12/31/99

NOTE TO: NRC DOCUMENT CONTROL DESK
MAIL STOP O-5-D-24

FROM: Virgil Curley, LICENSING ASSISTANT
~~OPERATING LICENSING~~ BRANCH _ REGION I

SUBJECT: OPERATOR LICENSING EXAMINATION ADMINISTERED ON
Aug 27, Aug 30-Sep 2, 1999 AT Oyster Creek
DOCKET NO. 50-219

ON Aug 27, Aug 30-Sep 2, 1999 OPERATOR LICENSING EXAMINATIONS WERE ADMINISTERED AT THE REFERENCED FACILITY. ATTACHED YOU WILL FIND THE FOLLOWING INFORMATION FOR PROCESSING THROUGH NUDOCS AND DISTRIBUTION TO THE NRC STAFF, INCLUDING THE NRC PDR.

Item #1 a) FACILITY SUBMITTED OUTLINE AND INITIAL EXAM SUBMITTAL DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE A070.
(Preliminary Submittal)

b) AS GIVEN OPERATING EXAMINATION, DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE A070.

Item #2 EXAMINATION REPORT WITH THE AS GIVEN WRITTEN EXAMINATION ATTACHED, DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE IE42.

Rev 7/1/99

Original Outlines

GPU NUCLEAR

GPU Nuclear, Inc.
U.S. Route #9 South
Post Office Box 388
Forked River, NJ 08731-0388
Tel 609-971-4000

June 29, 1999
2110-99-0052

Mr. Richard Conti
NRC Region 1, Chief Examiner

Mr. Larry Briggs
NRC Region 1, Lead Examiner

Gentlemen:

GPU Oyster Creek Nuclear Generating Station is scheduled to administer a NRC Initial Licensing Examination during the week of August 30, 1999. This examination is being prepared by the facility in accordance with NUREG 1021 Interim Revision 8 January 1997. Enclosed are the examination outlines.

As required by ES-201 INITIAL OPERATOR EXAMINATION PROCESS, the examination outlines have been prepared and are being submitted for NRC review and approval in accordance with ES-301 and ES-401.

Oyster Creek volunteered to take part in a pilot program concerning submittal of examination material for review. Per telephone message on June 16, 1999, it was agreed to submit the examination outlines the week of June 28, 1999.

If you should have any questions or comments, please contact Jay Vaccaro, Operations Training Manager, at 609-971-4192.

Yours truly,

Kevin Mulligan
Plant Operations Director

/fpm

Oyster Creek
Initial License Examination
1999 BWR SRO Examination Outline
Form ES-401-1

Facility: Oyster Creek Date of Exam: August 30, 1999 Exam Level: SRO

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	4	6	7				3	4			2	26
	2	1	4	3				4	4			1	17
	Tier Totals	5	10	10				7	8			3	43
2. Plant Systems	1	2	2	2	3	1	4	2	4	1	2	0	23
	2	0	1	3	2	2	1	2	0	1	0	1	13
	3	0	0	1	2	1	0	0	0	0	0	0	4
	Tier Totals	2	3	6	7	4	5	4	4	2	2	1	40

3. Generic Knowledge and Abilities	Cat 1	Cat 2	Cat 3	Cat 4	
	6	4	1	6	17

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.

BWR SRO Examination Outline Emergency and Abnormal Plant Evolutions - Tier 1/Group 1									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp	Point (s)
295003 Partial or Complete Loss of AC Pwr / VI	X	X					AK1.06 Station Blackout AK2.04 A.C. electrical Loads	4.0 3.5	2
295006 SCRAM / I				X			AA1.04 Recirculation System	3.2	1
295007 High Reactor Pressure / III		X					AK2.02 Reactor Power	3.8	1
295009 Low Reactor Water Level / II							None		0
295010 High Drywell Pressure / V			X				AK3.01 Drywell Venting	4.0	1
295013 High Suppression Pool Temp. / V					X		AA2.02 Localized heating/stratification.	3.5	1
295014 Inadvertent Reactivity Addition / I				X			AA1.07 Cold Water Injection	4.1	1
295015 Inadvertent Reactivity Addition / I	X	X					AK2.11 Instrument Air AK1.02 Cooldown effects on reactor Power	3.7 4.1	2
295016 Control Room Abandonment / VII						X	Generic 2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls	4.0	1
295017 High Off-site Release Rate / IX							None		0
295023 Refueling Accidents Cooling Mode / VIII			X		X		AK3.02 Interlocks associated with fuel Handling equipment AA2.04 Occurrence of fuel handling accident.	3.8 4.1	2
295024 High Drywell Pressure / V			X		X		EK3.01 Drywell spray operation: Mark-I&II. EA2.01 Drywell Pressure	4.0 4.4	2
295025 High Reactor Pressure / III							None		0
295026 Suppression Pool High Water Temp. / V	X		X				EK1.02 Steam condensation EK3.04 Suppression Pool high water temperature	3.8 4.1	2

295027 High containment Temperature							N/A		0
295030 Low Suppression Pool Water Level / V	X			X			EK1.03 Heat Capacity EA1.01 ECCS system(NPSH considerations)	4.1 3.8	2
295031 Reactor Low Water Level / II		X	X X		X		EK2.07 EK3.02 Core Coverage EK3.05 Emergency Depressurization EA2.01 Reactor Water Level	3.8 4.7 4.3 4.6	4
295037 SCRAM Condition Present and Power Above APRM Downscale or Unknown / I		X				X	EK2.13 Generic 2.4.18 Knowledge of the specific bases of EOP's	4.1 3.6	2
295038 High Off-site Release Rate / IX		X					EK2.03 Plant Ventilation systems	3.8	1
500000 High Containment Hydrogen Conc. / V			X				EK 3.07 Operation of Drywell vents	3.7	1
									0
									0
									0
									0
									0
K/A Category Totals: +++ - Deviation from NUREG 1123 for plant specifics.	4	6	7	3	4	2	Group Point Total:		26

BWR SRO Examination Outline Emergency and Abnormal Plant Evolutions – Tier 1/Group 2									
E/APE # / Name / Safety Function	K 1	K 2	K 3	A 1	A 2	G	K/A Topic(s)	Imp	Point (s)
295001 Partial or Complete Loss of Forced Core Flow Circulation / I & IV			X	X			AK3.02 Reactor Power response AA1.01 Recirc System	3.8 3.6	2
295002 Loss of Main Condenser Vacuum / III		X	X				AK2.07 Offgas system AK3.06 Air ejector Flow	3.1 2.9	2
295004 Partial or Total Loss of DC Pwr / VI							None		0
295005 Main Turbine Generator Trip / III	X	X					AK1.10 Pressure effects on reactor power. AK2.08 A.C. Electrical Distribution	4.1 3.3	2
295008 High Reactor Water Level / II		X		X			AK2.06 Isolation condenser AA1.01 Reactor Water Level control	3.6 3.7	2
295011 High Containment Temperature / V							N/A - Mark III Containment Only	N/A	0
295012 High Drywell Temperature / V							None		0
295018 Partial or Total Loss of CCW / VIII		X			X		AK2.02 Plant operations AA2.03 Cause for partial or complete loss	3.6 3.5	2
295019 Partial or Total Loss of Inst. Air / VIII				X			AA1.02 Instrument air system valves	3.	1
295020 Inadvertent Cont. Isolation / V & VII							None		0
295021 Loss of Shutdown Cooling / IV				X			AA1.04 Alternate heat removal methods	3.7	1
295022 Loss of CRD Pumps / I						X	Generic 2.4.49 Ability to perform without reference to procedures those actions that require immediate operation of system components and controls	4.0	1
295028 High Drywell Temperature / V			X				EK3.02 RPV Flooding	3.8	1
295029 High Suppression Pool Water Level / V							None		0

295032 High Secondary Containment Area Temperature / V					X		EA2.01 Area Temperature	3.8	1
295033 High Secondary Containment Area Radiation Levels / IX					X		EA2.01 Area Radiation Levels	3.9	1
295034 Secondary Containment Ventilation High Radiation / IX							None		0
295035 Secondary Containment High Differential Pressure / V							None		0
295036 Secondary Containment High Sump/Area Water Level / V							None		0
600000 Plant Fire On Site / VIII					X		AA2.17 Systems that may be affected by the fire	3.6	1
									0
									0
									0
									0
									0
									0
K/A Category Point Totals:	1	4	3	4	4	1	Group Point Total:		17

BWR SRO Examination Outline

Plant Systems - Tier 2/Group 1

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp	Point (s)
201005 RCIS												N/A		0
202002 Recirculation Flow Control										X		A4.07 Recirc Pump Speed	3.2	1
203000 RHR/LPCI: Injection Mode												N/A		0
206000 HPCI												N/A		0
207000 Isolation Condenser		X						X				K2.01 Motor Operated Valves A2.08 System Initiation	3.8 3.8	2
209001 LPCS		X						X	X			K2.02 Valves A2.01 Pump trips A3.02 Pump start & Valve Operation	2.7 3.4 3.7	3
209002 HPCS												N/A		0
211000 SLC												None		0
212000 RPS								X				A2.16 Changing Mode Switch positions	4.1	1
215004 Source Range Monitor							X					A1.05 Scram, rod block and period alarm trip setpoints	3.8	1
215005 APRM / LPRM				X			X					K4.07 Flow biased trip setpoints A1.01 Reactor power indication	3.7 4.0	2
216000 Nuclear Boiler Instrumentation												None		0
217000 RCIC												N/A		0
218000 ADS					X	X						K5.01 ADS Logic Operation A4.01 ADS Valves	3.8 4.4	2

223001 Primary CTMT and Auxiliaries						X X				X		K3.06 Differential pressure between the secondary and primary containment K6.08 Containment Atmosphere control A4.12 Drywell Cooling	3.6 3.4 3.6	3
223002 PCIS/Nuclear Steam Supply Shutoff												None		0
226001 RHR/LPCI: CTMT Spray Mode												None		0
239002 SRVs												None		0
241000 Reactor/Turbine Pressure Regulator			X X									K3.01 Reactor Power K3.29 NSSS (MSIV's)	4.1 3.1	2
259002 Reactor Water Level Control								X				A2.02 Loss of any number of reactor feedwater flow inputs	3.4	1
261000 SGTS	X					X						K1.02 Drywell K6.04 Process Radiation Monitoring	3.4 3.1	2
262001 AC Electrical Distribution												None		0
264000 EDGs				X X								K4.02 EDG Trips (Emergency/LOCA) K4.05 Load shedding and Sequencing	4.2 3.5	2
290001 Secondary CTMT	X											K1.01 Reactor building Ventilation	3.5	1
K/A Category Point Totals:	2	2	2	3	1	4	2	4	1	2	0	Group Point Total:		23

BWR SRO Examination Outline

Plant Systems - Tier 2/Group 2

System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp.	Point (S)
201001 CRD Hydraulic							X					A1.01 CRD Drive Water Header Pressure	2.9	1
201002 RMCS											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
201004 RSCS												N/A		0
201006 RWM					X							K5.01 Minimize clad damage if a control Rod drop accident (CRDA) occurs	3.7	1
202001 Recirculation							X					A1.09 Recirc Pump Seal Pressures	3.3	1
204000 RWCU			X	X								K3.02 Reactor Water Level K4.04 System isolation on receipt of isolation signals.	3.1 3.6	2
205000 Shutdown Cooling			X									K3.02 Reactor Temperatures	3.9	1
214000 RPIS												None		0
215002 RBM												None		0
215003 IRM				X								K4.04 Varying system sensitivity levels using range switches	2.9	1
219000 RHR/LPCI: Torus/Pool Cooling Mode												None		0
230000 RHR/LPCI: Torus/Pool Spray Mode												None		0
234000 Fuel Handling Equipment												None		0
239003 MSIV Leakage Control												None		0

245000 Main Turbine Gen. and Auxiliaries						X						K6.05 Stator Water Cooling	2.9	1
259001 Reactor Feedwater												None		0
262002 UPS (AC/DC)												N/A		0
263000 DC Electrical Distribution												None		0
271000 Offgas									X			A3.01 Automatic system Isolations	3.3	1
272000 Radiation Monitoring												None		0
286000 Fire Protection												None		0
290003 Control Room HVAC					X							K5.01 Airborne contamination	3.5	1
300000 Instrument Air			X									K3.02 - Systems having pneumatic valves and controls	3.4	1
400000 Component Cooling Water		X										K2.01 - Knowledge of electrical power supplies to the following: CCW pumps	3.0	1
K/A Category Point Totals:	0	1	3	2	2	1	2	0	1	0	1	Group Point Total:		13

BWR SRO Examination Outline Plant Systems - Tier 2/Group 3														
System # / Name	K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G	K/A Topic(s)	Imp.	Points
201003 Control Rod and Drive Mechanism				X	X							K4.07 Maintaining the control rod at a given position K5.04 Rod sequence patterns	3.2 3.4	2
215001 Traversing In-core Probe												None		0
233000 Fuel Pool Cooling and Cleanup			X									K3.01 Pool temperature	3.4	1
239001 Main and Reheat Steam				X								K4.01 Automatic Isolation of Steam Lines	3.8	1
256000 Reactor Condensate												None		0
268000 Radwaste												None		0
288000 Plant Ventilation												None		0
290002 Reactor Vessel Internals												None		0
														0
K/A Category Point Totals:	0	0	1	2	1	0	0	0	0	0	0	Group Point Total:		4

Oyster Creek
Initial License Examination
1999 BWR SRO Generic Knowledge and Abilities Outline
Form ES-401-5

Facility: Oyster Creek   Date of Exam: August 30,1999   Exam Level: SRO

Category	K/A #	Topic	Imp.	Points
Conduct of Operations	2.1.1	Knowledge of the conduct of Operations requirements	3.8	1
	2.1.4	Knowledge of Shift staffing requirements	3.4	1
	2.1.12	Ability to apply Technical Specifications for a system	4.0	2
	2.1.33	Ability to recognize indications for system operating Parameters which are entry-level conditions for Technical Specifications.	4.0	1
	2.1.34	Ability to maintain primary and secondary plant chemistry Within allowable limits.	2.9	1
	Total			6
Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, Including operating those controls with plant equipment that could affect reactivity	3.6	1
	2.2.11	Knowledge of the process for controlling temporary changes	3.4	1
	2.2.22	Knowledge of limiting conditions for operations and safety limits.	4.1	1
	2.2.29	Knowledge of SRO Fuel handling Responsibilities	3.8	1
	Total			4
Radiation Control	2.3.11	Ability to control radiation releases	3.2	1
	Total			1
Emergency Procedures and Plan	2.4.18	Knowledge of the specific bases for EOP steps	3.6	3
	2.4.25	Knowledge of Fire Protection Procedures	3.4	2
	2.4.41	Knowledge of the emergency action level thresholds and Classifications.	4.1	1
	Total			6
Tier 3 Target Point Total (SRO)				17

Facility: Oyster Creek Examination Level (circle one): RO SRO	Date of Examination: August 30, 1999 Operating Test Number:

Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1 Conduct of Operation Staffing Requirements	Two Administrative questions 2.1.4 Knowledge of Shift Staffing requirements SRO: 3.4 Note: This JPM can be performed while at the RSP
A.1 Conduct of Operation Plant Parameter Verification	One Administrative JPM 2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation SRO: 4.0
A.2 Equipment Control Pre-Critical checkoff	One Administrative JPM 2.1.31 Ability to locate control room switches/controls and indications and to determine that they are correctly reflecting the desired plant lineup SRO : 3.9
A.3 Radiation Control Control of Radiation release: Turbine Building Ventilation	Two Administrative questions 2.3.11 Ability to control radiation releases SRO:3.2
A.4 Emergency Plan Classify an emergency or Abnormal Event	One Administrative JPM 2.4.41 Knowledge of EAL thresholds and classifications SRO: 4.1 At the end of each simulator Operating test, each examinee who was evaluated in the SRO position will classify the event per EPIP-OC-001 CLASSIFICATION OF EMERGENCY CONDITIONS

Facility: Oyster Creek
Exam Level (circle one): RO / SRO(I) / SRO(U)

Date of Examination: August 30, 1999
Operating Test No.:

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G - Importance – Description
1. Perform rod coupling check/respond to uncoupled rod < 10% power (D) (S) (L) (A)	Yes	a. 201003 A2.02 Uncoupled Rod (3.7/3.8)
		b. 201003 K3.01 Reactor Power (3.2/3.4)
2. Perform ARI Logic Test (N) (S)	Yes	a. 202001 K1.27 ATWS Circuitry (4.1/4.3)
		b. 295001 AK1.04 Limiting Cycle oscillation(2.5/3.3)
3. Respond to Hi-Hi trip of IRM Channel 11 during Startup (D) (S) (L)	Yes	a. 215003 K3.05 APRM (3.7/3.8)
		b. 215003 K5.03 Changing Detector Position (3.0/3.1)
4. Place the H2/O2 Analyzers in service IAW Support Procedure 39 (N) (S)	Yes	a. 500000 EA2.03 combustible limits for Drywell (3.2/3.8)
		b. 500000 EK1.01 Containment Integrity (3.3/3.9)
5. Override Core Spray to prevent injection during an ATWS (N) (S)	Yes	a. 295037 EK3.03 Lowering Reactor Water level (4.1/4.5)
		b. 209001 K4.08 Automatic system initiation (3.8/4.0)
6. Place a Recirculation Pump in Local Manual control (D) (P)	Yes	a. 202001 A2.09 Scoop tube lockup (3.2/3.4)
		b. 202002 A3.03 Scoop Tube Operation (3.1/3.0)
7. Take local manual control of a Feedwater Regulating Valve (D) (P) (R)	No	a. 259001 A3.07 FWRV position (3.2/3.2)
		b. 259001 K6.07 Reactor Water Level control System (3.8/3.8)
8. Manually scram the reactor by venting the Scram Air Header (D) (P) (R)	Yes	a. 295015 AK2.11 Instrument Air (3.5/3.7)
		b. 295015 AA1.02 RPS (4.0/4.2)
9. Place the remote Shutdown Panel in service, then control RPV cool-down using "B" Isolation Condenser (M) (S)	Yes	a. 295016 AK2.02 Local control stations (4.0/4.1)
		b. 295016 AA1.06 Reactor Water Level (4.0/4.1)

* 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: Oyster Creek
Exam Level (circle one): RO SRO(I) SRO(U)

Date of Examination: August 30, 1999
Operating Test No.:

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G – Importance – Description
10. Perform EDG Load Test (D) (S)	Yes	a. 2.1.12 Ability to apply Technical specifications for a system SRO: 4.0
		b. 2.1.12 Ability to apply Technical specifications for a system SRO: 4.0
11. Restart RB HVAC IAW Support Procedure 50 (S) (N)	Yes	a. 295034 EK2.01 Process Radiation Monitoring system (3.9/4.2)
		b. 290001 K6.01 Rx Bldg Ventilation (3.5/3.6)
12. Transfer Control of EDG to LSP-DG2 and start EDG-2 to re-energize Bus 1D (D) (S)	Yes	a. 2.4.27 Knowledge of fire in the plant procedure (3.0/3.5)
		b. 264000 A2.09 Loss of AC Power (3.7/4.1)
13. Perform Core Spray Operability Test (D) (S)	Yes	a. 209001 K4.04 Line Break detection (3.0/3.2)
		b. 209001 K3.02 ADS Logic (3.8/3.9)
14. Lineup Fire Protection to Core Spray System 2 (D) (P) (R)	Yes	a. 209001 K6.08 Keep-fill (2.9/3.0)
		b. 209001 K3.01 Reactor Water level (3.8/3.9)
15. Perform Station Blackout in-plant evolutions (Lineup TBCCW) (D) (P) (R)	No	a. 295003 AA2.04 System Lineups (3.5/3.7)
		b. 295003 AK1.06 Station Blackout (3.8/4.0)
16. Bypass RPS scram signals and Reset RPS as directed by the EOP during a hydraulic ATWS Event (N) (S)	Yes	a. 212000 K4.08 Complete control rod insertion following Scram signal generation (4.2/4.2)
		b. 295015 AA1.01 CRD Hydraulics (3.8/3.9)
17. Start # 2 EDG and pick up load from the EDG cubicle (D) (P)	Yes	a. 264000 A2.07 Loss of offsite power during full load testing (3.5/ 3.7)
		b. 264000 K4.05 Load shedding and Sequencing (3.2/3.5)

* 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: Oyster Creek **Scenario No.:** A-1 **Op-Test No.:**

Examiners: ____________________ **Operators:** ____________________

____________________ ____________________

____________________ ____________________

Objectives:
Evaluate applicants performance of SBGT surveillance
Evaluates applicants ability to increase reactor power IAW General Operating Procedures
Evaluate applicants ability to respond to a loss of Instrument Panel IP-4B (INSTRUMENT FAILURE EVENT)
Evaluate applicants response to a field ground/loss of field Generator trip/turbine trip
Evaluate applicants ability to execute EOP's during an electrical ATWS event
- Recognize loss of condenser as a heat sink, then control RPV pressure with Isolation Condensers / EMRV's
- Lower RPV water level as directed by EOP
- Initiate SLC prior to exceeding BIIT Limit
- Place containment Spray in torus cooling
- Attempt to manually insert control rods using RMCS
- Successfully vent the scram air header to terminate the ATWS event

Initial Conditions:
The plant is at 65% power; all equipment is operable.

