSAT	*Step 11:	**Slowly RAISE the MPR SETPOINT by going to RAISE until the MPR OUTPUT STROKE is 10% below the EPR.**
	Standard:	Operator takes MPR SETPOINT switch to RAISE and observes MPR OUTPUT STROKE indication lowers. Operator continues until indication reads 10% below EPR.
SAT/UNSAT	Step 12:	**Adjust reactor pressure as necessary.**
	Standard:	Operator observes reactor pressure and adjusts EPR SETPOINT as necessary to stabilize reactor pressure.

Interim Cue: If necessary, when reactor pressure is stable, indicate current pressure is the desired pressure.

TIME FINISH: _____

Terminating Cue: The EPR is in service controlling reactor pressure.

Evaluators Comments: _____

_____

_____

System: 241000 K/A's: K1.02 K3.02 K4.01
A1.14

NEW

JPM 24505

Question 1:

The reactor is operating at 100% power. The EPR is controlling reactor pressure. What is the effect of deenergizing the EPR by opening Vital AC ckt #5 on Distr Panel 9-45?

Answer:

Pressure control will be transferred to the MPR. Reactor pressure will be slightly higher because the MPR setpoint is set above the EPR.

K/A: 241000 A: 2.11 RO: 3.1

IG: LOT-00-249

OBJ: 3

REF: OP 2160

Closed Reference Question

JPM 24505

Question 2:

The reactor is operating at 50% power. If 4 turbine bypass valves are opened with the turbine still on line, how will the RPS system respond to a turbine trip and why?

Answer:

Turbine first stage pressure will reduce. At < 153 psig (20-30 % power) alarm (5-K-8) should annunciate. This will bypass the control valve and stop valve RPS scram functions. Therefore, a reactor scram will not occur.

K/A: 212000 K: 1.10 RO: 3.2

IG: LOT-00-212

OBJ: 3

REF: (5-K-8)

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Shift FWLC from Single-Element to Three-Element Control
Reference: OP 2172, Feedwater System
Task Number: 2597130101

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation ___ Performance _X_ Discuss ___

Setting: Classroom ___ Simulator _X_ Plant ___

Performance Expected Completion Time: 10 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/9/99
Operations Training Instructor Date

Reviewed by: _____ 4/9/99
SRO Licensed/Certified Reviewer Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor Date

rections: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Simulator and you are to perform the actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: Reactor power is approximately75%. E & C has just completed work on FWLC system and ready to return to three element control.

Initiating Cues: The SS directs you to shift FWLC from single-element to three-element control.

Task Standards: FWLC in three-element, RPV level steady. (No abnormal level trends)

Required Materials: OP 2172, Feedwater System
OT 3113

Simulator Setup: At power IC, power ≈ 75%
FWLC in single-element
FW28F "D" Steam Flow Detector failure @ 0% on KEY 1

Evaluation	Performance Steps
	TIME START: _____
SAT/UNSAT	**Step 1: Obtain procedure, review administrative limits, precautions and prerequisites.**
	Standard: Obtained OP 2172, Section C, administrative limits, precautions and prerequisites reviewed.
Interim Cue:	If asked, inform operator that prerequisites are met.
SAT/UNSAT	**Step 2: Balance the master level controller.**
	Standard: Indicating needle is lined up with setpoint line on master controller on CRP 9-5 bench board using manual potentiometer.
SAT/UNSAT	**Step 3: Switch master level controller to manual.**
	Standard: Operator places master controller to manual position on CRP 9-5 benchboard.
SAT/UNSAT	***Step 4: Shift level control to three-element.**
	Standard: Operator places single element/3 element control switch to three element on CRP 9-5 vertical panel.
SAT/UNSAT	**Step 5: Balance the master level controller.**
	Standard: Indicating needle is lined up with setpoint line on master controller on CRP 9-5 benchboard, using the manual potentiometer

Evaluation	Performance Steps
SAT/UNSAT	**Step 6: Switch master level controller to BAL position.**
	Standard: Operator switches master controller to BAL position on CRP 9-5 benchboard
	INSERT Malfunction KEY 1
SAT/UNSAT	**Step 7: Monitor vessel level.**
	Standard: Monitor vessel level on CRP 9-5 and observes lowering RPV water level.
SAT/UNSAT	***Step 8: Shift Rx Vessel Master Controller (FC-6-83) to MAN (OT 3113 Immediate Action).**
	Standard: Operator shifts master controller to MAN
SAT/UNSAT	**Step 9: Monitor Vessel Level.**
	Standard: Operator monitors vessel level for abnormal trends
	TIME FINISH: _____

Terminating Cue: FWLC IN THREE-ELEMENT MANUAL CONTROL, RPV LEVEL STEADY.

Evaluators Comments: _____
_____
_____
_____

System: 259002 **K/A's:** K1.02 K3.01 K4.09 K5.01 K6.01
K1.02 K3.07 K4.10 K6.04
K1.04 K4.12 K6.05
K4.14

A1.01 A3.02 A4.01
A1.02 A3.09 A4.02
A1.04 A4.03
A4.06
A4.07

JPM 25908F

Question 1:

A leak has developed in the "A" reference leg associated with the "A" feedwater level instrument (GEMAC). How will the feedwater level control system respond to this event? Assume the "A" GEMAC is selected for control and the system is operating in three-element control.

Answer:

A reference leg leak will result in a rise in indicated level. As a result, the FRVs will close down causing actual water level to lower.

K/A: 259001 A: 2.07 RO: 3.7

IG: LOT-01-259

OBJ: 5e

REF: OT 3114

Open Reference Question

NEW

JPM 25908F

Question 2:

During post-LOCA level control, condenser hotwell level lowers. In addition to the normal makeup, what methods are available to supply makeup to the hotwell?

Answer:

- Open Emergency Makeup valve C-31
- Cross connect Service Water and fill condenser hotwell using SW-55A/B

K/A: 256000 A: 2.06 RO: 3.2

IG: LOT-00-256

OBJ: 3

REF: RP 2170

Closed Reference Question

(8)

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Isolate and Vent the Scram Air Header
Reference: OE 3107 OE Appendices, Appendix D
Task Number: 3101060504

Task Performance: AO/RO/SRO X RO/SRO ___ SRO Only ___

Sequence Critical: Yes ___ No X

Time Critical: Yes ___ No X

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation X Performance ___ Discuss ___

Setting: Classroom ___ Simulator ___ Plant X

Performance Expected Completion Time: 8 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: MD Hanlon 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions:

Actions are being carried out IAW EOP-2 and all control rods have failed to insert.

Initiating Cues:

SS directs you to isolate and vent the Scram Air Header per OE 3107, Appendix D.

Task Standards:

Scram Air Header isolated and vented in accordance with OE 3107, Appendix D.

Required Materials:

OE 3107, OE Appendices, Appendix D

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT Step 1: Obtain Procedure

Standard: OE 3107 Appendix D obtained

SAT/UNSAT Step 2: If reactor pressure is <500 psi then OPEN/confirm OPEN CRD-56 charging water header isolation valve.

Standard: Operator verifies RPV pressure is greater than 500 psig.

Interim Cue: RPV Pressure is 900 psig

SAT/UNSAT *Step 3: Close CRD-A1, Air Filter Inlet Valve

Standard: Air filter inlet valve, CRD-A1, located to the right of CRD Hydraulic Station, handwheel taken to clockwise direction until the valve is shut.

Interim Cue: Valve handwheel rotates freely in the clockwise direction and the valve stem lowers until resistance is felt and the handwheel stops moving.

SAT/UNSAT *Step 4: Close CRD-A4, Air Filter Inlet Valve

Standard: Air filter inlet valve, CRD-A4 located to the right of CRD Hydraulic Station is shut, handwheel taken to clockwise direction.

Interim Cue: Valve handwheel rotates freely in the clockwise direction and the valve stem lowers until resistance is felt and the handwheel stops.

Evaluation **Performance Steps**

SAT/UNSAT **Step 5:** **Check open/open CRD-A2, Air Filter Outlet Valve**

Standard: Air filter outlet valve, CRD-A2 located to the right of the CRD Hydraulic Station is Open, handwheel taken to the clockwise direction, then counter-clockwise until full open.

Interim Cue: Valve moves freely in the clockwise direction, then counter-clockwise until resistance is felt and the handwheel stops moving. The valve stem moves first inward then outward while the valve is moving.

SAT/UNSAT **Step 6:** **Check open/open CRD-A3, Air Filter Outlet Valve**

Standard: Air filter outlet valve, CRD-A3 located to the right of the CRD Hydraulic Station is Open, handwheel taken to the clockwise direction, then counter-clockwise until full open.

Interim Cue: Valve handwheel rotates freely clockwise, then counter-clockwise until resistance is felt and the handwheel stops moving. The valve stem moves inward then outward while the valve is moving.

SAT/UNSAT ***Step 7:** **Open Air Filter Cartridge Drains CRD-A12 and CRD-A13**

Standard: Air Filter Cartridge drains, petcocks located on the underside of the air filters located between CRD A1 & A4 and CRD A2 & A3 are rotated counter-clockwise

Comment: Air Header should be blowing down through drain valves

---

Interim Cue: Valves rotate freely counter-clockwise until resistance is felt, they stop moving and the sound of air rushing out is heard.

Evaluation | **Performance Steps**

SAT/UNSAT **Step 8:** **Verify Scram Air header depressurizing.**

Standard: Air pressure decreasing on PI-3-229, located on the wall near CRD flow control station.

Interim Cue: When the operator locates PI-3-229 inform him that the air pressure is decreasing.

SAT/UNSAT **Step 9:** **Inform SCRO that the scram air header has been isolated and vented.**

Standard: Inform SCRO, scram air header is isolated and vented.

Interim Cue: Report is acknowledged.

TIME FINISH: _____

Terminating Cue: Scram Air Header isolated and vented IAW OE 3107 Appendix D.

Evaluators Comments: _____
_____
_____

System: 295037 K/A's: EK2.01 EK2.03 EK2.05 EK2.12
EK3.07 EK3.08 EA1.01 EA1.05
EA1.08 EA2.05

System: 295015 K/A's: AK2.01 AK2.03 AK2.04 AK2.07
AK2.11 AA1.01 AA1.02 AA1.04
AA2.02

Generic K/A's:				
	2.1.10	2.2.25	2.1.28	2.1.30
	2.4.50	2.4.10	2.1.30	2.1.32
	2.4.1			

NEW

JPM 20015

Question 1:

What is the reason CRD-56 is opened when implementing OE 3107 Appendix D, Manual Isolation and Venting of the Scram Air Header, with reactor pressure less than 500 psig?

Answer:

Opening CRD-56 will allow the CRD pumps to recharge the CRD accumulators. Below 500 psig the accumulators will be needed as the motive force to SCRAM the control rod.

Not required for answer:
Above 500 psig, reactor pressure provides the motive force to scram the control rod.

K/A: 295037 EA: 1.05 RO: 3.9

IG: LOT-00-626

OBJ: 3

Reference: ON 3145, OE 3107 Appendix D

Closed Reference Question

JPM 20015

Question 2:

How will the CRD Hydraulic System flow respond when OE 3107 Appendix D, MANUAL ISOLATION AND VENTING OF THE SCRAM AIR HEADER, is implemented?

Answer:

Venting air will result in the loss of air to the flow control valve causing the valve to fail closed. Drive and Cooling Water delta-P will decrease to zero.