Turnover:
Per 201.3, continue to increase power to 100%.
Complete Standby Gas Treatment System surveillance 651.4.001, starting at Section 6.5.2 (10 hour run is completed)

Event No.	Malf. No.	Event Type*	Event Description
1		N	Perform SGTS surveillance
2		R	10% increase in reactor power using Recirc flow
3		I C	Loss of IP-4B (INSTRUMENT FAILURE EVENT) Recover AOG after system isolates
4		C	Respond to Field ground annunciator Respond to loss of field generator trip/turbine trip
5		M C	Electrical ATWS / turbine Trip with Bypass Valves available. However, a slow loss of vacuum occurs (blade thrown through condenser shell). Loss of condenser as a heat sink: when the low vacuum trip closes the bypass Valves, pressure control will now be with the Isolation condensers and EMRV's maintained open. Torus water temperature will increase, requiring Injection of SLC

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

Facility: Oyster Creek **Scenario No.:** A-2 **Op-Test No.:**

Examiners: ____________________ **Operators:** ____________________

____________________ ____________________

____________________ ____________________

Objectives:
Evaluate applicants performance of Isolation condenser valve Operability surveillance
Evaluate applicants ability to respond to a loss of 125 VDC power panel DC-F (INSTRUMENT FAILURE EVENT)
Evaluate applicants response to a slow loss of condenser vacuum
Reduce reactor power using Recirc flow and cram rods to 80% rod line; observe operational requirements of the Operational map
Evaluate applicants response to a slow increase in Drywell pressure (Recirc loop leak)
Evaluate applicants ability to execute EOP's during a LOCA inside the Drywell
Initiate Containment Spray
Respond to a loss of 4160 VAC Bus 1D; Respond to injection valve failures System 1 Core spray
Emergency depressurize when RPV water level < TAF; Recognize only four (4) EMRV's are open
Recover RPV water level > TAF using reduced ECCS capacity (System 2 Core Spray)

Initial Conditions:
The plant is at 100% power.

Turnover:
Maintain 100% power operations for the shift.
Isolation Condenser surveillance 609.4.001 Valve operability and In-service test is scheduled to be performed.

Event No.	Malf. No.	Event Type*	Event Description
1		N	Perform Isolation condenser Valve operability surveillance
2		I,C	Respond to a loss of 125 VDC Power Panel DC-F
3		C R	Respond to decreasing condenser vacuum. Reduce power using Recirc flow and insert rods to the 80% rod line to maintain > 25"
4		C	Respond to an increase in Drywell pressure (small leak)
5			If time permits, perform Scram Setup actions, then insert a manual scram.
6		M	At 12 PSIG Torus pressure, Initiate Containment Sprays.
7		C	Evaluate impact on EOP strategy when 4160 VAC Bus 1D is de-energized
8		M C	Respond to a large break LOCA inside the Drywell. After Containment Sprays have been initiated, the leak becomes a large break LOCA. RPV water level rapidly drops; Multiple failures combined with the Bus 1D lockout reduces injection flow to the vessel. RPV water level drops below TAF, requiring Emergency depressurization (only four (4) EMRV's open). Observe for Reference Leg flashing. (Reference leg flashing does not occur)
9		M	Recover RPV water level > TAF using System 2 Core Spray (Feedwater will not be available for injection)

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

Facility: Oyster Creek **Scenario No.:** A-3 **Op-Test No.:**

Examiners: ____________________ **Operators:** ____________________

____________________ ____________________

____________________ ____________________

Objectives:
Evaluate applicants ability to reduce reactor power using control rods
Evaluate applicants ability to remove the Turbine Generator from service and maintain the reactor critical, steaming to the Condenser via Bypass Valves
Evaluate applicants response to a failed temperature instrument causing Cleanup to isolate (V-16-1 fails to isolate)
Evaluate applicants response to increasing OffGas/ MSL Radiation levels per the Abnormal Procedure
Evaluate applicants ability to execute EOP's during a Radioactive Release
  Recognize failure of MSIV's' to close
  Performs actions to mitigate the consequences of a large steam leak in the Turbine Building
  When General emergency levels for Rad Release are exceeded, initiates Emergency Depressurization

Initial Conditions:
The plant is at 40% power.

Turnover:
A power reduction is in progress to remove the Turbine Generator from service for maintenance repair.
The shift will maintain the reactor critical and steaming to the condenser via Bypass valves. Expected time for Generator repair is 12 hours.

Event No.	Malf. No.	Event Type*	Event Description
1		R	Continue power reduction to < 37% using control rods.
2		N	Remove the turbine Generator from service IAW Procedure 203.1 Section 5.20
3		I,C	Respond to INSTRUMENT FAILURE Event (temperature element failure causes Cleanup system to isolate; V-16-1 fails to isolate)
4		C	Recognize increasing OffGas / MSL Radiation levels and take actions IAW 2000-ABN-3200.26
5		C	At 800 mr/hr MSL rad levels, insert a manual scram and close MSIV's. MSIV's in MSL fail to fully close.
6		M	Respond to reports of a large steam leak in the Turbine Building
7		M	When Radiation Release limits exceed General Emergency levels, Emergency Depressurization is required.

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

Original Submittal
Written

7/19/99

Larry,

The breakdown of this exam is as follows:

Cognitive level

24 Level 3 style questions

36 Level 2 style questions

40 Level 1 style questions

Origin of Questions

80 questions are new

11 questions are from NRC exams (9 from NMP1 SRO and 2 from the last OC SRO exam-1996)

9 questions are from the exams given during the Candidates Systems/Procedures course

The 20 questions that were previously used or from the NMP1 exam are copied and inserted in the back of the package.

Yours truly,
Joe Milligan

U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information	
Name:	Region: I
Date:	Facility/Unit: Oyster Creek
License Level: SRO	Reactor Type: GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

____
Applicant's Signature

Results	
Examination Value	100 Points
Applicant's Score	________ Points
Applicant's Grade	________ Percent

G2.1.1-01

1. You are the on coming CRO. During the panel walkdown you observe a graph on a back panel which converts percentage of tank level to gallons. This graph was not there the last time you had this watch.

Which of the below describes the manner you can verify this graph is an approved operator aid?

a. The operator log contained an entry discussing the use of this aid

b. It is signed by the Plant Operations Director or designee

c. It is signed by the Group Operating Supervisor

d. It is initialed by the Site Shift Manager

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Per 109.1 Section 4.3, each Operating Aid shall be authorized by the manager (director) responsible for the task or activity related to the Operating Aid
Distractors:	A	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	1	100

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Control of Operator Aids 109.1	
Learning Objective:	(01)(02)02442	
Terminal Objective:	34101(02)408	
Knowledge/Ability:	Generic 2.1.1	Importance: 3.7 / 3.8
Knowledge of the conduct of operations requirements		

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: [illegible] Signature: [illegible] Date: 1/7/99

G2.1.12-03

2. Given the following conditions:

- At 8 AM, July 6,1999, Diesel Generator 1 starting motor battery cable was discovered to be frayed and broken.
- At 9 AM, July 6, 1999, the GSS was informed of the broken cable
- At 10 AM, July 6, 1999, it was determined that the damage to the cable occurred at 4 AM July 6, 1999.

Which of the following is the correct time the Diesel Generator is to be declared inoperable?

a. 4 AM

b. 8 AM

c. 9 AM

d. 10 AM

Answer Key		
Choice		**Basis or Justification**
Correct:	A	A component shall be considered inoperable based on the time that the information was originally received or the event occurred. In this event, it has been determined that the event occurred at 4 AM.
Distractors:	B	Plausible distractor; this is the time the event was discovered
	C	Plausible distractor; this is the time the event was reported
	D	Plausible distractor; this is the time the event evaluation was completed.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.75	2	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Admin 106 Conduct of OPS 5.6.4.1 page 30	
Learning Objective:	(02)01520,01538,01520,01658	
Terminal Objective:	34403 (02)001; 34103(02)013	
Knowledge/Ability:	Generic 2.1.12	Importance: 2.9 / 4.0
Ability to apply Technical specifications to a system		

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #2 Signature: [illegible signature] Date: 7/1/99

G2-1-12-04

3. The plant is at 100% power. Chemistry has just completed its daily sample of the SLC Storage Tank.

Given the following information:

- SLC Storage Tank level: 3200 gallons
- SLC Storage Tank temperature: 100° F
- Weight % of sodium Pentaborate: 14%

Which of the following best describes the actions, if any, that need to be taken?

a. The weight % sodium pentaborate needs to be increased

b. The storage tank level needs to be increased

c. The temperature of the storage tank needs to be decreased

d. No actions are required

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Requires TS 3.2 and associated graphs to answer this question
Distractors:	B	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.75	2	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Tech Spec 3.2 Fig 3-2-1 / 2	
Learning Objective:	(01) 00338	
Terminal Objective:	21101 (01) 003, 004, 401	
Knowledge/Ability:	Generic 2.1.12	Importance: 2.9 / 4.0
Ability to apply technical specifications for a system		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: [illegible] Signature: [illegible] Date: 7/ /99

G2.1.33-01

4. Which one of the following situations, if not corrected within eight (8) hours, would require shutdown and cooldown of the reactor?

a. Drywell Sump Flow Integrator indicates 270 gallons pumped during the last hour; Drywell Equipment Drain Tank level has been increasing 300 gallons every 15 minutes.

b. Drywell Sump Flow Integrator indicates 210 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 330 gallons every 15 minutes.

c. Drywell Sump Flow Integrator indicates 90 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 345 gallons every 15 minutes.

d. Drywell Sump Flow Integrator indicates 150 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 315 gallons every 15 minutes.

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Drywell sump is 3.5 gpm unidentified; Drywell Equipment Drain tank is 22 gpm identified; Total leakage = 25.5; Limit is 25 gpm total leakage
Distractors:	A	Adds up tp 24.5 gpm total leakage
	C	Adds up tp 24.5 gpm total leakage
	D	Adds up tp 23.5 gpm total leakage

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.8	4	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Tech Spec 3.3.D; 6231-PGD-2621 850.0 .0090; 828.0015		
Learning Objective:	(01) 1416 (02) 01658, 01920, 01921		
Terminal Objective:	29101 (01) 402; 34505 (02) 401		
Knowledge/Ability:	2.1.33	Importance: 3.4 / 4.0	

Ability to apply Technical specifications for a system (2.1.12)
Ability to recognize indications for system operating parameters which are entry level conditions for technical specifications

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 4 Signature: [illegible] Date: 7/1/99

G2.1.34-01

5. Given the following conditions:

- Reactor startup in progress
- Reactor power 5%
- Main turbine warm-up in progress
- Chemistry reports reactor coolant sample results:
  - conductivity 8 µS/cm
  - chlorides 0.3 ppm

Which one of the following best describes the required actions?

A. No action is required because no Technical Specification limitations have been exceeded.

B. A shutdown must be initiated immediately because the low steaming rate (< 100,000 lbm/hr) limitations have been exceeded.

C. A shutdown must be initiated immediately because the high steaming rate (> 100,000 lbm/hr) limitations have been exceeded.

D. No action is required as long as coolant quality does not maintain these values for greater than 72 hours for this incident.

Answer Key		
Choice		**Basis or Justification**
Correct:	D	**Tech Spec is required to answer this question.** IAW TS 3.3.E.3, Limits are 10 µS/cm and 0.5 ppm (5% power is 363,000lbm/hr, based on 100% steaming rate is 7.26 Mlbm/hr) Limits given are below TS for >100,000lbm/hr, but are > than limits established in TS 3.3.E.5,hence TS 3.3.E.5 is applicable
Distractors:	A	Obvious answer because limits are below given and steaming rate > 100, 000 lbm/hr
	B	Mis-interpretation of TS or miscalculation of steaming rate based on 5%power
	C	Mis-interpretation of TS or miscalculation of steaming rate based on 5%power

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.5	3	70

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	TS 3.3.E; 6213-PGD-2621 850.0 .0090	
Learning Objective:	(02) 01658, (02) 01920, (02)01921	
Terminal Objective:	34403(02)001	
Knowledge/Ability:	Generic: Conduct of Ops 2.1.34	Importance: 2.3 / 2.9
Ability to maintain primary and Secondary plant chemistry within allowable limits		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: 4.5 Signature: [illegible] Date: 5/19/99

G2.1.4-01

6. The plant is at 100% power with minimum staffing requirements when the CRO At-The-Controls becomes ill with 4 hours shift time remaining and must go home.

Which of the following best describes the actions needed for continued plant operation?

a. The ill CRO must be formally relieved by the other CRO and staffing requirements must be returned to minimum within 2 hours

b. The ill CRO can not leave the Control Room exclusion area until minimum staffing requirements are met

c. The ill CRO must be formally relieved by the other CRO and minimum staffing requirements are waived until shift change

d. The ill CRO can leave the control room provided both SRO licensed supervisors remain in the Control room until staffing requirements are returned to minimum.

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Except for the GSS, shift crew staffing requirements may be less than minimum, for a period not to exceed 2 hours, in order to accommodate unexpected absence of on-duty shift crew members
Distractors:	B	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor; with minimum staffing requirements, there are 2 SROs, but no provision is allowed for an SRO to act as an CRO, thus downgrading the requirement for 2 SRO's on site at all times when there is fuel in the vessel.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	100

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Tech Spec 6.2.2.2	
Learning Objective:	(1)(2) 01631	
Terminal Objective:	34303(02)006 34101(02)411	
Knowledge/Ability:	Generic 2.1.4	Importance: 2.3 / 3.4
Knowledge of Shift staffing Requirements		

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #6 Signature: [signature] Date: 7/1/99

G2.2.1-01

7. Given the following conditions:

- On July 1st, a reactor scram from 100% power occurred
- During this scram event, all systems operated as designed

It is now July 5th, and a reactor startup is to be performed in accordance with Procedure 201.1 APPROACH TO CRITICALITY.

Which of the following best describes the Pre-Critical check off that must be performed for the CRD hydraulic system?

a. The scram insertion times for all operable control rods have been evaluated and are within Technical Specification limits

b. The scram insertion times for the eight (8) control rods selected to the brush recorder have been evaluated and are within Technical Specification limits.

c. At least one (1)control rod shall be scram time tested.

d. All control rods must be operable.

Answer Key		
Choice		**Basis or Justification**
Correct:	B	This question is simply asking if the examinee understands how scram times are obtained and on how many rods. The pre-critical check-off sheet is how Operations makes sure that the 8 rods are selected.
Distractors:	A	Selected if the examinee does not understand how scram times are obtained and does not know that only the times of 8 rods are measured.
	C	Selected if the examinee does not understand how scram times are obtained and does not know that only the times of 8 rods are measured.
	D	Plausible distractor; though answers a,b,and c mention scram times, this distractor could be selected if the examinee does not know that at least 6 rods are allowed to be out of service, provided they are not out of service due to failed collet finger housings.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.75	2	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	201.1 att 2 CRD pre-crit checkoff		
Learning Objective:	(01)00447; (01)00448		
Terminal Objective:	20001(01)407; 20001 (02)003		
Knowledge/Ability:	Generic 2.2.1	Importance: 3.7 / 3.6	
Ability to perform pre-startup procedures for the facility, including operating those controls with plant equipment that could affect reactivity			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #7 Signature: [illegible] Date: [illegible]

G2.2.11-01

8. Which of the following situations does the GSS have sole authority for approval of a Temporary Procedure Change?

a. While reviewing EOP 3200.01A RPV Control-No ATWS, the LOS submits a Temporary Procedure Change to the EOP for a more accurate wording of the intent of a specific step

b. A Control Room Operator submits a Temporary Procedure Change for re-ordering the steps for placing a second Reactor Feed Water Pump in service

c. While preparing to place a RWCU Filter Demineralizer in service, the EO submits a Temporary Procedure Change deleting a prerequisite because it is not applicable for current conditions

d. While performing a surveillance, a Temporary Procedure Change is submitted to change a valve stroke time acceptance criteria

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Tech Spec 6.8.3 authorizes the GSS to grant implementing approval for procedure changes that do not change the intent of the procedure.
Distractors:	A	Per 107.4, EOP Program Control, changes to the EOP's are submitted for review by the EOP committee. The Temp change process does not apply to EOP's.
	C	Per 107, if the change affects a prerequisite, approval must also be obtained from another plant management member, such as the Director, OC, or the POM
	D	Per 107, if the change affects an acceptance criteria, approval must also be obtained from another plant management member, such as the Director, OC, the POM, or Director, O and M

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.75	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	107 Procedure control Section 7;6231-PGD-2621 830.0005		
Learning Objective:	(01)(02) 02435; (01)(02)02436		
Terminal Objective:	34303(02)012		
Knowledge/Ability:	Generic 2.2.11 Controlling Temp changes	Importance: 2.5 / 3.4	
Knowledge of the process for controlling temporary changes			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: [illegible] Signature: [illegible] Date: 7/17/99

G2.2.22-03

9. Given the following conditions:

- Reactor at 90% power
- A planned outage is scheduled to start in 4 days
- EMRV NR-108C has just been declared inoperable
- The cause of the failure of the EMRV is under investigation

Which of the following best describes the required conditions for operation?

a. Reactor operation may continue until the scheduled shutdown because the minimum Technical Specification requirements are still met.

b. The reactor must be shut down and depressurized below 110 psig within 24 hours as required by Technical Specifications

c. Reactor operation may continue for up to 3 more days provided both Isolation Condenser isolation and makeup valves are verified operable on a daily basis.

d. If both loops of Core Spray and both Diesel Generators are operable, reactor operation can continue and the planned outage can occur as scheduled.