K/A: 295019 AK: 2.01 RO: 3.8

IG: LOT-00-626

OBJ: 4

REF: OE 3107 Appendix D, ON 3146

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Lineup to Operate SRV-71 A and B From The RCIC Room
Reference: OP 3126, Appendix C, Shutdown Using Alternate Shutdown Methods
Task Number: 2007170501

Task Performance: AO/RO/SRO ___ RO/SRO _X_ SRO Only ___

Sequence Critical: Yes ___ No _X_

Time Critical: Yes ___ No _X_

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation _X_ Performance ___ Discuss ___

Setting: Classroom ___ Simulator ___ Plant _X_

Performance Expected Completion Time: 20 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: _____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: Mo Hamir 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-9-99
Operations Training Supervisor — Date

.rections: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: Plant Shutdown is in progress, outside the Control Room. Rx depressurization required. Assume all immediate actions from Control Room are complete. Maintenance Electricians are not available to perform this procedure.

Initiating Cues: The SS directs you to lineup to operate SRV-71A and SRV-71B from the RCIC room per OP 3126, Appendix C.

Task Standards: SRV-71A and SRV-71B are aligned for operation from RCIC room.

Required Materials: OP 3126, Appendix C, Shutdown Using Alternate Shutdown Methods

Evaluation **Performance Steps**

TIME START: _____

SAT/UNSAT **Step 1:** **Obtain Procedure, review administrative limits and precautions.**

Standard: OP 3126, Appendix C obtained. Precautions reviewed.

Interim Cue: If asked, inform operator that prerequisites are met.

SAT/UNSAT **Step 2:** **Verify Local SRV Switch for SRV-71A, SRV-71B are in the CLOSED Position (213')**

Standard: Operator indicates switches closed

SAT/UNSAT ***Step 3:** **Place the alternate shutdown transfer switch for SRV-71A and SRV-71B to EMERGENCY (232').**

Standard: Operator indicates that the switch is in the EMERGENCY position.

Interim Cue: When operator indicates he will reposition the switch, inform him the switch moves sharply to the 10 o'clock position.

SAT/UNSAT ***Step 4:** **Place the MTS-13-1 transfer switch to EMERGENCY position by turning counter-clockwise (213').**

Standard: Operator indicates that the switch is moved counter-clockwise to the EMERGENCY position.

Interim Cue: Switch moves smartly counter-clockwise the ARROW is positioned to 12 o'clock.

/aluation **Performance Steps**

SAT/UNSAT ***Step 5:** **Place the transfer switches on the RCIC shutdown panel (CP-82-1) to EMER in the following sequence: SS1178A, SS1178B, SS1178C (213').**

Standard: The operator indicates that the transfer switches on the RCIC shutdown panel are placed in EMER in the following order: SS1178A, SS1178B, SS1178C.

Interim Cue: When operator indicates he is placing the transfer switches in EMER, inform him that the switch moves counter-clockwise to the 10 o'clock position.

SAT/UNSAT ***Step 6:** **Close the SRV Control Power knifeswitch in panel 1300BSII (213').**

Standard: Operator indicates the SRV control power knife switch is closed.

Interim Cue: When the operator indicates that he will close the knife switch, inform him the switch moves up and then comes to a hard stop.

SAT/UNSAT **Step 7:** **Notify SS that SRV Operation is Now Possible**

Standard: Operator notifies SS that SRV-71A and SRV-71B is ready for operation.

Interim Cue: When operator says he will call SS, inform him SS is informed.

TIME FINISH: _____

Terminating Cue: SRV-71A and SRV-71B are aligned for operation from RCIC room.

Evaluators Comments: _____

ystem: **295016** **K/A's:** K2.01 K2.02 K3.03

JPM 21804

Question 1:

With the reactor at 100% power, an SRV is opened. Predict the expected steady state tailpipe temperature. Use the following assumptions: Reactor Pressure 1000 psig and Torus Pressure is atmospheric.

Answer:

Using the Steam Tables at a reactor pressure of 1000 psig exhausting to atmosphere using a constant enthalpic process yields a temperature of approximately 300°F. An answer between 280°F and 320°F is acceptable.

K/A: 239002 A: 1.01 RO: 3.3

IG: LOT-00-133

OBJ: 21

REF: Steam Tables

Open Reference Question

JPM 21804

Question 2:

The ADS Appendix 'R' switch on CRP 9-3 is placed in Bypass prior to exiting the control room. How is the SRV/ADS logic affected?

Answer:

Appendix 'R' Switch in Bypass:

- Bypasses ADS auto actuation
- Bypasses manual operation from control room
- Isolates normal control power for all SRVs. Allows RV2-71A and RV2-71B alternate control power from RCIC Alt Shutdown control panel

Other affects to system not directly related. Not required for answer.

- Annunciates alarm ADS IN BYP (3-A-6)
- Does not affect over pressure relief actuation

K/A: 295016 AK: 3.03 RO: 3.5

IG: LOT-00-218

OBJ: 7

REF: CWD 752

Open Reference Question

VERMONT YANKEE NUCLEAR POWER CORPORATION
JOB PERFORMANCE MEASURE
WORKSHEET

Task Identification:

Title: Open the Inside Reactor Building Railroad Airlock Door

Reference: OP 2116, Section D, Secondary Containment Integrity Control

Task Number: 2237140102

Task Performance: AO/RO/SRO X RO/SRO ___ SRO Only ___

Sequence Critical: Yes X No ___

Time Critical: Yes ___ No X

Operator Performing Task: _____

Examiner: _____

Date of Evaluation: _____

Method of Testing: Simulation X Performance ___ Discuss ___

Setting: Classroom ___ Simulator ___ Plant X

Performance Expected Completion Time: 15 minutes

Evaluation Results:

Performance: PASS ___ FAIL ___ Time Required: ____

Prepared by: _____ 4/7/99
Operations Training Instructor — Date

Reviewed by: MD Harris 4/8/99
SRO Licensed/Certified Reviewer — Date

Approved by: _____ for MEG 4-8-99
Operations Training Supervisor — Date

Directions: Discuss the information given on this page with the operator being evaluated. Allow time for him to ask questions before beginning performance of the task. As each performance step is performed, evaluate the performance of that step by circling either "Sat" or "Unsat". Comments are required for any "Unsat" classification. If a step is preceded by an asterisk (*), it is a critical step. If a critical step is skipped or performed unsatisfactorily, then the operator has failed the Job Performance Measure.