Answer Key		
Choice		**Basis or Justification**
Correct:	C	**Tech Spec 3.4 will be provided for use in determining the correct LCO**
Distractors:	A	Minimum number of EMRV's is 5; this statement is incorrect, for there are only 4 EMRV's operable
	B	Selected if examinee does not realize that this spec requirement is in effect after 3 days with an inoperable EMRV
	D	A plausible distractor relating the operability of Core spray, Diesel Generators and ADS function of the EMRV's

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	3	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Tech Spec 3.4.b; 6231-PGD-2621 850.0 .0090		
Learning Objective:	(01) 00370; 371,372 ; (02) 01658,01920,01921		
Terminal Objective:	21801 (01)001		
Knowledge/Ability:	2.2.22 Equipment Control	Importance: 3.4 / 4.1	
Knowledge of Limiting Conditions for operations and safety limits			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: [illegible] Signature: [illegible] Date: [illegible]

G2.2.29-01

10. Oyster Creek is in a refueling outage.

Which one of the following conditions would require a SRO *specifically assigned to refueling* to be present on the refuel bridge?

a. Partial core offload, fuel pool gates removed, removal of control rod 02-27 in progress from the refuel bridge

b. Partial core offload, fuel pool gates removed, processing new fuel from inspection stand to fuel pool racks

c. Full core offload, fuel pool gates removed, repositioning blade guides for control rod drive interference checks

d. Partial core offload, fuel pool gates removed, withdrawing control rod 02-27 from control room in preparation for uncoupling

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Per 205 Step 6.8, and Tech Spec 6.2.2.2e and the Tech spec definition of Core Alterations, a SRO or LSRO shall directly supervise core alteration. Removing a control blade from the core using the Refueling platform is defined as core alterations
Distractors:	B	This distractor is not defined as core alterations.
	C	This distractor is not defined as core alterations. (the core is completely off loaded)
	D	Uncoupling a rod implies that the fuel cell is empty and that the rod is being supported by blade guides. Additionally, Core Alterations definition specifically states that moving a control rod using CRD is not defined as core alteration.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	90

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam ✓ OC SRO 1996 # 91 Other Exam Bank NRC Exam Bank
Reference(s):	205; Tech spec definition of core alteration; TS 6.2.2.2.e; 62311-PGD-2621 812.0003	
Learning Objective:	(01)01139, 00323	
Terminal Objective:	23401(02)001	
Knowledge/Ability:	2.2.29	Importance: 1.6 / 3.8
Knowledge of SRO fuel Handling Responsibilities		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #10 Signature: [signature] Date: 7/1/99

202002-01

11. "A" Recirc Pump is operating in MANUAL and is being transferred to AUTO.

Which of the following explanations best describes the expected plant response when the AUTO/MANUAL pushbutton on the controller is depressed?

a. A recirculation flow transient would occur if a deviation exists between the Master and Individual Controller setpoints

b. The Recirc Flow control system will not allow you to place the individual controller into AUTO unless the deviation signal has been balanced

c. A bumpless transfer from MANUAL to AUTO control will occur because the control system automatically adjusts setpoints

d. A Scoop Tube lockup occurs because going to AUTO without balancing the deviation between the Master and Individual controller would result in a recirculation flow transient

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Guidance is given in 301.2 Recirc Pump startup for matching setpoint speeds between the Master and individual controllers
Distractors:	B	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.9	2	90

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓98-1 System final	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	6231-PGD-2621 828.0040	
Learning Objective:	(01)00158;00214;00227;08706; (02)00158	
Terminal Objective:	20201(01)005	
Knowledge/Ability:	202002 A4.07	Importance: 3.3 / 3.2
Ability to manually operate and/or monitor in the Control Room: Recirc Pump speed		

Prepared by: s. Sowell

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: 3 11 Signature: [illegible] Date: 7/7/97

207000-02

12. Given the following conditions:

- Operation of the plant is being controlled from the Remote Shutdown Panel
- RPV pressure is 1050 PSIG and rising
- RPV water level is 100" and dropping
- Isolation Condenser Transfer Switches for Train "A" and "B" are in ALTERNATE

Concerning the Isolation Condensers, which of the following will occur if an initiation signal is received?

a. Only the "A" Isolation Condenser will automatically initiate

b. Only the "B" Isolation Condenser will automatically initiate

c. Initiation signals are bypassed; the operator must open the DC Condensate Return Valve to place "A" Isolation Condenser in service

d. Initiation signals are bypassed; the operator must open the DC Condensate Return Valve to place "B" Isolation Condenser in service

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Only the B IC can be operated from the RSP; when the Train switches A and B are in EMERG, V-14-35 is manually operated from the RSP, all initiations and isolations are bypassed.
Distractors:	A	Plausible distractor
	B	Plausible distractor
	C	Plausible distractor

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.9	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0023 ; 828.0064		
Learning Objective:	(01) 02275; (01)02261		
Terminal Objective:	20704 (01)402; 30804 (01) 410		
Knowledge/Ability:	207000 A2.08	Importance: 3.8 / 3.8	
Ability to (a) predict the impacts of the following on the IC, and (b) based on those predictions, use procedures to correct, control or mitigate the consequences of abnormal conditions or operations: system Initiation			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #12 Signature: [signature] Date: 3/7/99

207000-04

13. Which of the following describes plant operation if 125 VDC MCC DC-2 is de-energized?

a. Operation can continue if "A" Isolation Condenser is operable

b. Operation can continue if "B" Isolation Condenser is operable

c. Operation can continue if both Isolation Condensers are operable

d. Operation can continue if DC-2 can be supplied from another DC source via an ATS

Answer Key		
Choice		Basis or Justification
Correct:	A	TS 3.7 and 3.8 required to answer this question DC2 provides power to Isol cond "B" DC operated valves; if DC2 is de-energized and "A" Isol cond is operable, plant operation is allowed to continue for 7 days
Distractors:	B	Plausible distractor; B Isolation condenser valves are supplied from DC-2; if it is de-energized, B Isol Cond is inoperable
	C	Plausible distractor;
	D	Plausible distractor: DC 2 does not have ATS capability; however, DC-1 does.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Technical specification 3.7 and 3.8; 2631-PGD-2621 828.0023		
Learning Objective:	(01)00219; (01) 02550		
Terminal Objective:	207001 (01) 401		
Knowledge/Ability:	207000 K2.01	Importance: 3.6 / 3.8	
Knowledge of electrical power supplies to the following: MOV's			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #3 Signature: [illegible] Date: 1/17/99

209001-01

14. Given the following conditions:

- The plant is in cold shutdown.
- Core Spray system is in Standby readiness
- Core Spray System high Drywell pressure detector RV46A has failed high.

Which of the following best describes the response of Core Spray to this event?

a. Both "A" and "B" Main Pumps start, then "A" and "B" Booster Pumps start and all parallel valves open

b. Both "A" and "B" Main Pumps start, then "A" and "B" Booster Pumps start; parallel valves must be manually opened if injection is required

c. System 1 "A" Main Pump starts, then System 1 "A" Booster Pump starts, then System 1 parallel valves open. System 2 Pumps do not start

d. Core Spray SYSTEM 1 AUTOSTART and DEMAND FOR PUMPS ON annunciators alarm, but no pumps start

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Actuation of any channel (high Drywell pressure or lo-lo RPV water level) starts both primary core spray pumps, primary boosters and the parallel valves will open because pressure < 310 PSIG
Distractors:	B	Selected if examinee fails to realize that the RPV is at 0 PSIG, meaning the valve opening permissive for RPV pressure is satisfied
	C	Selected if the examinee does not know that any actuation signal to Core Spray will start both Core spray systems unless inhibited (but the stem makes no mention of the inhibit feature being used)
	D	Plausible distractor; selected if examinee thinks that it requires two or more sensor trips to actuate Core Spray

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.9	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0010		
Learning Objective:	(01)00292, 00298;(01)00302		
Terminal Objective:	20901(01)005		
Knowledge/Ability:	209001 A3.02	Importance: 3.8 / 3.7	
Ability to monitor automatic operations of Core Spray including: Pump start and Valve operation			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 14 Signature: [signature] Date: 7/1/99

209001-02

15. Given the following conditions:

- A valid Core Spray initiation signal is present
- System 1 Priority Booster Pump failed to start

Which of the following best describes the *automatic* response of the Core Spray system booster pumps?

a. ONLY "B" Booster Pumps is operating

b. ONLY "C" and "B" Booster Pumps are operating

c. ONLY "C" Booster Pump is operating

d. ONLY "B", "C" and "D" booster Pumps are operating

Answer Key		
Choice		**Basis or Justification**
Correct:	A	If either booster pump starts (as did Sys 2 "B" booster when D main pump starts), then the other loop's backup boosters ("C") is interlocked off to prevent overloading the DG. Final configuration for this event is A and B Main Pumps and B booster on. (the boosters can be started manually)
Distractors:	B	Selected if the examinee does not know that the "A" loop backup booster pump is interlocked off because "B" loop primary booster pump is operating
	C	Selected if the examinee does not understand the Core Spray logic for starting pumps
	D	Selected if the examinee does not understand the Core Spray logic for starting pumps

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.7	4	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0010		
Learning Objective:	(01) 00302		
Terminal Objective:	20901 (01)004		
Knowledge/Ability:	209001 A2.01	Importance: 3.4 / 3.4	
Ability to (a) predict the impacts of the following on Core Spray and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions: Pump trips			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #15 Signature: [signature] Date: 7/17/99

209001-03

16. The plant is at 100% power

Given the following conditions:

- A loss of offsite power has occurred
- One of the Diesel Generators can NOT be started
- RPV water level is decreasing due to a LOCA

Which of the following assures increased confidence that at least one loop of Core Spray will inject into the vessel?

a. Coping strategy has the CT's energizing the 4160 VAC system within 1 hour

b. Parallel Injection valve V-20-41 can be powered from whichever Diesel Generator is operating

c. The Core Spray Fill Pumps continue to operate, minimizing water hammer

d. Diesel Generator Sequential Timing assures that the Main and Booster Pumps do NOT start at the same time, overloading the available DG

Answer Key		
Choice		**Basis or Justification**
Correct:	B	PSA (or PRA....)question; V-20-41 is powered from 1AB2. This assures that whatever DG is operating, MCC 1AB2, via its ATS, will supply power to this valve. This increases the reliability of system 2 Core Spray to be available to inject, thus reducing chances of fuel damage
Distractors:	A	This is the SBO Criteria; not applicable if on-site power is available (at least 1 EDG is operating per the stem)
	C	Plausible distractor;
	D	False statement; EDG Load Sequence timers do not affect Core spray, only CRD, Service Water, and RBCCW Pumps

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.6	3	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0010		
Learning Objective:	(01)00303, (01)00304		
Terminal Objective:	20901(01)004		
Knowledge/Ability:	209001 K2.02	Importance: 2.5 / 2.7	
Knowledge of electrical power supplies to: valves			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #16 Signature: [illegible signature] Date: 7/5/99

212000-02

17. Per 201.2 PLANT HEATUP TO HOT STANDBY, which of the following best describes when the mode switch can be placed to RUN?

a. When at least 2 Bypass Valves are fully open

b. All IRM's are reading high on Range 9 and all APRM downscale indicator lights have cleared

c. If operating in IRM Range 10, the mode switch must be in RUN prior to exceeding 25% power

d. Reactor power > 10%

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Per 201.3 Section 5.32
Distractors:	A	Plausible distractor; This is the requirement for transferring from the MPR to the EPR
	C	Plausible distractor; In range 10, the scram setpoint is 38% power; this requirement for 25% is for ensuring IRM calibration before increasing power
	D	Plausible distractor; This requirement pertains to 3 bypass valves open and swapping the RWM to Power Operations Mode

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.9	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	201.2 Section 5.32; 6231-PGD-2621 832.0003		
Learning Objective:	(01)01044		
Terminal Objective:	20001(01)407; 20001(02)003		
Knowledge/Ability:	212000 A2.16	Importance: 4.0 / 4.1	
Ability to (a) predict the impacts of the following on RPS and (b) based on those predictions, use procedures to correct, control and/or mitigate the consequences of those abnormal conditions or operations: changing mode switch positions			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 17 Signature: [illegible] Date: 5/11/99

215004-01

18. Given the following conditions:

- A reactor startup is in progress
- Reactor power is approximately 5.5×10^4 cps on all SRM's

Which of the following describes how a SRM detector that cannot be fully withdrawn affects continued control rod withdrawals?

A. Control rod withdrawals will **NOT** be permitted because of administrative controls.

B. Control rod withdrawals will be possible as soon as the remaining SRM's are fully withdrawn and read less than 500 cps.

C. Control rod withdrawals will be possible until power reaches 1×10^5 cps, and then will not be allowed (Rod Block) until IRM's are at or above Range 8.

D. Control rod withdrawals will be possible until power reaches 1×10^5 cps, and then will not be allowed (Rod Block) until IRM's are at or above Range 8 AND the affected SRM is bypassed.

Answer Key		
Choice		**Basis or Justification**
Correct:	C	SRM rod block is 1×10^5 cps, regardless of detector position and is auto bypassed when all IRM's are on Range 8 or higher or the mode switch is in RUN
Distractors:	A	There are no administrative controls for stuck detector (Refer to Procedure 401.2, .3, .4)
	B	Selected if confused with SRM Detector not fully inserted (500 cps S.O.#1)
	D	Selected if examinee does not know that SRM rod blocks are bypassed when all IRM's are Range 8 or higher

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.9	2	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	6231-PGD-2621 828.0 .029B SRM	
Learning Objective:	(02) 00347	
Terminal Objective:	21501 (01) 005	
Knowledge/Ability:	215004 A1.05 SRM	Importance: 3.6 / 3.8
Ability to predict and/or monitor changes in parameters associated with operating the SOURCE RANGE MONITOR (SRM) SYSTEM controls including: SCRAM, rod block, and period alarm trip setpoints		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #18 Signature: [illegible signature] Date: 7/17/99

215005-01

19. Which of the following conditions requires an immediate manual scram to be inserted?

a. While reducing power using recirc flow, inadvertent entry into the Exclusion Region on the Power Operation curve occurs

b. Total Recirculation flow is 10 X 10^4 gpm and APRM's 4 and 8 show oscillations of 6% power peak to peak over a 3 minute period

c. Withdrawing control rods to establish the 100% rod pattern line when a single Recirc Pump trip causes entry into the Exclusion Area on the Power Operation curve

d. Recirc flow has been reduced to minimum and APRM's 4 and 8 indicate a 6% peak to peak oscillation

Answer Key		
Choice		**Basis or Justification**
Correct:	D	If Recirc flow is < 8xE4 gpm (50% rated) and power oscillations of >5% peak to peak are occurring on 2 or more APRM's , manually scram the reactor
Distractors:	A	Inadvertent entry requires operator actions to move the plant out of the exclusion area; inserting a reactor scram is not required
	B	Selected if the examinee sees the slow power oscillations peak to peak > 5% but does not realize that core flow > 50%
	C	Inadvertent entry requires operator actions to move the plant out of the exclusion area; inserting a reactor scram is not required

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	202.1 Section 3.7.2	
Learning Objective:	(01)(02)00358; (01)(02) 02022	
Terminal Objective:	02221(01)410	
Knowledge/Ability:	215005 A1.01	Importance: 4.0 / 4.0
Ability to predict and/or monitor changes in parameters associated with operating the APRM/LPRM: Reactor power indication		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 19 Signature: [illegible] Date: [illegible]

215005-02

20. The reactor is at 50% power when Flow Converter 1 input to the APRM's fails downscale.

In addition to a Flow Comparator Rod Block, which of the following conditions will occur?

a. A flow biased half scram and a flow biased rod withdrawal block on APRM's 1,2,3, and 4.

b. A flow biased half scram and a flow biased rod withdrawal block on APRM's 5,6,7,and 8.

c. A flow biased rod withdrawal block on APRM's 1,2,3, and 4

d. A flow biased rod withdrawal block on APRM's 5,6,7,and 8.

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Comparator Trip > 16,000 gpm difference between channels, upscale trip at 115%; Inop trip(mode switch not in operate/module removed) Additionally, Channel 2 prevents rod withdrawal by de-selecting the rod when rod withdrawal is attempted. May require power operation map to answer
Distractors:	A	The flow unit failed downscale. This is a not trip into RPS, therefore a half scram does not occur
	B	The flow unit failed downscale. This is a not trip into RPS, therefore a half scram does not occur. Additionally, Flow Unit 1 does not affect APRM's on RPS B side.
	D	Flow Unit 1 does not affect APRM's on RPS B side.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.5	2	70

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank ✓ NMP 1 SRO #8
Reference(s):	6213-PGD-2621 828.0036	
Learning Objective:	Obj R	
Terminal Objective:	21501(01)023	
Knowledge/Ability:	215005 K4.07	Importance: 3.7 / 3.7
Knowledge of APRM/LPRM design features and/or interlocks which provide for the following: flow biased trip setpoints		

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: [illegible] Signature: [illegible] Date: [illegible]

218000-01

21. A plant transient is in progress.

- The ADS timers have initiated.
- Reactor pressure is 1055 PSIG and increasing.

Which of the following best describes the affect on EMRV "A" if its control switch is placed to OFF?

a. The valve will **not** function as a relief valve, but its ADS function remains operable

b. The valve will function as a relief valve and its ADS function remains operable

c. The valve will function as a relief valve, but its ADS function will **not** work

d. Neither the relief or ADS mode of operation will work.

Answer Key		
Choice		**Basis or Justification**
Correct:	a	OFF: over pressure relief function is bypassed; however, the automatic function ADS is still functional.
Distractors:	b	This is the function of the AUTO position
	c	Inverse of correct answer; selected if examinee does not know what OFF is used for.
	d	Selected if examinee thinks that the OFF bypasses both the pressure relief and ADS function of the EMRV

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	1	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0 .0005		
Learning Objective:	(01)(02)00368		
Terminal Objective:	21801(01)001		
Knowledge/Ability:	218000 A4.01 ADS	Importance:	4.4 / 4.4
Ability to manual operate and/or monitor in the control room: ADS valves			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #3 Signature: [illegible] Date: [illegible] 99

218000-02

22. Given the following conditions:

- A plant transient has occurred.
- The ADS timers have initiated, BUT have NOT yet timed out.
- RPV water level is now 70" TAF and increasing

Which of the following best describes the response of ADS?

a. The timing sequence will not be affected. The ADS valves will open when the timer times out.

b. The timing sequence will stop. The ADS valves will not automatically open.

c. The timing sequence will stop, however, the timer will not reset to zero.

d. The timing sequence will re-set to time ZERO, then initiate the ADS timer again.

Answer Key		
Choice		Basis or Justification
Correct:	A	The ADS timers have a seal in circuit; once the timers have initiated, the only way to prevent ADS is to turn the keylock switches to BYPASS.
Distractors:	B	Selected if the examinee does not know that ADS timer initiated is a seal-in signal
	C	Selected if examinee does not know that ADS timer initiated is a seal-in circuit
	D	Selected if examinee does not know that ADS timer initiated is a seal-in circuit

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.6	2	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0 .005		
Learning Objective:	(01)(02)00368		
Terminal Objective:	21804(01)402; 21805 (01)401		
Knowledge/Ability:	218000 K5.01	Importance: 3.8 / 3.8	
Knowledge of the operational implications of the following concepts as they apply to ADS: ADS logic operation			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #22 Signature: [illegible signature] Date: 7/1/99

223001-02

23. While operating at rated power, a large break loss of coolant accident occurs inside the Drywell.

As the Drywell pressure and temperature began to rise, the operator noted that Torus pressure rose at the same rate and remained the same as Drywell pressure.

Which of the following identifies the possible explanation for this response?

a. This is the expected response due to the design of the Torus to Drywell Vacuum Relief system

b. This response may be due to the failure of the Torus to Drywell Vacuum Relief system valves

c. This is the expected response due to the design of the Reactor Building to Torus Vacuum Relief system

d. This response may be due to the failure of the Reactor Building to Torus Vacuum Relief system

Answer Key		
Choice		**Basis or Justification**
Correct:	B	If torus pressure equals or leads Drywell pressure during a LOCA, it could be due to a Torus to Drywell vacuum breaker stuck open and steam is bypassing the Torus water and being discharged directly into the Torus airspace
Distractors:	A	Plausible distractor; This not the design of the Torus to Drywell vacuum breakers
	C	Plausible distractor; This is not the design of the Reactor Building to torus Vacuum breakers
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	2	100

Source Documentation			
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank ✓ NMP1 SRO #47	
Reference(s):	6231-PGD-2621 828.0 .0032		
Learning Objective:	(01) 00436, 00437		
Terminal Objective:	22202 (01) 507; 509		
Knowledge/Ability:	223001 K6.09 Primary Containment	Importance: 3.4 / 3.6	
Knowledge of the effect that a loss or malfunction of the following will have on the Primary containment System and auxiliaries: Drywell Vacuum Relief system			

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #23 Signature: [illegible] Date: 7/15/99

295001-01

24. Given the following conditions:

- The plant is at 100% power with all Recirc Pumps operating
- "C" Recirc Pump trips

Which of the following best describes the basis for the expected operator actions?

a. To satisfy Recirc MG Set Motor starting interlocks

b. Minimizes the possibility of a LOCA occurring on the affected loop

c. Minimizes reverse coolant flow through the affected loop

d. To prevent windmilling of the affected Recirc Pump

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Expected operator action for a single Recirc pump trip is: Confirm Open the discharge Bypass valve and close the discharge valve; this action idles the affected loop; this minimizes reverse coolant flow
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.9	3	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	ABN 3200.02; 6231-PGD-2621 801.0001; 828.0038	
Learning Objective:	(02)01410; (02)00224,00226	
Terminal Objective:	01801(02)001; 20204(02)404	
Knowledge/Ability:	295001 AA1.01	Importance: 3.5 / 3.6
Ability to operate and/or monitor the following as they apply to Partial loss of Recirc Flow: Recirc System		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #34 Signature: [illegible] Date: 7/1/99

295001-02

25. The plant was initially at 100% power when it is noticed that Turbine Generator Megawatt output is changing 6 MWe peak to peak

Which of the following describes the most likely cause of this event?

a. Extraction steam to 1C3 Feedwater heater has isolated

b. "E" Recirc Pump speed is varying between 46.6 HZ and 44.4 HZ

c. A control rod is drifting in

d. Condenser vacuum is degrading

Answer Key		
Choice		**Basis or Justification**
Correct:	B	With recirc speed varying, this affects core flow, which affects core power, and finally affects TG Mwe output
Distractors:	A	Plausible distractor; however, power does not oscillate, it will increase
	C	Plausible distractor; however, power does not oscillate, it will decrease
	D	Plausible distractor; however, power does not oscillate, it will decrease

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	1	3	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	ABN-3200.03; 6231-PGD-2621 801.001; 828.0040		
Learning Objective:	(02)01410; (02)00226		
Terminal Objective:	01801(02)001;20204(01)002		
Knowledge/Ability:	295001 AK3.02	Importance: 3.7 / 3.8	
Knowledge of the reasons for the following responses as they apply to partial loss of Recirc flow: Reactor power response			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #25 Signature: [illegible] Date: [illegible]

295002-01

26. Given the following conditions:

- The plant is at 100% power
- Annunciator OFF GAS PRES HI alarms (Panel 10F)
- Radwaste Control Room has just called and reported a loud bang was heard in the AOG building.

Which of the following best describes the plant response to this event?

a. SJAE Steam supply valve V-1-11 closes

b. SJAE Air Inlet Valves close

c. Air Extraction Valves V-7-1 through V-7-6 close

d. AOG system trips into ISOLATE

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Valves V-7-1 thru 6 auto close if Off Gas explosion sensors actuate at 20 PSIG or 220° F
Distractors:	A	Plausible distractor; V-1-11 is a MOV with no interlocks associated with it.
	B	Plausible distractor: there are no automatic features associated with valve V-7-17 thru 28; they are interlocked open with the associated Steam Jet steam supply valve
	D	Plausible distractor: AOG could trip into Isolate and bypass on blower pressure trips; AOG Isolates on hi-hi rad or switch placed into Isolate

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.6	3	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	ABN-2000-3200.25; 6231-PGD-2621 828.0002		
Learning Objective:	(01)00666		
Terminal Objective:	27104(01)001		
Knowledge/Ability:	295002 AK2.07	Importance: 3.1 / 3.1	
Knowledge of the interrelationships between loss of Main condenser vacuum and: OffGas			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #36 Signature: [illegible] Date: 7/15/99

295002-02

27. Given the following conditions:

- The plant is at 75% power
- SJAE STEAM HI/LOW PRES annunciator has just alarmed
- SJAE inlet steam pressure as read on 7F indicates 75 PSIG and dropping
- Condenser vacuum is 27.5" and degrading

Which one of the following diagnostic actions would **NOT** be successful in terminating this event and stabilizing the plant??

a. Swapping Pressure Controllers from V-1-37 to V-1-38

b. Verifying Steam Supply valve V-1-11 is full open

c. Placing all SJAE elements in service

d. Locally verifying air pressure supply is available to the pressure regulator

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Placing additional jets in service with degrading steam supply pressure will NOT help stabilize the plant and terminate the event
Distractors:	A	D&RP action for restoring SJAE
	B	D&RP action for restoring SJAE
	D	D&RP action for restoring SJAE

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	3	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	BR 2008; Procedure 325 ; 2000-OPS-3024.04; LER 98-004 (Oyster Creek)		
Learning Objective:	(01)00849		
Terminal Objective:	25504(01)401		
Knowledge/Ability:	295002 AK3.06	Importance: 2.9 / 2.9	
Knowledge of the reasons for the following responses as they apply to Loss of Main condenser Vacuum: Air ejector flow			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #95 Signature: [illegible signature] Date: [illegible]

295005-01

28. Which of the following best describes the reason why reactor power shall not exceed 40% until all Bypass Valves are closed??

a. If the turbine tripped, the scram could be from Reactor high pressure instead of Fast Closure of the Turbine Stop Valves

b. If the turbine tripped, the additional steam loading on the condenser could result in degrading condenser vacuum

c. If the turbine tripped, a drop in Main Steam Line pressure could causes the MSIV's to close

d. If a loss of Stator Water Cooling occurred, a runback signal would not be generated

Answer Key		
Choice		**Basis or Justification**
Correct:	A	By maintaining BYP Valves closed, first stage shell pressure is indicative of reactor power, therefore, the anticipatory scram signals are not inadvertently bypassed
Distractors:	B	Plausible distractor
	C	Plausible distractor; the MSIV's will always auto close if MSL pressure < 850 and mode switch in run; this isolation is based on failure of pressure regulation
	D	Plausible distractor; the generator runback signals are not bypassed

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.7	3	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Procedure 201.3; 2631-PGD-2621 832.003		
Learning Objective:	(01)01157		
Terminal Objective:	21202(01)303		
Knowledge/Ability:	295005 AK1.01	Importance: 4.0 / 4.1	
Knowledge of the operational implications of the following concepts as they apply to Main turbine generator trip: pressure effects on reactor power			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #28 Signature: [signature] Date: 5-1-99

295005-02

29. Given the following conditions:

- The plant is at 100% power
- A neutral ground overcurrent condition is detected on Auxiliary Transformer 1A and trips the AUX TRANS LOCKOUT relay on Panel 12R

Which of the following best describes the plant status due to this event?

a. Bus 1A dead bus transfers to Startup Transformer SA.
A manual reactor scram is required due to loss of multiple major plant pumps.

b. Bus 1A de-energizes.
EDG #1 fast starts and re-energizes Bus 1C.
A manual reactor scram is required due to loss of multiple major plant pumps.

c. A Turbine trip / reactor scram occurs.
Bus 1A is de-energized.
EDG #1 fast starts and re-energizes Bus 1C.
Bus 1B dead bus transfers to Startup Transformer SB.

d. A Turbine trip / reactor scram occurs.
Bus 1A transfers to Startup Bus SA.
Bus 1B transfer to Startup Bus SB

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Aux Trans Lockout is a turbine trip, and at 100% power, a reactor scram is generated. As long as no fault exists on Buses 1A or 1B, these buses will auto transfer to the Startups
Distractors:	A	Plausible distractor
	B	Plausible distractor
	C	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	3	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0016; .0025 2000-ABN-3200.10		
Learning Objective:	(01)1187		
Terminal Objective:	26201(01)002		
Knowledge/Ability:	295005 AK2.08	Importance: 3.2 / 3.3	
Knowledge of the interrelationships between Main turbine Generator Trip and : AC electrical distribution			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #29 Signature: [signature] Date: 7/7/99

295008-02

30. Assuming no operator actions are taken to control RPV water level after a scram, AND all equipment operates as designed, which of the following best describes the plant response?

a. If ROPS is in NORMAL, all operating Feedwater Pumps will trip

b. If ROPS is BYPASSED, all operating Feedwater Pumps will trip

c. RPV water level will continue to rise due to CRD and leakage past the MFRV

d. RPV water level will continue to drop due to steaming demand of SJAE and Bypass Valves

Answer Key		
Choice		**Basis or Justification**
Correct:	C	The response of feedwater will be to close the FRV's, but they leak by. The operating CRD pump will continue to inject water into the vessel
Distractors:	A	Plausible distractor: the Reactor Overfill Protection system (ROPS) auto bypasses when feedwater flow <2.23 mlbm/hr
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	3	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	ABN-3200-.1; ROPS RAP H-5-d, H-6-d; 6231-PGD-2621 801.0001		
Learning Objective:	(02)01408		
Terminal Objective:	01801(02)001		
Knowledge/Ability:	295008 AA1.01	Importance: 3.7 / 3.7	
Ability to operate and/or monitor the following as they apply to high reactor water level: Reactor Water Level control			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☐	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #30 Signature: [signature] Date: 7/17/99

295008-03

31. Given the following conditions:

- The plant was at 100% before a reactor scram occurred due to a loss of condenser vacuum
- "A" and "B" Reactor Feedwater Pumps are manually tripped.
- Direction is given by the GOS to control RPV water level low in the control band

Which of the following best describes why this direction would by given?

a. Exceeding 175" TAF will require the operator to trip "C" RFP

b. Isolation Condensers may be used for pressure control

c. The loss of condenser vacuum makes use of RWCU letdown unavailable

d. Decay heat could cause RPV water level to swell up above 175"

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Keeping RPV water level < 180" allows the Iso condensers to be used for pressure control
Distractors:	A	Plausible distractor; the operator is required by expected operator actions of the Scram Abnormal Procedure to trip all operating RFW pumps and CRD pumps at 170"
	C	Plausible distractor; Cleanup can still be letdown to the condenser, or even to Radwaste
	D	Plausible distractor, using same value as in the "A" distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	2	100

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000-ABN-3200.01; 6231-PGD-2621 801.0001	
Learning Objective:	(02)01410	
Terminal Objective:	01801(02)001	
Knowledge/Ability:	295008 AK2.06	Importance: 3.4 / 3.6
Knowledge of the interrelationships between HIGH REACTOR WATER LEVEL and: Isolation condensers		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #3 Signature: [signature] Date: 7/17/98

295018-01

32. Given the following conditions:

- The plant is at 50% power
- 1-2 RBCCW Pump is tagged out of service for maintenance
- 1-1 RBCCW Pump trips and cannot be restarted

Which of the following best describes the plant response AND the expected operator actions?

a. The cleanup system will isolate.
Recirc Pump motor temperatures will increase.
The operators are required to perform a normal plant shutdown, then trip all operating Recirc Pumps

b. The cleanup system will isolate.
Recirc Pump motor temperatures will increase.
The operators are required to scram the reactor and trip all operating Recirc Pumps

c. The cleanup system will continue operating.
Recirc Pump motor temperatures will increase.
The operators are required to perform a normal plant shutdown, then trip all operating Recirc Pumps

d. The cleanup system will continue operating.
Recirc Pump motor temperatures will increase.
The operators are required to scram the reactor and trip all operating Recirc Pumps

Answer Key		
Choice		**Basis or Justification**
Correct:	B	NRHX outlet temps will quickly rise, resulting in a hi temp isolation of cleanup. Per procedure, a loss of RBCCW to the Recirc Pumps requires a reactor scram and tripping of all recirc pumps within 1 minute
Distractors:	A	Plausible distractor, variation of correct answer
	C	Plausible distractor, variation of correct answer
	D	Plausible distractor, variation of correct answer

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.9	3	90

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓ 98-1 system Final	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	6231-PGD-2621 828.0035; 2000-ABN-3200.19	
Learning Objective:	(01)00062	
Terminal Objective:	20804(01)002	
Knowledge/Ability:	295018 AK2.02	Importance: 3.4/ 3.6
Knowledge of the inter-relationships between PARTIAL or COMPLETE LOSS of CCW and the following: Plant Equipment		

Prepared by: S.Sowell

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☐	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #37 Signature: [illegible signature] Date: 7/7/99

201001-01

33.

Prior to a reactor startup with plant cold, the CRO adjusts the CRD Drive Water Pressure Control Valve to maintain 250 PSID between drive water header pressure and reactor pressure.

How is this pressure differential maintained as reactor pressure increases during the ensuing startup? **(Assume the CRD system is operating as designed)**

A. The Pressure Control Valve automatically operates to maintain CRD system pressure above reactor pressure

B. The CRO will periodically adjust the Flow Control Valve to maintain CRD system pressure above reactor pressure

C. The operator needs to continuously adjust the Pressure Control Valve to maintain the required differential pressure

D. The Flow control valve automatically opens to maintain constant flow, therefore a constant differential pressure across the Pressure Control Valve

Answer Key		
Choice		**Basis or Justification**
Correct:	D	The Flow control valve automatically opens to maintain constant flow, therefore a constant differential pressure across the Pressure Control Valve
Distractors:	A	The PCV is a motor operated manually controlled valve; no automatic features are associated with this valve.
	B	The FCV is placed in AUTO for 45-55 gpm during reactor startup. Adjusting this valve will also require adjusting the Cooling water and Drive water PCV. Selected if the examinee does not fully understand CRD Hydraulic operation; stem states system is operating as designed
	C	Selected if the examinee does not fully understand CRD Hydraulic operation; stem states system is operating as designed. Though the procedure allow for manual adjusting of the PCV, this should not be required since the system is operating as designed, and is not a continuous operation as reactor pressure increases during the startup

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.6	2	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Procedure 302.1; 6231-PGD-2621 828.0 .0011		
Learning Objective:	(01) 00017		
Terminal Objective:	20101 904) 010		
Knowledge/Ability:	201001 A1.01 CRD	Importance: 3.1 / 2.9	
Ability to predict and/or monitor changes in parameters associated with operating the CRD system controls including: CRD Drive water header pressure			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #33 Signature: [illegible] Date: 7/17/99

201002-01

34. Given the following conditions:

- A reactor startup is in progress
- No control rod is selected for withdrawal
- Control Rod 24-17 is banked at position 12

One minute later
- ROD DRIFT annunciator H-6-a is in alarm
- Control Rod 24-17 is found at position 16 and drifting out

Which of the following describes the expected operator actions?

a. Apply an EMERG ROD IN signal using the NOTCH OVERRIDE switch, then turn off rod power when the rod is returned to position 12

b. Apply an EMERG ROD IN signal using the NOTCH OVERRIDE switch, insert the rod to position 00, then turn off rod power

c. Apply an insert signal to the rod and return the rod to position 12

d. Apply an insert signal to the rod and insert the rod to position 00

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Expected operator action per ABN-3200.06 Section 3.2.2
Distractors:	A	This is the expected action if a timer malfunction (rod block) is indicted. This is not indicated in the stem.
	B	This is an incorrect variation of expected operator actions if a timer malfunction was indicated
	D	This is an incorrect variation of the correct answer; the rod in not inserted to position 00; Position 00 is used only if the rod can not be positioned at its programmed spot, such as if collet finger failure has occurred.