After providing the initiating cue, ask the operator "Do you understand the task?"

Read to the person being evaluated:

Before starting, I will explain the initial conditions, provide the initiating cues and answer any questions you have.

This JPM will be performed in the Plant and you are to simulate all actions.

You are requested to **"talk through"** the procedure, stating the parameters you are verifying or checking and the steps you are performing.

Inform me upon completion of this task.

Initial Conditions: 100% Reactor Power

Initiating Cues: SS directs you to open the inside Reactor Building Railroad Airlock Door "A". The SS has notified security that the inside door will be opened. Another operator has verified the outside Reactor Building Railroad Airlock Door is locked and its seal is pressurized.

Note: If inside door is actually open, remind operator to simulate all actions regardless of actual door position.

Task Standards: Inside door open, secondary containment intact.

Required Materials: OP 2116, Section D, Secondary Containment Integrity Control
Stopwatch (wristwatch is acceptable)

Valuation	Performance Steps
	TIME START: ____
SAT/UNSAT	**Step 1:** **Obtain Procedure, review administrative limits, precautions and prerequisites.**
	Standard: OP 2116, Section D obtained, administrative limits, precautions, and prerequisites reviewed.
Interim Cue:	If asked, inform operator that prerequisites are done.
SAT/UNSAT	**Step 2:** **Notify Security that RBRAD A wil be opened.**
	Standard: Initial conditions presented by SS included this notification.
Interim Cue:	If asked, inform operator SS has already notified security.
SAT/UNSAT	**Step 3:** **If Secondary Containment is required, or is desired, verify RBRAD B is closed. Using RBRAD B seal pressure is between 15-20 psig.**
	Standard: Initial conditions presented by SS included this information.
Interim Cue:	If asked, the outside AO reports P1-105-31 reads 20 psig.

Valuation	Performance Steps
SAT/UNSAT	**Step 4: Verify RBRAD B is closed.**
	Standard: Initial conditions presented by SS included this information.
Interim Cue:	If asked, Security reports RBRAD B is locked.
SAT/UNSAT	**Step 5: Verify path for the door is clear of obstructions.**
	Standard: Operator walks over and inspects the door track.
Interim Cue:	If door track is not clear when operator checks door track clear, tell him that it is clear. Note: SS gave order, so permission is granted.
SAT/UNSAT	**Step 6: Ensure the security and rad protection padlocks have been removed prior to opening the Rx Bldg railroad airlock door**
	Standard: Operator checks locks are removed.
SAT/UNSAT	**+*Step 7: Position SW-105-AA to deflate.**
	Standard: Operator turns the switch counter-clockwise to the deflate position.
Interim Cue:	The switch snaps smoothly to the 12 o'clock position.

Valuation	Performance Steps
SAT/UNSAT	+Step 8: Wait 2 minutes after seal pressure has decreased to 0 psig.
	Standard: Operator observes pressure on PI-105-33 decrease to 0 psig and then checks time.
Interim Cue:	When operator indicates that PI-105-33 will go to 0 and he will wait 2 minutes, tell him that it has decreased to "0" psig and 2 minutes have elapsed.
SAT/UNSAT	+*Step 9: Close breaker on panel AA.
	Standard: 2 minutes after pressure decreases to 0 psig, the operator closes the local panel breaker. (Breaker position to ON or UP)
Interim Cue:	The breaker handle snaps smoothly into the UP position.
SAT/UNSAT	+*Step 10: Open the door.
	Standard: Operator depresses the OPEN pushbutton on the local panel.
Interim Cue:	Pushbutton is depressed. The door begins to open. The door fully opens.
SAT/UNSAT	Step 11: Open breaker on panel AA.
	Standard: Operator opens the local panel breaker when the door is fully opened.
Interim Cue:	The breaker snaps smoothly into the down position.
SAT/UNSAT	Step 12: Close IA-605.
	Standard: Operator turns valve fully clockwise.
Interim Cue:	The valve handle moves freely clockwise until resistance is felt and the handle stops.

TIME FINISH: ____

Terminating Cue: Inside Reactor Building Railroad access door open.

Evaluators Comments: _____
_____
_____

System: 290001 **K/A's:** K4.01 K6.08 A2.01

NEW

JPM 22309

Question 1:

Define Secondary Containment Integrity.

Answer:

Secondary containment integrity means that the reactor building is intact and the following conditions are met:

1. At least one door in each access opening is closed.
2. The SBGT is operable.
3. All reactor building automatic ventilation system isolation valves are operable or are secured in the isolated position.

K/A: G 2.1.27 RO: 2.8

IG: LOT-02-224

OBJ: 6

REF: T.S., OP 2116

Closed Reference Question

NEW

JPM 22309

Question 2:

Several of the SBGT System automatic starts are based on process radiation monitor inputs. What process radiation monitors provide signals and what is the logic associated with these signals?

Answer:

SBGT initiates:

- High radiation signal for Reactor Bldg Vent exhaust (1 out of 2)
- High radiation signal for Refuel floor (1 out of 2)
- Downscale or INOP on both monitors for Rx BLDG vent exhaust (2 out of 2)
- Downscale or INOP on both monitors for Refuel flow radiation (2 out of 2)

K/A: 261000 K: 4.01 RO: 3.7

IG: LOT-00-261

OBJ: CRO 7

REF: OP 2117

Closed Reference Question

Scenario # 1 / 2 Outline

Simulation Facility: Vermont Yankee **Scenario No:** 1 / 2 **Op Test No:**

Examiners: Herb Williams

Operators: _____ SCRO(Surrogate)
Glenn Bacala CRO
_____ ACRO(Surrogate)

Objectives: Evaluate the CRO's ability to:

- recognize the downscale failure of an APRM channel
- insert a manual ½ scram to comply with tech specs
- Respond to a trip of a CRD pump and place the standby CRD pump in service per ON 3145
- Respond to a trip of a reactor recirc pump, evaluate operation in the instability region and reduce power using control rods to exit the region
- Recognize the upscale trip of an APRM channel, which results in an automatic scram failure and necessitates insertion of a manual scram.
- Recognize failure of control rods to fully insert necessitating manual insertion of control rods.
- Maintain RPV level following the scram.