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	2	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	ABN 200-ABN-3200.06 3.2.2	
Learning Objective:	(01)02013	
Terminal Objective:	21401(01)00321704(01)001,002	
Knowledge/Ability:	201002 Generic 2.4.49	Importance: 4.0 / 4.0
Ability to perform without reference to procedures those actions that require immediate operation of system components and controls		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 24 Signature: [illegible] Date: 7/ /99

201006-01

35. Which of the following describes the LOW POWER MODE OPERATION of the Rod Worth Minimizer?

A. It enforces the rod sequence to limit the rate of heat production to < 280 calories/gram of fuel during rod withdrawal when reactor power is < 10%

B. It enforces a rod insert sequence to ensure the correct rod pattern is established prior to initiating a reactor shutdown

C. It enforces rod withdrawal with a banked position withdrawal sequence to minimize clad damage if a control rod drop accident were to occur

D. It enforces rod movement to provide insert and withdraw blocks during a rod sequence exchange

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Definition of the purpose of the RWM per Tech Spec 3.2.B.2
Distractors:	A	Selected if examinee recognizes 280 cal/gram but fails to apply it to a CRDA versus normal rod withdrawal
	B	This feature is performed by the Power Mode Operation of the RWM at 35% power; selected if examinee does not understand Low Power Mode Operation < 10% power
	D	The RWM is not used during rod sequence Exchanges

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.6	2	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0 .0041; Procedure 409		
Learning Objective:	(01) 01310		
Terminal Objective:	21701(01)008		
Knowledge/Ability:	201006 K5.01 RWM	Importance: 3.3 / 3.7	
Knowledge of the operational implications of the following concepts as they apply to RWM: Minimize clad damage is a CRDA occurs			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #35 Signature: [illegible] Date: 7/5/99

202001-01

36. The plant is at 100% power.

Given the following conditions:

- Increased leakage to the DWEDT

and the following indications on "A" Reactor Recirc Pump

- Seal Cavity # 1 pressure constant @ 1050 PSIG
- Seal Cavity # 1 temperature slowing increasing
- Seal Cavity #2 Pressure @ 450 PSIG and slowly decreasing
- Seal cavity #2 temperature slowly increasing

Which of the following best describes the condition of "A" Reactor Recirc Pump?

a. # 2 seal is degrading, # 1 seal is operating as designed

b. # 2 seal has failed

c. # 1 seal is degrading, # 2 seal is operating as designed

d. # 1 seal has failed

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Conditions given are indicative of #2 Seal degrading.
Distractors:	B	Selected if examinee does not understand given conditions for #2 seal .Selected if examinee does not know how Recirc Pump seals are designed to operate.
	C	Inverse of correct answer; Selected if examinee does not know the positioning of the seals.
	D	Selected if examinee does not know how Recirc Pump seals are designed to operate.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	1	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0 .0038;		
Learning Objective:	(01)00215,05131;05132 (02)00215		
Terminal Objective:	20201 (01)006; 20204 (02)403		
Knowledge/Ability:	202001 A1.09 Recirculation system	Importance: 3.3 / 3.3	
Ability to predict and/or monitor changes in parameters associated with operating Recirculation controls including: Recirc Pump seal pressures			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: [illegible] Signature: [illegible] Date: 7/17/99

204000-01

37. Given the following conditions:

- Reactor at 100% power
- Cleanup System Pressure Control Valve PCV–ND11 set to maintain system pressure at 90 psig
- The air supply line to PCV–ND11 fails at the connection to the valve positioner.

Which of the following explanations correctly describes the expected system response?

A. The PCV fails open, and the RWCU system isolates on a Filter high flow isolation signal.

B. The PCV fails shut, diverting flow through the bypass orifice, with system pressure stabilizing at some new value less than 125 psig.

C. The PCV fails open, raising system pressure and lifting relief valves to the condenser, and, if necessary, to the Torus.

D. The PCV fails shut, and the RWCU system isolates on a Filter Low Flow isolation signal.

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Loss of air, PCV fails closed. Low flow condition in RWCU causes isolation
Distractors:	A	The PCV fails closed
	B	The PCV fails closed; however, the orifice is around the F/D's; Orifice has no pressure control capability
	C	The PCV fails closed; selected if examinee fails to recognize that RWCU isolates on high pressure before relief valves lift

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	ABN 3200.35		
Learning Objective:	(01)00252		
Terminal Objective:	20405 (01) 401		
Knowledge/Ability:	204000 K4.04 RWCU	Importance: 3.5 / 3.6	
Knowledge of RWCU design feature(s) and/or interlocks which provide for the following: System isolation upon receipt of isolation signal			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☐	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☐	☐
9.	Does the question have face validity?	☐	☐
10.	Are key points underlined or highlighted?	☐	☐
11.	Is each question separate and independent of all other questions?	☐	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☐	☐
13.	Are "none of the above" and "all of the above" avoided?	☐	☐
14.	Are there four answer options for each question?	☐	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #37 Signature: [illegible] Date: [illegible]

204000-02

38. While operating at power, annunciator D–1–d "RWCU HELB (I)" alarms.

Which of the following best describes the expected plant / operator response?

a. If annunciator D-2-d RWCU HELB (II) is in alarm, confirm automatic isolation of RWCU has occurred.

b. RWCU will isolate.

c. If RWCU is still in service, RWCU has failed to isolate as designed; immediately isolate RWCU by closing motor operated isolation valves.

d. Verify RWCU system temperature, RBCCW operation and supply temperature, and adjust as required to restore Cleanup Room temperature to less than 180°F.

Answer Key		
Choice		**Basis or Justification**
Correct:	a	HELB leak detection requires both Div 1 and Div 2 signals for RWCU automatic isolation to occur; therefore, if the Div 2 HELB is in alarm as well, the RWCU system will automatically isolate
Distractors:	b	HELB leak detection requires both Div 1 and Div 2 signals for RWCU automatic isolation to occur; this distractor only indicates one division of HELB is actuated
	c	HELB leak detection requires both Div 1 and Div 2 signals for RWCU automatic isolation to occur; this distractor implies a failure of RWCU to automatically isolate. Selected if examinee thinks the alarm means that an RWCU isolation for HELB has occurred.
	D	None of these operator actions will result in mitigating a potential system leak in the Pump Room. Selected if examinee does not understand what RWCU HELB means.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.9	2	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000 RAP-3024.01 Panel D; 6231-PGD-2621 828.0 .0039; GE Dwg 237E566 Sh1	
Learning Objective:	(01) 00252	
Terminal Objective:	20405 (01) 401	
Knowledge/Ability:	204000 K4.04 RWCU	Importance: 3.5 / 3.6
Knowledge of RWCU design feature(s) and/or interlocks that provide for the following: System Isolation upon receipt of isolation signals		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 32 Signature: [signature] Date: 7/7/99

204000-03

39. Following a scram from rated conditions, RWCU is being used to lower RPV water level.

Which of the following best describes a possible effect of raising letdown flow during this evolution?

a. The system may isolate due to high filter demin differential pressure

b. The system may isolate due to high pressure in the system downstream of HP PCV

b. The system may isolate due to high system temperature

d. The system may isolate due to low flow from diverting flow to the reject line

Answer Key		
Choice		**Basis or Justification**
Correct:	C	High temperature isolation of the RWCU will occur
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	100

Source Documentation			
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	✓ NMP1 SRO #27
Reference(s):	6231-PGD-2621 828.0 .0039		
Learning Objective:	(01) 00273; (01) 00275		
Terminal Objective:	20401 (01) 007		
Knowledge/Ability:	204000 K3.02 RWCU	Importance: 3.1	
Knowledge of the effect that a loss or malfunction of RWCU will have on the following: Reactor Water Level			

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: [illegible] Signature: [illegible] Date: [illegible]

205000-01

40. Given the following conditions:

- A loss of Shutdown Cooling has occurred
- Reactor water temperature is 180 ° F
- No Recirc Pumps are in operation

Which of the following best describes why reactor water level is raised > 185" TAF?

a. To increase the volume of cold water in the reactor vessel

b. To flood up to the Isolation Condenser Steam lines for Alternate Decay Heat Removal

c. To submerge the Steam Separators to enhance natural circulation in the core

d. To prevent cavitation of the Cleanup Pumps, which will now be used for decay heat removal

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Enhancing natural circulation assures adequate core cooling; though the heat sink is lost, this method assures that heat is being removed from the core and ensures that the water in the core does not boil away.
Distractors:	A	Selected if the examinee thinks that the addition of cold water is the definition of adequate core cooling in this configuration
	B	If the Isol cond are to be used, water level is lowered to 160"; alternate decay heat removal is flooding out thru the EMRV's into the torus. In this situation, the Isol cond valves are closed
	D	Though Cleanup pumps can be used for decay heat removal, the pumps tap of the B Recirc loop...cavitation of the cleanup pumps is not a concern

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.9	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	SDC 2000-OPS-3024.27 Section 4.1		
Learning Objective:	(01)(02)02602		
Terminal Objective:	20504(01)402		
Knowledge/Ability:	205000 K3.03	Importance: 3.8 / 3.9	
Knowledge of the effect a loss of SDC will have on: reactor temperatures			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 40 Signature: [signature] Date: 7/1/99

215003-01

41. A reactor startup is in progress following a forced outage.
During the shutdown, IRM 11 drawer voltage preamplifier was replaced.

Step 5.11 of Procedure 201.2 PLANT HEATUP TO HOT STANDBY requires IRM Range 6/7 overlap check to be performed.

This is required because:

a. it assures a proper overlap between the SRM's and the IRM 11 reading.

b. it verifies the correct correlation between Range 6 & 7 when the voltage pre-amplifier switches from the low frequency to the high frequency amplifier.

c. further calibration of the IRM's can not be performed when the range attenuation is selected for Range 7 or higher.

d. it assures that when the IRM's are positioned at various heights in the core, the correct reading is obtained and used for Rod Block/RPS instrumentation.

245000-01

42. Given the following conditions:

- The plant is at 55% power (363 MWe)
- At T = 0, STATOR COOLING TROUBLE annunciator alarmed due to high outlet temperature
- At T = 5 minutes, STATOR TEMP HI annunciator alarms, and generator Mwe starts decreasing

Which of the following best describes the required operator action(s) for the given conditions?

a. Verify Generator Amps decrease to less than 4800

b. Verify Generator output drops to less than 264 MWe and 3 Bypass Valves are open

c. Trip the turbine when < 264 MWe

d. Manually scram the reactor

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Expected operator action per ABN 3200.11
Distractors:	A	Distractor is written is to automatic response to a runback; observing the runback is not the expected operator action
	B	The Mwe and three bypass valves = 55% power; selected if examinee does not know expected operator actions per the ABN
	C	Mwe = 40%; plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000 ABN 3200.11 3.2		
Learning Objective:	(01)00648		
Terminal Objective:	25304(01)002		
Knowledge/Ability:	245000 K6.05	Importance: 2.9 / 2.9	
Knowledge of the effect that a loss or malfunction of the following will have on the Turbine Generator: Stator Water cooling			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: 4/2 Signature: [illegible] Date: 7/7/99

271000-01

43. Given the following conditions:

- Reactor power was increased from 55% to 65%
- Following the power increase, an increase in Off Gas activity was noted. (OFF GAS HI (10F-2-C) is in alarm)
- OFF GAS HI-HI (10F-1-C) annunciator has just alarmed
- Operator actions are being performed IAW Procedure 2000-ABN-3200.26 INCREASE IN MAIN STEAM LINE/OFFGAS ACTIVITY
- OFF GAS MODE SELECTOR SWITCH (10XF) is in NORMAL; Drain Valve handswitch for OG-AOV-016 and V-7-29 is in AUTO (10XF)

Which of the following best describes the response of AOG?

a. AOG will ISOLATE and BYPASS

b. AOG will ISOLATE after a 15 second time delay

c. If the OFF Gas HI-HI alarm does not clear after 15 minutes, AOG will ISOLATE

d. If the OFF Gas Hi and HI-HI alarms do not clear after 15 minutes, AOG will ISOLATE

Answer Key		
Choice		**Basis or Justification**
Correct:	C	AOG will isolate if the Hi-Hi Off Gas alarm does not clear after 15 minutes; AOV-001A(B) and V-7-31 close
Distractors:	A	Selected if the examinee does not understand the isolation logic on hi-hi activity levels in AOG
	B	Selected if the examinee does not know the time delay for allowing operator action IAW the ABN to reduce activity levels.
	D	Selected if the examinee associates the Hi and Hi-Hi alarms are requred for the isolation to occur

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.7	2	80

Source Documentation			
Source:	New Exam Item ✓	Old NRC Exam	
	Modified Bank Item	Other Exam Bank	
	OC Exam Bank	NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0 .0004; 2000-ABN-3200.26		
Learning Objective:	(02) 00718		
Terminal Objective:	30401 (01) 303		
Knowledge/Ability:	271000 A3.01 Off Gas	Importance: 3.3 / 3.3	
Ability to monitor automatic operations of Off Gas System including: Automatic system Isolations			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 43 Signature: [illegible] Date: 3/ /99

290003-02

44. Which of the following describes Control Room HVAC operation in Full Recirculation Mode?

a. This mode of operation is used to provide automatic temperature control of the Control room and Old Cable Spreading room

b. This mode of operation is used to remove smoke, fumes, or other undesirable odors from the Control room or Old Cable Spreading room

c. This mode of operation is used to minimize contamination getting into the Control Room

d. This mode of operation is used to minimize intrusion of toxic gases into the Control Room

Answer Key		
Choice		**Basis or Justification**
Correct:	D	This is the purpose of Full Recirc mode
Distractors:	A	This is the purpose of the normal mode of operation
	B	This is the purpose of the Purge mode of operation
	C	This is the purpose of Partial Recirc mode of operation

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Procedure 331.1	
Learning Objective:	(01)02324,02330	
Terminal Objective:	28801(01)001,004,403,404	
Knowledge/Ability:	290003 K5.01 CR HVAC	Importance: 3.2 / 3.5
Knowledge of the operational implications of the following concepts as they apply to CR HVACL Airborne contamination (rad, toxic gas, smoke) control		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: 4/4 Signature: [illegible signature] Date: 7/15/99

300000-01

45. A reactor scram from 100% has occurred due to a loss of offsite power.

Which of the following best describes the impact on plant operations if the Instrument Air compressors can NOT be restarted?

a. The Condensate Storage Tank will drain to the hotwell, affecting Isolation Condenser shell side makeup

b. The MFRV's lockup, requiring the Heater String outlet valves to be used for RPV water level control

c. The outboard MSIV's will fail closed, isolating the reactor from the Main Condenser, requiring EMRV's for pressure control

d. The CRD Flow Control Valve will fail closed, making CRD unable to maintain RPV water level > 61"

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Per ABN 3200.36, direction is given to isolate the CST from the hotwell if IA is lost for > 30 minutes during the Loss of offsite power. Hotwell level control valves fail open , draining the CST to the hotwell. In this scenario, the concern is for a loss of makeup to the Isolation Condensers, which are in service as the primary means of pressure control
Distractors:	B	The Feed Reg Valves due lock up on a loss of air, but with the loss of offsite power, 4160 V buses 1A and 1B de-energize on the Turbine trip, therefore, no power for the condensate or Feedwater Pumps
	C	The MSIV's have already failed closed due to the loss of RPS as a result of the loss of offsite power.
	D	The CRD FCV fails closed on every scram; this is expected after depressurizing the scram air header. CRD Pump B will be injecting into the vessel through the charging water header, as designed. The scram can not be physically reset due to the sustained loss of IA

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	3	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000-ABN-3200.36		
Learning Objective:	(01)00913; (01)(02)02533;(01)08910		
Terminal Objective:	34403 (02) 009;20705 (02)401		
Knowledge/Ability:	300000 K3.02 Instrument Air	Importance: 3.3 / 3.4	
Knowledge of the effect that a loss or malfunction of Instrument Air will have on the following: systems having pneumatic valves and Controls			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #45 Signature: [signature] Date: 7/1/99

295018-02

46. Given the following conditions:

- The plant is at 100% power
- Leakage into RBCCW from a Recirc Pump Seal Cooler has been confirmed to be greater than 6 gph.

Which of the following best describes the required actions?

a. Remove the suspected Recirc Pump from service; commence a plant shutdown

b. Remove the suspected Recirc Pump from service and isolate the loop; commence a plant shutdown

c. Remove the suspected Recirc Pump from service, then idle the loop

d. Scram the reactor, then trip all Recirc Pumps. Isolate the suspected Recirc Pump loop and 3 additional loops

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Oyster Creek is currently experiencing Recirc Pump Seal cooler leakage into the RBCCW System. Standing Order #54 is written to provide instructions for monitoring and responding if the seal cooler tube cracks. Per Section 4.1, 6 gph in-leakage is the threshold point for removing a suspected Recirc Pump from service
Distractors:	A	Plausible distractor: variation of correct answer. Selected if the examinee does not realize isolation of the loop is necessary to stop the leakage
	C	Plausible distractor. Selected if the examinee does not realize isolation of the loop is necessary to stop the leakage
	D	This distractor is the actions taken if CCW Temp Hi alarm on two or more Recirc Pumps occurs.

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Standing Order #54	
Learning Objective:	(01) (02) 00219; (01)09540	
Terminal Objective:	34303(02)019; 20201(01)006; 20204(02)403	
Knowledge/Ability:	295018 AA2.03	Importance: 3.2 / 3.5
Ability to determine and/or interpret the following as they apply to Partial or complete loss of CCW: Cause for partial or complete loss.		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #4 Signature: Date: 7 99

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Correlation between Range 6 & 7 is required because the voltage pre-amplifier switches from the low frequency to the high frequency amplifier.
Distractors:	A	Selected if confused about the purpose of the Range 6/7 correlation and the functional check of SRM/IRM overlap during shutdown; on a startup, SRM's should be fully withdrawn by Range 6/7
	C	The stem implies a calibration or check is required; selected if unsure of answer.
	D	IRM's are positioned full in or full out; any calibration of IRM is with the detector fully inserted; Selected if examinee confuses IRM and SRM detector operation during startup

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	100

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓ (used 98-01 Systems)	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Procedure 201.2; 6231-PGD-828.0 029C	
Learning Objective:	(02) NEW	
Terminal Objective:	21501 (01) 402	
Knowledge/Ability:	215003 K4.04 IRM	Importance: 2.9 / 2.9
Knowledge of IRM design feature(s) and/or interlocks which provide for the following: Varying system sensitivity levels using Range switches		

Prepared by: S. Sowell

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #41 Signature: [illegible] Date: [illegible]

295019-01

47. Given the following conditions:

- An Instrument Air header line break occurs on the discharge of the Air Receivers
- The break can NOT be isolated
- Instrument Air pressure as read on Panel 7F is dropping
- CONTROL AIR PRESSURE LO annunciator has just alarmed
- The direction is now given to manually scram the reactor.

Which of the following best describes the systems available for level / pressure control? (Assume Instrument Air header pressure continues to decrease)

a. Bypass Valves, LFRV "A" and/or "C", CRD

b. EMRV's, CRD, RWCU letdown

c. Bypass Valves, Feedwater on "A" or "C" block valve, RWCU letdown

d. EMRV's, Isolation Condensers, Feedwater using heater string outlet valve(s).

Answer Key		
Choice		**Basis or Justification**
Correct:	D	These systems do not require Instrument air to operate; though at some time, makeup to the Isol cond will be required using firewater or manual operation of makeup valves
Distractors:	A	The bypass valves are not available after the outboard MSIV's fail closed
	B	Cleanup letdown will not be available; the valve fails closed on a loss of air
	C	The bypass valves are not available after the outboard MSIV's fail closed Cleanup letdown will not be available; the valve fails closed on a loss of air

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.9	3	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	ABN-2000-3200.35; 6231-PGd-2621 828.0043	
Learning Objective:	(01)(02) 00916,08331,08346,08348,08686	
Terminal Objective:	27904(01)403	
Knowledge/Ability:	295019 AA1.02	Importance: 3.3 / 3.1
Ability to operate and/or monitor the following as they apply to loss of IA: IA system Valves		

Prepared by: Joseph M.Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #47 Signature: [signature] Date: 7/1/99

295021-01

48. The plant is in a cold shutdown with Shutdown Cooling in service.

A loss of RBCCW occurs (neither RBCCW pump can be started).

Given the following conditions:

- The MSIV's are closed; condenser vacuum is not established
- No Reactor Recirc Pumps are operating
- RPV coolant temperature is 155 °F and increasing at 1°/ minute
- RPV water level is 190" and slowly increasing

Which of the following methods can be used to restore cooling to the RPV?

A. Start at least one Reactor Recirculation Pump, allowing forced circulation to cool the RPV

B. Manually initiate the Isolation Condensers

C. Establish Torus Cooling, then open at least one EMRV to allow the RPV to steam to the Torus

D. Establish Torus Cooling, then raise RPV water level to establish a flow path through an open EMRV to the Torus

Answer Key		
Choice		**Basis or Justification**
Correct:	D	In order to maintain cold shutdown conditions (<212°), the SDC Diag & Restoration procedure 3024.27 provides procedure guidance for re-establishing SDC. RWCU is a perferred method (feed and bleed) , but is not given as a choice.(additionally, RBCCW is not available) This question tests the examinees knowledge of the intent and flowpath of Alternate SDC
Distractors:	A	Potential for loss of communication between the downcomer and fuel when starting a pump; no heat sink in service for removal of decay heat; additionally, no RBCCW cooling for the Recirc pumps
	B	RPV water level is too high for Isol condenser operation
	C	Torus cooling is correct; however, steaming the core to the Torus means RPV temperature> 212°F; no procedure guidance to do this. Additionally, it would be an unplanned, uncontrolled change in plant conditions, from Cold shutdown (<212°) to Shutdown (>212°) ; selected if examinee does not understand the cooling flowpath from the RPV to Torus via an open ERV.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	4	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000-OPS-3024.27; 6231-PGD-2621 828.0 .0045	
Learning Objective:	(02)02602	
Terminal Objective:	20504 (01)402	
Knowledge/Ability:	295021 AA1.04 Loss of SDC	Importance: 3.7 / 3.7
Ability to operate/monitor the following as they apply to Loss of shutdown Cooling: Alternate Heat removal Methods		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☐	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #28 Signature: [illegible] Date: 7/ /99

295022-01

49. Given the following conditions:

- A reactor startup is in progress.
- Reactor pressure is 600 PSIG; MSIV's are open; condenser vacuum is 26"
- "A" CRD PUMP has tripped

Which of the following best describes the expected operator actions?

a. If CRD HI TEMP annunciator alarms, manually scram the reactor

b. If a CRD Pump cannot be restarted and two Accumulator alarms have been received, manually scram the reactor

c. If ACCUMULATOR PRESS LO/LEVEL HI annunciator alarms, manually scram the reactor

d. If a CRD Pump cannot be restarted, manually scram the reactor

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Per RAP H-7-c expected operator actions are based on this annunciator and RPV pressure > than or < than 850 PSIG. For this scenario, if charging water pressure cannot be immediately restored (starting a CRD Pump) insert a manual scram for RPV pressure < 850PSIG
Distractors:	A	Plausible distractor
	B	Plausible distractor; this is the expected operator actions if RPV pressure > 850 PSIG
	C	Plausible distractor; this annunciator most likely will alarm, but the RAP for Low charging water pressure first tells the operator to attempt to re-start a CRD Pump

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	3	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	RAP H-7-c; 6231-PGD-2621 801.0001; 828.0011		
Learning Objective:	(02)01406; (01)00017		
Terminal Objective:	01801(02)001; 20104(01)005		
Knowledge/Ability:	295022 Generic 2.4.49	Importance: 4.0 / 4.0	
Ability to perform without reference to procedures those actions that require immediate operation of system components and controls			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #49 Signature: [signature] Date: 7/1/99

295028-01

50. Given the following conditions:

- At 12:00 AM, the Reactor scrammed due to a LOCA inside the Drywell
- At 12:30 AM, RPV Flooding due to loss of level instrumentation was entered
- At 1:00 AM, Torus pressure is 8 PSIG and ALL EMRV's are open; RPV pressure is steady at 75 PSIG
- At 1:30 AM, RPV pressure dropped to 60 PSIG, but was quickly raised to 85 PSIG and is now steady; Torus pressure is 8 PSIG

At what time will the conditions of Table FLD-3 be initially established?

a. 2:05 AM

b. 2:35 AM

c. 2:42 AM

d. 3:14 AM

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Adequate Core Cooling (the conditions of Table FLD-1) was lost and then re-established at 1:30 AM, + 65 minutes per Table FLD-3 = 2:35 AM
Distractors:	A	Plausible distractor: 65 minutes from the initial establishment of Table FLD-1 conditons
	C	Plausible distractor; based on 4 EMRV's open
	D	Plausible distractor; based on 4 EMRV's open

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	EMG-3200.08a; 6231-PGD-2621 845.0018		
Learning Objective:	(01)03099		
Terminal Objective:	20005(02)418		
Knowledge/Ability:	295028 EK3.02	Importance: 3.5 / 3.8	
Knowledge of the reasons for the following responses as they apply to HIGH DRYWELL TEMPERATURE: RPV Flooding			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #50 Signature: [illegible] Date: 7/7/99

295032-01

51. Given the following conditions:

- Reactor power is 100% when a leak occurs in Cleanup system
- CU ROOM HI TEMP annunciator is in alarm
- Cleanup can NOT be isolated
- Temperature in the CU Hx Room (IB06-13) is 200° F and increasing
- All other Cleanup area temperatures are < 180° F

Which of the following best describes the required actions?

a. Continue efforts to isolate Cleanup

b. Commence a reactor shutdown

c. Manually scram the reactor

d. Emergency Depressurization is required if IB06-13 exceeds 210° F

Answer Key		
Choice		**Basis or Justification**
Correct:	C	With a Primary system discharging into the SC, and temps approaching max safe, a manual scram is required per EMG 3200.11
Distractors:	A	Attempting all efforts to isolate a leak is good operating practice, however, the situation is degrading, requiring more drastic operator actions to be performed
	B	This distractor is selected if the examinee does not also address the leak in SC leg of the EOP's. This action would be taken if the high temp was due to fire or loss of ventilation(cooling) in that area
	D	This distractor leads the operator to believe Max Safe temperatures will be exceeded, however, ED is not required unless 2 areas exceed max safe

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.9	3	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000-EMG-3200.01A, 08A, 04A	
Learning Objective:	(01)03082	
Terminal Objective:	20005(01)429	
Knowledge/Ability:	295032 EA2.01	Importance: 3.8 / 3.8
Ability to determine and/or interpret the following as it applies to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE: area temperature		

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #51 Signature: [illegible] Date: 7/17/99

295033-01

52. Given the following conditions:

- The plant is at 100% power
- A steam leak from the "B" Isolation Condenser Condensate return line is in progress
- All attempts to isolate the leak have failed

- Rx Building pressure indicates +0.5" WC
- 75' Isol Cond Vlvs West is 220° F
- 95' Isol cond area North is 165° F
- 95' Isol Cond area radiation level > 1000mr/hr
- 95' Liquid Poison area radiation level > 1000mr/hr
- Rx Building Ventilation has isolated on high radiation
- 1-7 Sump high level alarm is annunciated

Which of the following best describes the required actions?

a. Commence a reactor shutdown

b. Manually scram the reactor

c. Emergency Depressurization is required

d. Implement Support Procedure 50 to re-establish Rx building Ventilation

Answer Key		
Choice		**Basis or Justification**
Correct:	B	This scenario style question requires the examinee to use SEC CONT EOP and determine what actions are required.
Distractors:	A	Selected if the examinee does not realize one of two things: 1) area temp is approaching max safe or 2) area rad level > max safe
	C	Selected if the examinee does not recognize that the two areas exceeding max safe rad levels are in the same area (Table 12, Area 2)
	D	Selected if the examinee does not understand the meaning and purpose of IF/THEN override conditions for implementation of SP 50

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.6	5	70

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	BAS –3200.02 User's guide; EMG-3200.11; 6231-PGD-2621 845.0011	
Learning Objective:	(01) 03082	
Terminal Objective:	20005 (01) 429,430	
Knowledge/Ability:	295033 EA2.01	Importance: 3.8 / 3.9
Ability to determine and/or interpret the following as they apply to HIGH SEC CONT AREA RAD LEVELS: Area Rad levels		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #52 Signature: [signature] Date: 7/17/99

600000-01

53. Given the following conditions:

- A plant transient is in progress
- The GOS directs "A" EMRV to be placed in "DISABLE"

Which of the following is NOT a reason for this action to be performed?

a. To prevent spurious operation of the EMRV

b. A fire in the Recirc MG Set room

c. The EMRV is open and reactor pressure is 920 PSIG and decreasing

d. To ensure the EMRV is available for pressure control, if needed

Answer Key		
Choice		**Basis or Justification**
Correct:	D	The switch in disable prevents any operation of the EMRV, therefore, this distractor is incorrect
Distractors:	A	Defeats any hot shorts in the solenoid or circuit, thus the EMRV should not spuriously open
	B	Per ABN 3200.29-1 EQUIPMENT AVAILABILITY MATRIX FOR FIRES, direction is given to place EMRV controls to disable if EMRV exhibit abnormal or spurious operation. This is caused be the fire shorting the 125VDC control circuit for the EMRV's and causing spurious operation. This is the purpose of the disable switch.
	C	Actions to be taken if the EMRV is open below its intended blowdown relief range, indicating the EMRV may be stuck open

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	3	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000-ABN-3200.29-1 (E1-59); 6231-PGD-2621 828.0005		
Learning Objective:	(02)00380		
Terminal Objective:	21804(01)401		
Knowledge/Ability:	600000 AA2.17	Importance: 3.1 / 3.6	
Ability to determine and interpret the following as they apply to PLANT FIRE ON SITE: Systems that may be affected by a fire			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #53 Signature: [signature] Date: 7/7/99

223001-03

54. Given the following conditions:

- Reactor power was at 50% when a small LOCA occurred.
- Drywell Pressure is 4.5 PSIG and slowly increasing
- Drywell Temperature is 180° F and slowly increasing
- RPV water level dropped as low as 100"

Which of the following best describes the status of Drywell Cooling?

a. RBCCW to the Drywell is isolated; all operating Drywell Cooler fans are tripped

b. RBCCW is still being supplied to the Drywell; all operating Drywell Cooler fans have tripped

c. RBCCW to the Drywell is isolated; Drywell Cooler fans are still operating

d. RBCCW is still being supplied to the Drywell; Drywell Cooler fans are still operating

Answer Key		
Choice		**Basis or Justification**
Correct:	D	RBCCW isolates on triple lo or high drywell and double lo; DW Cooler fans trip on high drywell and double lo
Distractors:	A	Plausible distractor; incorrect variation of the isolation signals
	B	Plausible distractor; incorrect variation of the isolation signals
	C	Plausible distractor; incorrect variation of the isolation signals

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	100

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	OPS-3024.09 Note 3.1.3; 6231-PGD-2621 828.0032	
Learning Objective:	(01)00416	
Terminal Objective:	22301(01) 502	
Knowledge/Ability:	223001 A4.12	Importance: 3.5 / 3.6
Ability to manually operate and/or monitor in the control room: Drywell Cooling		

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #54 Signature: [signature] Date: 7/17/99

223001-04

55. Which of the following best describes the affect of a loss of both Nitrogen Compressors during power operation?

a. Drywell oxygen concentration would increase

b. Inboard MSIV's could drift closed

c. Drywell pressure control is lost AND Drywell pressure will decrease

d. Nitrogen Makeup to the Drywell is lost

Answer Key		
Choice		Basis or Justification
Correct:	A	At N2 Low pressure, indicative of N2 compressor failure(s), N2 shiftd over to IA. Leaks in the system in the Drywell will result in introducing air into the Drywell, thus O2 concentration will increase
Distractors:	B	Plausible distractor; inboard MSIV's will now be supplied with IA
	C	Plausible distractor; valves used to control Drywell makeup and venting are solenoid operated valves
	D	Plausible distractor; makeup to the containment is from the N2 system outside, not the N2 compressor system

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.9	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0065		
Learning Objective:	(01)00937		
Terminal Objective:	28201(01)002		
Knowledge/Ability:	223001 K6.08	Importance: 3.3 / 3.4	
Knowledge of the effect that a loss of the following will have on Primary containment Sys and Aux: Containment Atmospheric control			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #55 Signature: [signature] Date: 7/17/99

241000-01

56. Given the following conditions:

- The plant is at 100% power with the EPR providing pressure control
- The MPR relay position indication is 8-10% below the EPR relay position indication

Which of the following describes the plant response if the EPR pressure setpoint fails high?

a. Reactor power will be higher because reactor pressure will be lower.

b. Reactor power will be lower because reactor pressure will be higher.

c. Reactor power will be higher because reactor pressure will be higher.

d. Reactor power will remain constant because reactor pressure remains constant

Answer Key		
Choice		**Basis or Justification**
Correct:	C	With the MPR set at 8-10% lower, steam header pressure will now be controlled by the MPR at a new higher pressure. For example, if the EPR is controlling at 1020, and its setpoint fails high, the MPR should now control reactor pressure at 1023-1025,.This small pressure increase will result in a void collapse and subsequent increase in reactor power
Distractors:	A	Variation of correct answer
	B	Variation of correct answer
	D	Variation of correct answer

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	:8	2	80

Source Documentation			
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓ 98-01 M/U quiz	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.8 .0051; 2000-ABN-3200.09		
Learning Objective:	(01) 2316,2312,2317,2318		
Terminal Objective:	24101 (01) 003		
Knowledge/Ability:	241000 K3.01 Turbine Pressure Regulation	Importance: 4.1 / 4.1	
Knowledge of the effect that a loss or malfunction of the Reactor/turbine Pressure Regulating System will have on the following: Reactor power			

Prepared by: S. Sowell

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #56 Signature: [signature] Date: 7/17/98

241000-02

57. Given the following conditions:

- A reactor startup is in progress; the Mode Switch is in STARTUP
- All IRM's are operable and on Range 10
- Reactor power is 10%
- Reactor pressure is 1020 PSIG on the EPR; the MPR is properly adjusted per operating procedures

Which of the following best describes the plant response if the Reactor pressure input (*steam line pressure detector*) to the EPR fails low?

(Assume No Operator actions are performed)

a. The MPR will now control reactor pressure

b. At 850 PSIG, the MSIV's will close

c. A Reactor high pressure scram will occur

d. At 600 PSIG, a reactor scram will occur.

Answer Key		
Choice		**Basis or Justification**
Correct:	C	The TCV's will go closed, sensing low steam header pressure, causing reactor pressure to increase to the high pressure scram setpoint
Distractors:	A	Plausible distractor; this would occur if the steam pressure detector failed high
	B	Plausible distractor; selected because all the conditions for a MSIV closure in startup are given in the stem, however, the pressure detector failed low versus high
	D	Plausible distractor;

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	3	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0026; 828.0051		
Learning Objective:	(01)2316;2312;2317;2318		
Terminal Objective:	24901(01)002		
Knowledge/Ability:	241000 K3.29	Importance: 2.9 / 3.1	
Knowledge of the effect that a loss of Turbine Pressure Regulating system will have on: NSSS (MSIV's)			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #57 Signature: [illegible] Date: 7/17/99

259002-01

58. Given the following conditions:

- Reactor power is 25% with the generator on line
- Feedwater flow is 1.65 X10^6 lbm/hr with A and C Feedwater pumps operating
- A Feedwater Level control malfunction causes feed water flow to increase to 2.4 x 10^6 lbm/hr
- Reactor Water level reaches 177" for 10 seconds

Which of the following best describes the plant response?

a. The Main Turbine trips,
The Reactor scrams due to the turbine trip,
All Feedwater Pumps trip

b. The Main Turbine trips,
The Reactor does not scram,
A and C Feedwater Pumps trip

c. The Main Turbine trips,
The Reactor does not scram,
A and C Feedwater Pumps do not trip

d. The Main Turbine does not trip,
The Reactor does not scram,
A and C Feedwater Pumps trip

Answer Key		
Choice		**Basis or Justification**
Correct:	C	This question tests the examinee's knowledge of turbine high water level trips and anticipatory RPS scram bypass < 40% power. The feed pumps do not automatically trip; they are procedure controlled to be stopped on increasing RPV water level
Distractors:	A	Variation of correct answer
	B	Variation of correct answer
	D	Variation of correct answer

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.6	2	70

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓ 98-01 System Final	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000-OPS-3024.14; 2000-ABN-3200.17; 6231-PGD-2621;6213-PGD-2621 828.0 .0055	
Learning Objective:	(01) 02041,42,46,47,48,49,52,53,54	
Terminal Objective:	25904 (01) 005;	
Knowledge/Ability:	259002 A2.02 Rx FWLC	Importance: 3.3 / 3.4
Ability to predict the impacts of the following on FWLC; and based upon those predictions, use procedures to correct, control, or mitigate the consequences of thoses abnormal conditions or operations; LOSS OF ANY NUMBER OF REACTOR FEEDWATER FLOW INPUTS.		