Initial Conditions:

100% power, wintertime, end of cycle, rapid S/D sequence is latched, APRM C out of service and bypassed

Turnover: See attached "Shift Turnover" sheet

Event No.	Malf. No.	Event Type*	Event Description
1	NM05A	I CRO	APRM A fails downscale
2	RD01A	C CRO	Respond to A CRD pump trip/start B CRD pump
3	RR05B	R CRO	Recirc Pump B Drive Motor Breaker Trip/Drive rods to exit instablility region
4	NM05B RP01A	C CRO	APRM B fails upscale Failure of auto scram logic/Insert manual scram
5	RP01C	C CRO	ARI/RPT logic failure/manually trip A recirc pump
6	RD12A RD12B	M CRO	Control Rods fail to fully insert due to SDV blockage/manually insert control rods to fully shutdown reactor

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

2

Appendix D **Scenario #~~1~~ Outline** **ES-D-1**

Simulation Facility: Vermont Yankee **Scenario No.:** ~~#1~~ 2 **Op Test No.:**

Examiners: _____ **Operators:** — SCRO(surr)

_____ — CRO(surr)

HERB WILLIAMS Glenn Bacala ACRO

Objectives: Evaluate the ACRO's ability to:

- Place the main generator on the grid and operate the plant during low power conditions,
- Respond to a loss of power to Bus 8
- Recognize a failure of the group 3 isolation to go to completion and take appropriate corrective actions
- Respond to increasing primary containment pressure and temperature
- Operate the drywell HVAC during a LOCA
- Recognize the failure of a primary containment spray valve
- Manually energize bus 8 following repair
- Operate the RHR system in containment spray and cooling modes

Initial Conditions: IC-82, 27%, ready to synch main turbine to the grid

Turnover: See Attached "Shift Turnover" Sheet

Event No.	Malf. No.	Event Type*	Event Description
1		N ACRO	Place the main generator on the grid
2	RP08A RP08B ED05C	I ACRO	PCIS Group 3 logic failure following bus 8 loss
~~3~~	MS06	~~M ACRO~~	~~Increasing Primary Containment Pressure and Temperature due to steam line break inside the drywell~~
~~4~~	RH11A	~~C ACRO~~	~~Primary containment spray valve, RHR-31A, fails to open/re-power bus 8/spray drywell~~

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Scenario # 1 / 2 / 1 Outline

Simulation Facility: Vermont Yankee **Scenario No:** 1 / 2 / 1 **Op Test No:**

Examiners: Herb Williams

Operators: _____ SCRO(Surrogate)
Glenn Bacala CRO
_____ ACRO(Surrogate)

Objectives: Evaluate the CRO's ability to:

- recognize the downscale failure of an APRM channel
- insert a manual ½ scram to comply with tech specs
- Respond to a trip of a CRD pump and place the standby CRD pump in service per ON 3145
- Respond to a trip of a reactor recirc pump, evaluate operation in the instability region and reduce power using control rods to exit the region
- Recognize the upscale trip of an APRM channel, which results in an automatic scram failure and necessitates insertion of a manual scram.
- Recognize failure of control rods to fully insert necessitating manual insertion of control rods.
- Maintain RPV level following the scram.

Initial Conditions:

100% power, wintertime, end of cycle, rapid S/D sequence is latched, APRM C out of service and bypassed

Turnover: See attached "Shift Turnover" sheet

Event No.	Malf. No.	Event Type*	Event Description
1	NM05A	I CRO	APRM A fails downscale
2	RD01A	C CRO	Respond to A CRD pump trip/start B CRD pump
3	RR05B	R CRO	Recirc Pump B Drive Motor Breaker Trip/Drive rods to exit instablility region
4	NM05B RP01A	C CRO	APRM B fails upscale Failure of auto scram logic/Insert manual scram
5	RP01C	C CRO	ARI/RPT logic failure/manually trip A recirc pump
6	RD12A RD12B	M CRO	Control Rods fail to fully insert due to SDV blockage/manually insert control rods to fully shutdown reactor

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op-Test No.: _____ Scenario No.: 2 Event No.: 1

Event Description: **Downscale failure of APRM A**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize APRM A downscale indication by: ▪ CRP 9-5 recorder indication ▪ Downscale warning light lit on CRP 9-5 desk section Acknowledge annunciator 5-M-4 and consult ARS Report condition to SCRO
	SCRO	*Consult Tech Specs table 3.1.1 and 3.2.2 and direct that a ½ scram and ½ PCIS group isolation signals should be inserted*
	ACRO	When directed, insert a ½ scram on RPS channel A: ▪Depress the A manual scram pushbutton ▪Acknowledge CRP 9-5 annunciators as appropriate ▪Verify RPS A scram solenoid white lights on CRP 9-5 are OFF

Op-Test No.: _____ Scenario No.: 2 Event No.: 2

Event Description: **A CRD pump trip**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize A CRD pump trip by observing: ▪ Annunciators 5-B-1, B-3, C-5 energized ▪ System flow low ▪ Drive water pressure low ▪ Cooling water pressure low ▪ A CRD pump green and amber lights ON and red light OFF on CRP 9-5 Report trip to SCRO Acknowledge CRP 9-5 annunciators and consult ARS 5-B-1, B-3, C-5: ▪ Recommend entering ON 3145 and starting B CRD pump per ARS Acknowledge and report CRD accumulator low pressure alarms as necessary
	SCRO	*Enter and direct actions IAW ON 3145, Loss of CRD Regulating Function* *Direct CRO to place B CRD pump in service per ON 3145*
	CRO	Place B CRD in service IAW ON 3145 as follows: ▪ Place CRD flow controller FIC-3-301 to **MANUAL,** ▪ Dial flow controller to **ZERO** (0 gpm) to close CRD-FCV-19A ▪ Start the B CRD pump ▪ Adjust CRD flow controller to establish 54-58 GPM ▪ Balance flow controller and place in **BALANCE** ▪ Direct AO to verify charging header pressure 1400-1500 psig