Prepared by: S. Sowell

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #58 Signature: [signature] Date: 7/17/99

261000-01

59. Given the following conditions:

- The plant is at 100% power
- Drywell pressure has slowly increased from 1.1 to 1.2 PSIG
- The GSS has decided to vent the Primary containment via SBGTS to maintain Drywell pressure below 1.3 PSIG
- Drywell Airborne Activity is increasing

Which of the following best describes the required actions in order to accomplish this task?

A. Manually start SGTS, shutdown RBHVAC, and vent the Primary Containment via Torus vent valves V-28-47 and V-28-18

B. Vent the Drywell to RBHVAC via Drywell Vent valves V-23-21 and V-23-22

C. Vent both the Drywell and the Torus via SBGTS

D. Implement Support Procedure 31

Answer Key		
Choice		**Basis or Justification**
Correct:	A	By procedure and good operating practices, SGTS should be used when venting the drywell during conditions where high airborne activity is present in the Drywell; using the torus provides additional scrubbing of the Drywell air, even further reducing activity levels in conjunction with the SGTS charcoal filters
Distractors:	B	Selected if examinee fails to recognize significance of increasing Drywell Airborne activity and unfiltered release to the environment
	C	Selected if examinee fails to understand that the Drywell and Torus are never vented at the same time; unapproved communication between the Drywell and torus
	D	EOP's are not entered of their own accord; selected if examinee does not recognize that 3.0 PSIG Drywell pressure is entry condition

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	2	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Procedure 312.11; 330; 6231-PGD-2621 828.0 .0042	
Learning Objective:	(01)00759	
Terminal Objective:	26101(01)003	
Knowledge/Ability:	261000 K1.02 SGTS	Importance: 3.2 / 3.4
Knowledge of the physical connections and/or cause-effect relationships between SGTS and the following: Drywell		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #59 Signature: [signature] Date: 7/17/99

295003-02

60. The plant was at 100% power when a Station Blackout occurred.

Given the following conditions:

- All control rods are full in.
- RPV pressure is 700 PSIG and decreasing
- RPV water level is +30" fuel zone indication and decreasing
- Drywell pressure is 14 PSIG and increasing
- Torus pressure is 12 PSIG and increasing
- Fire Protection is aligned in accordance with support Procedure 5

Which of the following best describes the required actions?

a. When RPV water level < 0", Emergency Depressurization is required

b. Initiate Drywell Spray

c. Based on current conditions in the Drywell, Emergency Depressurization is required

d. Lower RPV pressure as necessary to allow Firewater to inject

Answer Key		
Choice		**Basis or Justification**
Correct:	A	This scenario style question requires the examinee to determine the correct EOP action IAW EOP 3200.1A
Distractors:	B	The conditions for Drywell Spray have been met, however, no power is available to the Containment Spray Pumps
	C	14 PSIG in the Drywell at saturated conditions = 248°, well below 281 requirement
	D	No direction is given to lower RPV pressure intentionally to allow Fire water to inject

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0016		
Learning Objective:	(01)03055		
Terminal Objective:	20005(01)402		
Knowledge/Ability:	295003 AK1.06	Importance: 3.8 / 4.0	
Knowledge of the operational implication of the following concepts as they apply to Partial or complete loss of AC power: Station Blackout			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #60 Signature: [illegible] Date: 7/7/99

295003-03

61. Given the following conditions:

- A LOCA inside the Drywell concurrent with a loss of off-site power has occurred
- Only one (1) EDG has started and is supplying its respective bus

Which of the following combinations of operating equipment can be possible for the given conditions?

a. Containment Spray Pump 51A
ESW Pump 52A
Core Spray Main Pump 1A
Core Spray Booster Pump 3C

b. Containment Spray Pump 51B
ESW Pump 52D
Core Spray Main Pump 1D
Core Spray Booster Pump 3D

c. Containment Spray Pump 51B
ESW Pump 52A
Core Spray Main Pump 1A
Core Spray Booster Pump 3D

d. Containment Spray Pump 51C
ESW Pump 52D
Core Spray Main Pump 1B
Core Spray Booster Pump 3D

Answer Key		
Choice		**Basis or Justification**
Correct:	C	All powered from EDG #1 via Bus 1C and 480 VAC bus 1A2
Distractors:	A	CS Booster Pump 3C powered from EDG2,; all others EDG 1
	B	ESW Pump 52D powered from EDG 2; all others powered from EDG 1
	D	CS Booster Pump 3D powered from EDG 1; all others powered from EDG 2

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.8	4	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Procedure 341 Section 4.5.3; 6231-PGD-2621 828.0016; 845.0001	
Learning Objective:	(01)(02)03114	
Terminal Objective:	26201(01)008	
Knowledge/Ability:	295003 AK2.04	Importance: 3.4 / 3.5
Knowledge of the interrelations between partial or complete loss of AC power and the following: AC electrical loads		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #61 Signature: [illegible signature] Date: 7/17/99

295006-01

62. Procedure 203.4 PLANT COOLDOWN FOLLOWING RX SCRAM has been entered following a scram from 75% power.

Which of the following best describes the correct operating requirements for the Recirc Pumps during the cooldown?

a. If all operating Recirc Pumps have tripped, start at least one Recirc Pump for forced circulation through the core

b. Maintain total Recirc flow > 6.4×10^4 gpm and comply with Reactor Recirc Pump Speed limitations

c. Maintain total Recirc flow > 4.8×10^4 gpm and comply with Reactor Recirc Pump speed limitations

d. Reduce Recirc Pump speed to minimum of 11.5 hz on the Master Recirc Speed Controller (Panel 4F)

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Per Procedure 203.4 Section 5.4.4
Distractors:	A	Plausible distractor; ; If no recirc pumps are operating, Recirc pumps are not allowed to be restarted until the reactor has been depressurized to atmospheric pressure
	B	Plausible distractor; variation of correct answer with incorrect flow limitations
	D	Plausible distractor; This is minimum Recirc controller setpoint

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.9	3	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	203.4 Section 5.4.4;6231-PGD-2621 832.0006	
Learning Objective:	(01)(02)8713	
Terminal Objective:	20001(01)412	
Knowledge/Ability:	295006 AA1.04	Importance: 3.1 / 3.2
Ability to operate/monitor as they apply to SCRAM: Recirc system		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #22 Signature: [signature] Date: 7/17/99

295007-01

63. In which of the following conditions has a Safety Limit been exceeded?

a. Core flow is 4.8×10^4 gpm
RPV pressure is 825 PSIG
MCPR is determined to be 1.05

b. The reactor is in cold shutdown
SDC is in service; No Recirc Pumps are operating
RPV water level drops to 61" TAF

c. Core flow is 4.8×10^4 gpm
RPV pressure is 750 PSIG
Reactor power is 2.5%

d. A RPV pressure transient occurred
The reactor automatically shutdown on high pressure
A Safety Relief Valve lifted for 1 second, then closed

Answer Key		
Choice		**Basis or Justification**
Correct:	A	**Safety limits TS2.1 is not provided.** Per T.S. 2.1 Safety Limit Fuel cladding integrity, when core flow > 10% and pressure > 800, MCPR shall be > 1.09
Distractors:	B	Plausible distractor; in this case, water level < 56" (4'8"TAF) would violate a safety limit
	C	Plausible distractor; In this case, safety limits are not violated unless power exceeds 25%, not 2.5 %
	D	Plausible distractor: a safety lifting for 1 second then closing means pressure exceeded 1212 PSIG; by design, a safety opening is to prevent exceeding 1375 PSIG

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.7	4	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Tech Spec 2.1; 6231-PGD-2621 850.0090		
Learning Objective:	(01)(02)01658		
Terminal Objective:	29903(01)005		
Knowledge/Ability:	295007 AK2.02	Importance: 3.8 / 3.8	
Knowledge of the interrelations between High Reactor pressure and the following: Reactor power			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #63 Signature: [illegible signature] Date: 7/17/99

295010-01

64. Which of the following best describes what could be lost if the Primary Containment Pressure Limit were exceeded?

a. Ability to operate containment vent valves

b. Ability to monitor containment pressure

c. Ability to operate RPV head vents

d. Ability to monitor containment water level

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Per basis document page 13-29
Distractors:	B	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	2	100

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank ✓ NMP1 SRO #48
Reference(s):	2000 BAS-3200.02 EOP figures and Limits page 13-29; 6231-PGD-2621 845.0008	
Learning Objective:	(01)(02) 03000	
Terminal Objective:	20005(01)424	
Knowledge/Ability:	295010 AK3.01	Importance: 3.8 / 4.0
Knowledge of the reasons for the following responses as they apply to high Drywell pressure: Drywell Venting		

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #64 Signature: [signature] Date: 7/17/99

295013-01

65. Given the following conditions:

- A low power ATWS with MSIV isolation is in progress
- Reactor pressure is being maintained between 800 and 1000 PSIG using Isolation Condensers and EMRV "A".

Which of the following best describes the adverse effect of manually opening and closing ONLY EMRV "A" for pressure control?

a. Localized heating of the Torus

b. Failure of the EMRV blowdown piping vacuum breakers to operate

c. Over-pressurization of the Torus, which could lead to Containment failure

d. Violation of the EMRV solenoid EQ temperature rating

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Per EOP Users Guide RPV control –ATWS, an opening sequence (as described in support procedure 12) for EMRV operatrion distributes the heat load evenly around the Torus, and minimizes the effects of steam vent clearing (chugging) phenomenon
Distractors:	B	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	2	80

Source Documentation			
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank ✓NMP1 SRO #49	
Reference(s):	2000-BAS-3200.02 RPV Control –ATWS 1B-65; 6231-PGD-2621 845.0006		
Learning Objective:	(01)(02)03032		
Terminal Objective:	20005(02)406		
Knowledge/Ability:	295013 AA2.02 High Torus water Temp	Importance: 3.5	
Ability to determine and/or interpret the following as they apply to high Torus Water Temp			

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #65 Signature: [signature] Date: 7/17/99

295014-02

66. Given the following conditions:

- The plant is at 42% power on the 80% rod pattern line
- A loss of extraction steam to Feedwater Heater 1A3 occurs

Which of the following best describes the required actions?

a. Reduce Recirc Flow until minimum flow is reached

b. Insert Cram rods to exit the Exclusion Region

c. Secure Extraction Steam to any other operating high pressure feedwater heater

d. Manually scram the reactor

Answer Key		
Choice		**Basis or Justification**
Correct:	B	**This question will require use of Power Operation Map** The conditions given plot a point just on the exclusion area; loss of feed heating will resulting in a power increase, placing the plant into the Exclusion area. Inserting rods to exit the area is required.
Distractors:	A	Plausible distractor: recirc flow is already at minimum flow conditions
	C	Plausible distractor
	D	Plausible distractor; a scram is not required for these conditions

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000-ABN-3200.16; 202.1 Att 202.1-2; 6231-PGD-2621 832.0004	
Learning Objective:	(01)(02)02022	
Terminal Objective:	20001(01)501	
Knowledge/Ability:	295014 AA1.07	Importance: 4.0 / 4.1
Ability to operate and/or monitor the following as they apply to Inadvertent Reactivity Addition: cold water injection		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #66 Signature: [signature] Date: 7/17/99

295015-01

67. Given the following conditions:

- An ATWS is in progress; Reactor power is 10%
- All Scram Group solenoid lights are NOT illuminated
- Individual HCU red scram indicating lights are NOT illuminated
- SDV Vent and Drain Valves are open
- SCRAM CONTACTOR OPEN (G-1-c) is in alarm
- MSIV's are closed

Which of the following methods for scramming the control rods could be effective for the given conditions?

a. Operating sub-channel test switches

b. Opening the 100 AMP breakers

c. Venting the Scram Air Header

d. Resetting and then manually re-initiating a scram

Answer Key		
Choice		Basis or Justification
Correct:	C	The conditions given in the stem indicate RPS is de-energized, but the rods failed to insert. Of the distractors given, only venting the scram air header does not rely on RPS
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	80

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓ 98-01 Procedure Exam	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	EMG 3200.1A;6231-PGD-2621 828.0037;	
Learning Objective:	(01)03060	
Terminal Objective:	27905(02)401	
Knowledge/Ability:	295015 AK2.11	Importance: 3.5 / 3.7
Knowledge of the interrelations between incomplete scram and the following: Instrument Air		

Prepared by: S. Sowell

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #67 Signature: [signature] Date: 7/17/99

295015-02

68. Given the following conditions:

- A manual scram was inserted due to Main Generator electrical control problems
- Six (6) control rods did not fully insert; they are stuck at various positions between 48 and 24 and can NOT be moved
- Reactor Engineering has determined the reactor is shutdown even though boron has NOT been injected.
- The decision is made to cooldown the reactor and establish SDC.

Which of the following potential adverse affects could occur because of the cooldown?

a. RPV water level could drop low enough to isolate the MSIV's.

b. The depressurization could cause re-criticality to occur

c. SLC will need to be initiated, resulting in Cleanup isolation

d. Torus water temperature could exceed HCTL limitations

Answer Key		
Choice		**Basis or Justification**
Correct:	B	RPV depressurization and cooldown adds positive reactivity to the core due to decreasing moderator temperature, This could cause re-criticality to occur
Distractors:	A	Operations could lead to MSIV closure on low level, but this is not a cause for re-criticality.
	C	Plausible distractor; in this condition, SLC will not need to be injected, for there is no challenge to BIIT
	D	Plausible distractor; in this condition, there is no challenge to the Torus

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	2	100

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000-BAS-3200.02 Page 1B-67; 6231-PGD-2621 845.0005	
Learning Objective:	(01)00257	
Terminal Objective:	20005(02)404	
Knowledge/Ability:	295015 AK1.02	Importance: 3.9 / 4.1
Knowledge of the operational implications of the following concepts as they apply to Incomplete Scram: Cooldown effects on reactor power		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #68 Signature: [signature] Date: 7/11/99

295016-01

69. Given the following conditions:

- Reactor startup is in progress; reactor power is 10%
- The GSS orders a Control Room Evacuation due to a fire

Which of the following best describes the expected operator actions?

a. Reduce Recirculation flow to minimum;
Manually scram the reactor
Transfer house loads to the Startup transformers, then trip the turbine

b. Manually scram the reactor and confirm all rods inserted past 02;
Ensure one (1) Feedwater Pump is in service;
Ensure feedwater level control is set for post scram level;
Trip all operating Recirc Pumps, then trip the Turbine

c. Manually scram the reactor and start a second CRD pump;
Trip all operating Feedwater Pumps;
Trip all operating Recirc Pumps;
Transfer house loads to the Startup Transformers, then close the MSIV's

d. Manually scram the reactor and confirm all rods inserted past 02;
Trip all operating Recirc Pumps;
Close the MSIV's and trip all operating Feedwater pumps

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Expected operator action from ABN 30, Control Room Evacuation
Distractors:	A	Plausible distractor; variation of correct answer
	B	Plausible distractor; variation of correct answer
	C	Plausible distractor; variation of correct answer

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	2	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000 ABN 3200.30 3.2; 6231-PGD-2621 828.0064		
Learning Objective:	(01)00020; (02)09668		
Terminal Objective:	30805(02)401		
Knowledge/Ability:	295016 Generic 2.4.49	Importance: 4.0 / 4.0	
Ability to perform without reference to procedures those actions that require immediate operation of system components and controls			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #69 Signature: [signature] Date: 7/17/99

295023-01

70. Given the following conditions:

- Refueling activities are in progress
- A bundle from the Fuel Pool is being placed in the core
- All SRM's read 4 cpm

As the fuel bundle is being lowered into the core, SRM count rate starts increasing.

Which of the following is the expected operator action?

a. At 16 cpm, stop any fuel movement until directed by the GSS

b. At 32 cpm, return the bundle to the Fuel Pool

c. At 64 cpm, return the bundle to the Fuel Pool

d. At 128 cpm, return the bundle to the Fuel Pool

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Per ABN-3200.07, If refueling is in progress AND CR has increased by a factor of 8 (3 doublings), notify responsible supervisor on refuel floor and return fuel Assembly to its previous location
Distractors:	A	Plausible distractor
	C	Plausible distractor
	D	Plausible distactor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000 ABN 3200.07 3.1.2		
Learning Objective:	(02)01410; 01406		
Terminal Objective:	01801(02)001		
Knowledge/Ability:	295023 AA2.04	Importance: 3.4 / 4.1	
Ability to determine and/or interpret the following as they apply to Refueling Accidents: Occurrence of a Fuel Handling Accident			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #70 Signature: [signature] Date: 7/17/99

295023-02

71. During fuel movement over the Spent Fuel Pool, the BACKUP HOIST LIMIT light on the Interlock Status Display Module illuminates.

Which of the following best describes why that light would illuminate?

a. The Fuel Hoist is extended too far

b. The Fuel Hoist is overloaded (too much weight)

c. The Fuel Hoist is at its Maximum up limit

d. The Fuel Hoist is clear of the Spent Fuel Racks

Answer Key		
Choice		**Basis or Justification**
Correct:	C	This lamp lights if the NORMAL UP limit fails or is bypassed and the hoist is stopped by the Maximum Up limit.
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.8	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	205.012 Attachment 12; 6231-PGD-2621 812.003		
Learning Objective:	(01)01145		
Terminal Objective:	23401(01)307; 34103(02)029		
Knowledge/Ability:	295023 AK3.02	Importance: 3.4 / 3.8	
Knowledge of the reasons for the following responses as they apply to Refueling Accidents: Interlocks associated with Fuel Handling equipment			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #71 Signature: [signature] Date: 7/19/99

295024-01

72. Given the following conditions:

- A LOCA has occurred. All control rods are full in.
- Torus pressure is 25 PSIG; Torus water level is 150" and decreasing
- Torus water temperature is 108° and increasing
- RPV water level decreased to +30" TAF, and is now increasing
- RPV pressure is 200 PSIG and decreasing
- CHRMS reads 200 R/hr

All systems have responded as designed.

Which of the following best describes the required actions?

a. Stop injection from Core Spray, then manually open all EMRV's

b. Vent the Torus through Nitrogen Purge Valves V-23-15 and V-23-16

c. Initiate Drywell sprays

d. Emergency Depressurization is required

Answer Key		
Choice		**Basis or Justification**
Correct:	C	This scenario style questions requires the EOP's to answer.
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.7	3	70

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	6231-PGD-2621 845.0008; EMG 3200-02	
Learning Objective:	(02)03000	
Terminal Objective:	34501(02)207	
Knowledge/Ability:	295024 EK3.01	Importance: 3.6 / 4.0
Knowledge of the reasons for the following responses as they apply to High Drywell pressure: Drywell Spray Operation		

Prepared by Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 72 Signature: [signature] Date: 7/13/99

261000-02

73. Given the following conditions:

- EF 1-5 is OOS
- EF 1-7 is operating on the Turbine Building
- EF 1-6 is operating on the Reactor Building
- Reactor Building Vent Monitor Channel 1 alarms HIGH due to a faulty power supply

What is the expected response of the Plant Ventilation system?