Op-Test No.: _____ Scenario No.: 2 Event No.: 3

Event Description: **B Reactor Recirc pump trip/Drive rods to exit instability region**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize and report trip of B recirc pump Recognize and report reduction in Rx power Perform OT 3118, Recirc Pump Trip, immediate actions as follows: ▪ Shut discharge valve RV-53B ▪ Reduce A recirc pump speed to 70%, maintaining Rx power reduction rate less than 10%/min ▪ Evaluate and report combination of Rx power and core flow is in the "exclusion" region of COLR fig 2.4-1
	SCRO	*Enter and direct actions IAW OT 3118 and OT 3117, Reactor Instability* *Utilize process computer to evaluate core stability decay ratios*
	CRO	Monitor APRMs and LPRMs for indications of instability
	SCRO	*Direct Rx power reduction with control rods to exit exclusion and buffer regions*
	CRO	When directed insert control rods using rapid shutdown sequence as follows: ▪ Verify rapid shutdown sequence is latched ▪ Insert rods in reverse sequence using "continuous in" ▪ Monitor APRM indication and report when below exclusion and buffer regions
	CRO	When directed, reopen B recirc discharge valve RV-53B

Op-Test No.: _____ Scenario No.: 2 Event No.: 4

Event Description: **APRM B upscale failure/ failure of automatic scram/failure of all rods to fully insert**

Time	Position	Applicant's Actions or Behavior
	CRO	Recognize APRM B upscale indication
		Recognize and report auto scram channel B and full scram failure
	CT	**INSERT MANUAL SCRAM**
		Observe and report the following:
		▪Scram occurs
		▪Inward rod motion
		▪Rx power less than 2%
		▪All control rods did not fully insert
		Place Rx mode switch to S/D when MSL flow permits
		Verify SDV vent and drain valves shut
	SCRO	*Enter and direct actions IAW OT 3100, Rx Scram, and EOP-2, ATWS RPV Control*

Op-Test No.: _____ Scenario No.: 2 Event No.: 5

Event Description: **ARI/RPT Logic failure**

Time	Position	Applicant's Actions or Behavior
	SCRO	*Direct CRO to manually initiate ARI/RPT per EOP-2, ATWS RPV Control*
	CRO (E)"	Insert ARI/RPT by depressing all 4 ARI/RPT pushbuttons Recognize failure of logic by: ▪Control rod positions unchanged ▪ARI/RPT annunciators 4-N-1, P-1, Q-1, R-1 NOT lit ▪A Recirc pump field breaker SHUT (red light ON, green OFF) Manually trip A recirc pump drive motor breaker Report failure to SCRO

Op-Test No.: _____ Scenario No.: 2 Event No.: 6

Event Description: **Control rods fail to fully insert/manually insert control rods**

Time	Position	Applicant's Action or Behavior
	SCRO	*Direct control rod insertion using OE 3107 appendix G or F*
	CRO **CT**	**INSERT CONTROL RODS AS DIRECTED** Using appendix G: ▪Verify 1 CRD pump running ▪Bypass RWM ▪Direct AO to shut CRD-56 ▪Manually insert control rods in spiral pattern Using appendix F: ▪Direct E&C to bypass scram and ARI/RPT signals ▪Reset scram and ARI/RPT ▪Insert manual scram (repeat until all rods are inserted)
	CRO	When directed, maintain RPV water level between –22" and 177" with reactor feed system + condensate.
	CREW	*Verify Rx pressure controlled by MHC* *Verify fast transfer of house electrical loads to startup transformer*
	SCRO	*Direct cooldown via BPVs not to exceed 100F/hr*
	CREW	*Commence cooldown as directed*

SIMULATOR OPERATOR INSTRUCTIONS FOR SCENARIO #2

– GENERAL REQUIREMENTS

- All chart recorders will be rolled forward.
- Paper from selected chart recorders will be saved for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be returned to their normal storage place and closed.
- All markable procedures, boards, etc will be erased.
- All paper used by the previous crew will be removed and kept for the examination team as requested.
- The simulator operator, or designated person, will keep a rough log of all communications into and out of the "control room" during the scenario as requested by the examination team.

– INITIAL SETUP

- **IC 81**
- approximately 100% power
- APRM C Bypassed/pre-insert malfunction NM05C to 0%
- Rapid S/D sequence latched

Event No.	Malf. No.	Key	Severity	Event Type*		Event Description
1	NM05A	Key 1	0%	I	CRO	APRM A fails downscale
2	RD01A	Key 2	N/A	C	CRO	A CRD pump trip
3	RR05B	Key 3	N/A	R	CRO	B Recirc Drive Motor Breaker Trip
4	RP01A	Key 4	N/A	C	CRO	Failure of automatic scram
	NM05B	Key 5	100%			B APRM fails upscale
5	RP01C	Pre-insert	N/A	C	CRO	ARI/RPT logic failure
6	RD12A RD12B	Pre-insert	20%	M	CRO	Control Rods fail to fully insert due to SDV blockage

SIMULATOR OPERATOR INSTRUCTIONS FOR SCENARIO #2 (Continued)

– DURING THE SCENARIO

- The examination team will determine when each event is to be inserted and when to "Freeze" and will inform the simulator operator.

- **EVENT 1** -- Insert Malfunction **KEY #1** shortly after the crew assumes the watch (or at evaluator's discretion). Support the crew's investigation into the APRM failure as E&C. No repair will be completed during the scenario.

- **EVENT 2** -- Insert malfunction **KEY #2** after the ½ scram is inserted (or at evaluator's discretion). AO and /or maintenance will report A CRD pump motor is hot to the touch and the breaker is tripped. When directed to secure recirc seal purge, place RF **RDR11** and **RDR12** to **0** after about 5 minutes. When asked to restore seal purge place **RDR11** and **RDR12** to **3** after about 5 minutes.

- **EVENT 3** -- Insert malfunction **KEY #3** after CRD parameters are stable (or at evaluator's discretion). Support crew as AO and Maintenance with troubleshooting and repair of B recirc drive breaker. No repair will be made during this scenario. Provide single loop R/CE support as requested. If directed control A recirc pump lube oil temperature using RF **SWR52**

- **EVENT 4** -- When Rx power has been **REDUCED** and is **OUTSIDE** the **exclusion and buffer** regions and is stable (or at evaluator's discretion) insert malfunction **KEY #4**, RP01A, **THEN** insert malfunction **KEY #5**.

  - If directed, place remote function **APP_F** to **bypass** auto scrams after approximately 10 minutes (or at evaluator's discretion)

  - If directed , place remote function **APP_G** to **0%** to shut CRD-56 after approximately 5 minutes (or at evaluator's discretion)

- **TERMINATION** – The scenario may be terminated after all control rods are inserted and level is being maintained –22" to +177" (or at lead evaluator's discretion)

SHIFT TURNOVER (#2)

PLANT CONDITIONS:

- 100% Power
- Winter
- End of Cycle
- Rapid shutdown sequence latched
- APRM C bypassed

INOPERABLE EQUIPMENT/LCOs:

- APRM C failed last shift and was bypassed, resulting in an indefinite LCO per TS table 3.1.1

SCHEDULED EVOLUTIONS:

- Continue full power operations
- Support E&C troubleshooting and repair of APRM C

SURVEILLANCES DUE THIS SHIFT:

- None

ACTIVE CLEARANCES:

- None

GENERAL INFORMATION:

- N/A

2

Appendix D **Scenario #~~1~~ Outline** **ES-D-1**

Simulation Facility: Vermont Yankee **Scenario No.:** ~~#1~~ 2 **Op Test No.:**

Examiners: _____ **Operators:** — SCRO(surr)

_____ — CRO(surr)

HERB WILLIAMS Glenn Bacala ACRO

Objectives: Evaluate the ACRO's ability to:

- Place the main generator on the grid and operate the plant during low power conditions,
- Respond to a loss of power to Bus 8
- Recognize a failure of the group 3 isolation to go to completion and take appropriate corrective actions
- Respond to increasing primary containment pressure and temperature
- Operate the drywell HVAC during a LOCA
- Recognize the failure of a primary containment spray valve
- Manually energize bus 8 following repair
- Operate the RHR system in containment spray and cooling modes

Initial Conditions: IC-82, 27%, ready to synch main turbine to the grid

Turnover: See Attached "Shift Turnover" Sheet

Event No.	Malf. No.	Event Type*	Event Description
1		N ACRO	Place the main generator on the grid
2	RP08A RP08B ED05C	I ACRO	PCIS Group 3 logic failure following bus 8 loss
3	MS06	M ACRO	Increasing Primary Containment ~~Pressure and Temperature due to steam line break inside the drywell~~
4	RH11A	C ACRO	Primary containment spray valve, ~~RHR-31A,~~ fails to open/re-power bus ~~8/spray drywell~~

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Op Test No.:	Scenario No.: #1	Event No.: 1

Event Description: Synch the Main Generator to the Grid

Time	Position	Applicant's Actions Or Behavior
	SCRO	*Direct ACRO to place main generator on the gird per OP 0105, Phase 3 beginning at Step C.7* *Notify Load Dispatcher*
	ACRO	Place main generator on the grid IAW OP 0105, Phase 3, Section C: ▪ Open Bkr 81-1T ▪ Open Bkr 1T ▪ Close T-1 MOD ▪ Place reclosure switches to "Off" for 81-1T and 1T ▪ Place breaker switch in synch scope and turn synch scope on ▪ Adjust generator output voltage to be equal or slightly higher than line voltage ▪ Adjust generator speed to achieve synch scope moving slowly in the "Fast" direction ▪ When synch scope between 5 min of 12 and 12, close Bkr 81-1T ▪ Immediately pick up 25-50 MWe load by going to "Raise" on speed/load changer ▪ When Bkr 81-1T closed and generator at desired load, synchronize and close Bkr 1T ▪ Turn off synch scope and remove breaker switch ▪ Per Velco, place reclosure switch for 1T to "Inst" and 81-1T to "Sync Ck" ▪ Remain at current load to allow exhaust hoods to cool (5 minutes) ▪ Close drains per Step C.10 ▪ Adjust voltage to maintain reactive load at minimum ▪ Monitor generator parameters
	CRO	*Monitor plant parameters/assist as necessary*

Operator Actions

Op Test No.: **Scenario No.:** #1 **Event No.:** 2

Event Description: PCIS Group 3 logic failure following loss of bus 8

Initial Automatic Actions: RPS A loss, ½ scram

Time	Position	Applicant's Actions Or Behavior
	CREW	*Recognize and report loss of bus 8*
	ACRO	Verify/confirm: 9:40 ▪ Bus 8 @ 0 volts ▪ Breaker 38 and 88 tripped ▪ Acknowledge annunciators and refer to ARS as appropriate
	SCRO	*Refer to Tech Specs* *Direct troubleshooting/repair* *Direct ACRO to verify/backup group 3 isolation*
	ACRO ****CT**** RO	Recognize failure of group 3 isolation logic: **MANUALLY INITIATE GROUP 3 ISOLATION:** ▪ Utilize posted operator aid to confirm automatic action required for group 3 isolation ▪ Place all group 3 valves in the isolated position ▪ start SGT fan A IAW OP 2117 as follows: - Place fan A switch to START - Check SGT-2A and 3A OPEN - OPEN SGT-1A - Check SGT-4A SHUT - Verify SGT flow Report failure to SCRO

BOP Back Panel

Seismic Monitor

BRIEF

Op Test No.:	Scenario No.: #1	Event No.: 2, continued
Event Description:	PCIS Group 3 logic failure following loss of bus 8	

Time	Position	Applicant's Actions Or Behavior
	SCRO	*Consult tech specs* *Coordinate troubleshooting/repair*
	CRO	*Monitor plant parameters/assist as necessary*

Op Test No.: **Scenario No.: #1** **Event No.: 3**

Event Description: Increasing Primary Containment Pressure and Temperature

Cause: Steam line break inside drywell

Initial Automatic Actions: LOCA signal

Time	Position	Applicant's Actions Or Behavior
	CREW	*Recognize rising drywell pressure and temperature*
	ACRO	Perform immediate actions of OT 3111, High Drywell Pressure: ▪ Maximize drywell cooling by starting all drwell RRU fans ▪ Confirm torus vent path isolated ▪ Verfy nitrogen make up is terminated When drywell ressure exceeds 2.5 psig perform the following: ▪ Verify RHR and CS pumps auto start ▪ Confirm HPCI injecting to RPV ▪ When directed, secure HPCI by rotating inhibit collar to the INHIBIT position
	SCRO	*Enter and direct actions IAW OT 3111; OT 3100, Reactor Scram procedure; EOP-1, RPV Control; EOP-3, Primary Containment Control* *Direct manual reactor scram*
	CRO	*Insert manual scram*
	ACRO	When directed by SCRO, perform the following actions: ▪ Backup PCIS group isolations as required ▪ restart drywell RRU's using MCA bypass keylock switch ▪ Spray the Torus using RHR IAW OP 2124, Appendix D ▪ Attempt to spray the drywell, recognize RHR-31A failure to open, and report ot SCRO
	SCRO	*When maintenance reports bus 8 repair is complete, direct ACRO to re-energize bus 8*

Op Test No.:	Scenario No.: #1	Event No.: 3 continued

Event Description: Increasing Primary Containment Pressure and Temperature

Cause: Recirc rupture inside drywell

	ACRO	Re-energize bus 8 as directed: ▪ Close breakers 38 and 88 *Or* ▪ Cross tie bus 8 and 9 by closing breakers 8T9 and 9T8
	SCRO	*When bus 8 is re-energized, ensure DWSIL indicates safe to spray, DW RRUs OFF, both recirc pumps OFF, then direct ACRO to spray drywell using RHR loop B*
	ACRO **CT**	When directed, **Spray the drywell using OP 2124, appendix E** ▪ Bypass RHRSW LOCA trip signal ▪ Start RHRSW pump ▪ Verify RHR-89B automatically opens ▪ Establish RHRSW flow 2950-3050 GPM ▪ Ensure one RHR pump running ▪ Bypass RHR-B LOCA isolation signal (group 2B) ▪ Open RHR-26B & 31B ▪ Verify RHR flow approximately 7000 GPM ▪ Confirm drywell pressure lowering

SIMULATOR OPERATOR INSTRUCTIONS FOR SCENARIO # 1

– GENERAL REQUIREMENTS

- All chart recorders will be rolled forward.
- Paper from selected chart recorders will be saved for the examination team as requested.
- All procedures, flow charts, curves, graphs, etc. will be returned to their normal storage place and closed.
- All markable procedures, boards, etc will be erased.
- All paper used by the previous crew will be removed and kept for the examination team as requested.
- The simulator operator, or designated person, will keep a rough log of all communications into and out of the "control room" during the scenario as requested by the examination team.

– INITIAL SETUP

- IC-82, 27% power, ready to synch to the grid
- Place turbine RPM, ptid T005, on CRP 9-7 ERFIS digital display
- Preinsert malfunction AN17F3 to disable turbine excessive expansion alarm
- Place simulator in RUN, silence and clear RBM alarms

Event No.	Malf. No.	Key	Severity	Event Type*		Event Description
2	RP08A RP08B	Pre-insert	N/A	I	ACRO	Group 3 isolation logic failure
	ED05C	Key 1	N/A			Bus 8 de-energizes due to fault
3	MS06	Key 2	5 % @ 500sec	M	ACRO	Steam line break inside the drywell
4	RH11A	Pre-insert	N/A	C	ACRO	RHR-31A fails to open

– DURING THE SCENARIO

- The examination team will determine when each event is to be inserted and when to "Freeze" and will inform the simulator operator.

- <u>EVENT 1</u> – Support crew while placing generator on the grid. Keep them moving if they are slow in getting started.

- **EVENT 2** -- Insert malfunction **KEY #1** several minutes after the generator is on the grid (or at evaluator's discretion). Support troubleshooting as requested.

- **EVENT 3** -- Insert malfunction **KEY #2** after the plant is stable following event #3 (or at evaluator's discretion).

- **EVENT 4** -- After RHR-31A failure is discovered and reported, **REMOVE MALFUNCTION ED05C, BUS 8 FAULT,** then report as electrical maintenance that bus 8 fault has been repaired and it may be re-energized.

TERMINATION:

After drywell pressure drops below 2.5 psig following containment spray and containment spray valves are shut (or at evaluator's discretion).

SHIFT TURNOVER # 1

PLANT CONDITIONS:

-- Plant startup at 27% power, turbine ready to be synched to the grid
-- Sequence A2, Group 55

INOPERABLE EQUIPMENT/LCOs:

-- None

SCHEDULED EVOLUTIONS:

-- Continue plant startup and place the main generator on the grid. Currently in OP 0105, Phase 3, at Step C.7

SURVEILLANCES DUE THIS SHIFT:

-- OP 0105 startup surveillances

ACTIVE CLEARANCES:

-- None

GENERAL INFORMATION:

-- N/A