A. SGTS automatically starts after a 2 minutes TD, EF 1-6 trips, EF 1-7 continues to operate

B. SGTS automatically starts after a 2 minute TD, EF 1-6 and 1-7 trip

C. SGTS instantaneously automatically starts, EF-1-6 trips, EF-1-7 continues to operate

D. SGTS instantaneously automatically starts , EF 1-6 and 1-7 trip

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Either Div 1 or Div 2 RB Vent Monitor indicating > 9 mr/hr initiates RBHVAC isolation and auto start of SGTS; there is no time delay associated with this protective trip
Distractors:	A	Selected if examinee associates the time delay to the RB Vent Monitor versus the Refuel floor Rad Monitor
	B	Selected if examinee incorrectly thinks that the EF 1-7 should also trip
	D	Selected if examinee incorrectly thinks that the EF 1-7 should also trip

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	100

Source Documentation			
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam ✓ OC SRO 1996 Q#94 Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0 .0042 Sec Cont/SGTS		
Learning Objective:	(01) 00762		
Terminal Objective:	26101(01)004		
Knowledge/Ability:	261000 K6.04 SGTS	Importance: 2.9 / 3.1	
Knowledge of the effect that a loss or malfunction of the following will have on SGTS: Process Radiation Monitoring			

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #73 Signature: [illegible] Date: 7/7/99

264000-01

74. Given the following conditions:

- Reactor power is at 1%; the mode switch is in STARTUP
- A reactor scram occurs due to a loss of Off-site power
- Both EDG's start and re-energize their respective buses

Which of the following systems will automatically restart?

a. Both CRD Pumps and Core spray Pumps A and B

b. Both SGTS systems and ESW Pumps A and B

c. Service Water Pumps and RBCCW Pumps

d. Drywell Cooler Fans and TBCCW Pumps

Answer Key		
Choice		Basis or Justification
Correct:	C	Per Tech Spec 3.1.1, DG Load Sequence timers, only CRD, Service Water and RBCCW pumps are designed to auto restart after a LOOP
Distractors:	A	Plausible distractor; variation of correct answer
	B	Plausible distractor; variation of correct answer
	D	Plausible distractor; variation of correct answer

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	1	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	341 4.5.1.; 4.5.2; 6231-PGD-2621 828.0013		
Learning Objective:	(01) 00814		
Terminal Objective:	26401 (01)004,406		
Knowledge/Ability:	264000 K4.05	Importance: 3.2 / 3.5	
Knowledge of EDG design features and/or interlocks which provide for the following: Load shedding and Sequencing			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #74 Signature: [signature] Date: 7/17/99

264000-02

75. Given the following conditions:

- The plant was at 75% power when a LOCA occurred
- Drywell pressure is 5 PSIG
- Breaker S1B failed to close
- EDG 2 DISABLED alarm is annunciated due to low lube oil pressure

Which of the following best describes the current status of the EDG's?

a. EDG 1 has Fast Started and is unloaded; EDG 2 is tripped

b. Both EDG 1 and EDG 2 have Fast Started and are running loaded.

c. EDG 1 has Idle Started; EDG 2 is tripped

d. EDG 1 has Idle started; EDG 2 has Fast Started and running loaded

Answer Key		
Choice		**Basis or Justification**
Correct:	D	EDG 1 has idle started on high drywell pressure; EDG 2 has Fast started on No voltage to Bus 1D...The low lube oil pressure engine fault is bypasses in Fast start
Distractors:	A	Plausible distractor; variation of correct answer
	B	Plausible distractor; variation of correct answer
	C	Plausible distractor; variation of correct answer

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.6	2	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000 ABN 3200.11 3.1.2; 6231-PGD-2621 828.0013		
Learning Objective:	(01) 00788,00789		
Terminal Objective:	26401(01)009		
Knowledge/Ability:	264000 K4.02	Importance: 4.0 / 4.2	
Knowledge of EDG design features and/or interlocks which provide for: EDG trips (EMERGENCY/LOCA)			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #75 Signature: [signature] Date: 7/7/99

290001-01

76. Which of the following conditions would violate Secondary Containment Integrity requirements?

a. One of the doors at the Reactor Building Southeast corner Elevation 23' is open; the other door is closed

b. Only one Standby Gas Treatment System (SGTS) is operable

c. Reactor Building Vent Exhaust Valve V-28-21 is open and determined to be inoperable

d. Reactor Building Pressure is being maintained at 0.27" water vacuum

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Per Tech spec 1.14 Sec Cont Integrity definition: a) at least one door at each access opening is closed; b)SGTS is operable; and c)all automatic SC isol valves are operable OR secured in the closed position
Distractors:	A	Plausible distractor: this meets the definition of Sec Cont Integrity
	B	Plausible distractor: this meets the definition of Sec Cont Integrity
	D	Plausible distractor: this value for building pressure is not part of TS definition nor 3.5 The negative building pressure is an operational practice to minimize the potential spread of radioactive material

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	2	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	201.1 att 5 SC Integrity Checkoff; 6231-PGD-2621 828.0042	
Learning Objective:	(01)02328	
Terminal Objective:	26101(01)401;	
Knowledge/Ability:	290001 K1.01	Importance: 3.3 / 3.5
Knowledge of the physical connections and/or cause-effect relationships between Sec Con and: Reactor Building Ventilation		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #7 Signature: [signature] Date: 7/17/99

295026-02

77. Which of the following correctly describes the basis for initiating boron injection *before* exceeding the Boron Injection Initiation Temperature (BIIT)?

a. Ensures that Torus temperature will not exceed 150° F during the blowdown phase if a LOCA were to occur

b. Ensures the reactor will be shutdown and in hot standby before the Torus reaches the heat capacity temperature limit

c. Ensures that Torus temperature will not be so high that it results in increasing Drywell pressure

d. Ensures the reactor will be shutdown and in hot standby conditions before the Torus reaches the heat capacity level limit

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Per EOP user's guide, page 1B-82
Distractors:	A	Selected if confused about the 120° limitation for torus water and expected after blowdown temperature maximum of 180°F
	C	Increasing torus water temperature has little to no effect on Torus pressure, assuming all steam from the open EMRV's is condensed as designed
	D	Selected if the examinee is confused about torus level limitations versus temperature limitations during an ATWS

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	2	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000-BAS-3200.02; 6231-PGD-2621 845.0019;.0005		
Learning Objective:	(01)02257,00378,00379,01022		
Terminal Objective:	20005(02)405;408		
Knowledge/Ability:	295026 EK3.04 Torus high Water temperature	Importance: 3.7/ 4.1	
Knowledge of the reasons for the following responses as they apply to Torus High water temperature: SLC injection			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☐	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #77 Signature: [illegible signature] Date: 7/7/99

295026-03

78. Given the following conditions:

- An ATWS is in progress
- RPV pressure is 900 PSIG with two (2) EMRV's manually opened
- Both Isolation Condensers are in service; the Main Condenser is unavailable
- Torus water level is 160"; Torus water temperature is 141° F and increasing
- Reactor power is 15%; SLC failed to initiate

Which of the following best describes the required actions?

a. When Torus water temperature reaches 160°, Emergency Depressurization is required

b. When Torus water temperature reaches 180°, Emergency Depressurization is required

c. When Torus water temperature reaches 160°, take action to reduce RPV pressure < 900 PSIG

d. When Torus water temperature reaches 180°, take action to reduce RPV pressure < 900 PSIG

Answer Key		
Choice		**Basis or Justification**
Correct:	D	This question tests examinees ability to read and apply Fig F HCTL curve during ATWS conditions.
Distractors:	A	Selected if examinee incorrectly determines ED is required per torus Water Temperature leg of Pri cont Control EOP
	B	Selected if examinee incorrectly determines ED is required per torus Water Temperature leg of Pri cont Control EOP
	C	Variation of correct answer; selected if examinee applies wrong torus water level curve to determine HCTL limit

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	4	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	EMG-3200.01B; 6231-PGD-2621 845.0019		
Learning Objective:	(01) 02257,00378,00379,01022		
Terminal Objective:	20005(01)439		
Knowledge/Ability:	295026 EK1.02	Importance: 3.5 / 3.8	
Knowledge of the operational implications of the following concepts as they apply to Torus high water temperature: Steam condensation			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 78 Signature: [illegible] Date: 7/15/99

295030-01

79. Given the following conditions:

- An ATWS is in progress
- Torus temperature has risen due to EMRV operation, but is now stable
- Torus water level is lowering for unknown reasons

Which of the following is the bases for the Torus level at which the Heat Capacity Temperature limit will be exceeded irrespective of Torus temperature?

a. EMRV Y-quenchers are uncovered

b. Lowest indicated value for Torus level

c. Lowest safety related indicated value for Torus level

d. Drywell Vent header ram's head openings are uncovered

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Below 110", the Drywell vent header downcomer openings are uncovered and the pressure suppression function of the PC becomes inoperable. If a LOCA where to occur, steam suppression would be bypassed.
Distractors:	A	Plausible distractor; The EMRV's are uncovered at 90", but the basis of HCTL is to be able to handle a LOCA, so with the EMRV's still covered, depressurization of the RPV is required (Note: this distractor has been modified from the NMP 1 exam)
	B	Plausible distractor
	C	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	2	80

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank ✓ NMP1 SRO #60
Reference(s):	2000-BAS-3200.02 PCC page 2-54; figures and limits page 13-21;	
Learning Objective:	(02) 03042	
Terminal Objective:	20005(01)407; 20005(02)406	
Knowledge/Ability:	295030 EK1.03 Low Torus Water level	Importance: 3.8 / 4.1
Knowledge of the operational implications of the following concepts as they apply to Low Torus Water level: Heat Capacity		

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #79 Signature: [signature] Date: 7/17/99

295030-03

80. Given the following conditions:

- A LOCA has occurred
- Two Core Spray Pumps are injecting
- Two Containment Spray Pumps are operating; total flow is 5,000 GPM
- Torus water temperature is 160° F
- Torus Pressure is 10 PSIG
- Torus Water level is 75"

Based on these conditions, which of the following is the Maximum Core Spray flow available?

a. 8,000 gpm

b. 9,000 gpm

c. 10,000 gpm

d. 11,000 gpm

Answer Key		
Choice		**Basis or Justification**
Correct:	C	**Requires Support Procedure 4 to answer.** Using Figure A, core Spray vortex Limit, at 75", max flow is 15,000 gpm; since the Cont Spray Pumps are drawing 5,000, Core Spray can only have 10,000
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Support Procedure 4 Figure A; 6231-PGD-2621 845.0003	
Learning Objective:	(01)03055	
Terminal Objective:	20005(01)405	
Knowledge/Ability:	295030 EA1.01	Importance: 3.6 / 3.8
Ability to operate and/or monitor the following as they apply to Low Suppression Pool Water level: ECCS systems(NPSH considerations)		

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 83 Signature: [signature] Date: 7/7/99

295031-01

81. Given the following conditions:

- A plant scram has occurred due to a loss of feedwater
- Core Spray is available
- RPV pressure is 750 PSIG
- RPV water level is approaching 0" TAF

Which of the following is the reason for lowering RPV pressure at this time?

a. to reject heat to the pool while still within design limits

b. to establish steam cooling flow path conditions

c. to cause a level swell to drop the fuel temperature

d. to maximize flow from injection systems

Answer Key		
Choice		**Basis or Justification**
Correct:	D	By lowering RPV pressure, injection from any operating HP system is maximized, and injection from low pressure sources (Core Spray) is increased with the intent of recovering RPV water level before reaching TAF and requiring an ED
Distractors:	A	Plausible distractor
	B	Plausible distractor
	C	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	2	100

Source Documentation			
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	 ✓ NMP1 SRO #62
Reference(s):	2000-BAS-3200.02 page 1A-28; 6231-PGD-2621 845.0003		
Learning Objective:	(01)03055		
Terminal Objective:	20005(01)402		
Knowledge/Ability:	295031 EK3.05 Reactor Low Water Level	Importance: 4.3	
Knowledge of the reasons for the following responses as they apply to Reactor Low Water Level: Emergency Depressurization			

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #81 Signature: [signature] Date: 7/15/99

295031-02

82. In accordance with EMG-3200.05 STEAM COOLING, Emergency Depressurization is required at –42" TAF RPV water level.

Which of the following best describes the basis for this action?

a. to reduce pressure for the low pressure injection systems

b. to minimize energy in the RPV prior to a loss of the Torus

c. to provide final cooling of the fuel since all other sources of adequate core cooling have failed

d. to provide adequate steam flow to maintain fuel clad temperature less than 1500° F

Answer Key		
Choice		**Basis or Justification**
Correct:	C	BAS 2000-3200.02 page 5-7 and 5-8; the opening of EMRV's draws steam up through the core, providing a significant drop in fuel temperature
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	2	90

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓ 98-1 Procedures Exam	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000 EMG-3200.05; 6231-PGD-2621 845.0015	
Learning Objective:	(02)03004	
Terminal Objective:	20005(01)413;438; 20005(02)417	
Knowledge/Ability:	295031 EA2.04	Importance: 4.6 / 4.8
Ability to determine and/or interrupt the following as it applies to REACTOR LOW WATER LEVEL: adequate core cooling		

Prepared by: S.Sowell

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #82 Signature: [signature] Date: 7/17/99

295031-03

83. RPV FLOODING – NO ATWS is in progress.

At the completion of the Minimum Core Flooding Interval, which of the following best describes where RPV water level is expected to be?

a. At a level above the Steam Separators

b. At the top of active fuel

c. At Minimum Steam Cooling Water Level

d. At Minimum Zero injection Water level

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Per EOP bases pages 8A-19 and 20
Distractors:	A	Plausible distractor; selected if the examinee relates natural circulation as the end point of core flooding
	C	Plausible distractor; this term is defined as –30"
	D	Plausible distractor; this term is defined as –42"

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	2	90

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000-BAS-3200.02; 6231-PGD-2621 845.0018	
Learning Objective:	(01)03099	
Terminal Objective:	20005(02)418	
Knowledge/Ability:	295031 EK3.02	Importance: 4.4 / 4.7
Knowledge of the reasons for the following responses as they apply to Reactor Low Water level: Core coverage		

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #83 Signature: [illegible] Date: 7/7/99

295031-04

84. Given the following conditions:

- The plant is at 100% power
- At 12:00 AM, a large break LOCA occurred in the Drywell
- At 12:30 AM, RPV Flooding- NO ATWS is entered

- At 1:00 AM, the conditions of Table FLD-1 have been met
- At 1:30 AM, the conditions of Table FLD-2 have been met

- At 2:10 AM, it is determined that the conditions of Table FLD-3 have been met.

Based on these conditions, which of the following times is the Maximum Core Uncovery Time Limit?

a. 5 minutes

b. 5 ½ minutes

c. 6 minutes

d. 7 minutes

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Time after scram until conditions of Table FLd-2 are met is 130 minutes
Distractors:	B	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.9	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	EMG 3200.08a; 6231-PGD-2621 845.0018		
Learning Objective:	(01)03099		
Terminal Objective:	20005(01)409		
Knowledge/Ability:	295031 EA2.01	Importance: 4.6 / 4.6	
Ability to determine and/interpret the following as they apply to Reactor Low Water Level: Reactor Water level			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: # 84 Signature: [signature] Date: 7/7/99

295037-02

85. Given the following conditions:

- A transient occurred which resulted in a failure to scram
- EMG 3200.01B RPV CONTROL – with ATWS has been entered

Which of the following actions for inserting rods could result in Reactor Building airborne activity levels increasing?

a. De-energizing the scram solenoids

b. Increasing CRD cooling water differential pressure

c. Operating individual scram test switches

d. Bypassing the RWM and manually inserting control rods

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Individually scramming rods from 6XR does not result in the SDV vent and drain valves to close. And the RBEDT vents to the Secondary containment
Distractors:	A	Plausible distractor: If successful, this will result in the SDV vent and drain valves to close
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.7	3	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Support Procedure 21 Section 3.5; 6231-PGD-2621 845.0005		
Learning Objective:	(01)02257		
Terminal Objective:	21205(01)403; 21205(01)406		
Knowledge/Ability:	295037 EK2.01	Importance: 4.2. / 4.3	
Knowledge of the interrelationships between Scram condition present and Power above APRM downscale or unknown and the following: RPS			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☐	☐
11.	Is each question separate and independent of all other questions?	☐	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☐	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #85 Signature: [signature] Date: 7/17/99

295037-03

86. An ATWS is in progress.

In accordance with the EOP, if any EMRV is cycling on high pressure, direction is given to manually open EMRV's until any Bypass Valve starts to close.

Which of the following best describes the reason for this direction?

a. To prevent directing steam away from the condenser and into the Torus

b. To provide adequate operating margin below the setpoints of "A" and "D" EMRV's

c. To ensure pressure reduction is within the design of the operating Isolation Condenser

d. To limit the number of EMRV lifts, thus reducing the chances of a stuck open EMRV occurring

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Per EOP basis page 1B-59
Distractors:	B	Like distractor "D", This is the reason for the pressure reduction if the MSIV's are CLOSED
	C	Plausible distractor
	D	Like distractor "B", This is the reason for the pressure reduction if the MSIV's are CLOSED

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.7	2	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000-BAS-3200.02; 6231-PGD-2621 845.0005		
Learning Objective:	(01) 02257		
Terminal Objective:	21205(02)404		
Knowledge/Ability:	295037 Generic 2.4.18	Importance: 2.7 / 3.6	
Knowledge of the specific bases of EOP steps			

Prepared by: Joseph M.Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #86 Signature: [signature] Date: 7/7/99

295038-01

87. The following statement exists in the Radioactivity Release Control EOP:

"IF...THE RELEASE IS FROM THE TURBINE BUILDING
THEN...OPERATE AVAILABLE TURBINE BLDG VENTILATION PER SUPPORT PROC 51"

Which of the following best describes the basis for keeping Turbine Building Ventilation in operation while executing Radioactivity Release Control?

a. Maintains Turbine Building pressure above Reactor Building pressure

b. Prevents a reactor scram due to high temperature in the Turbine Building Steam Tunnel

c. Prevents having an unmonitored ground release from the Turbine Building

d. Ensures adequate dilution of the gases discharged through the Main Stack

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Continued personnel access to the Turbine Bldg may be required. Since the TB is not an airtight structure, any radioactivity release inside the TB would not only limit personnel access, but would eventually lead to an unmonitored ground level release
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	2	100

Source Documentation			
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	✓ NMP1 SRO #65
Reference(s):	2000-BAS-3200.02 page 12-3; 6231-PGD-2621 845.0030		
Learning Objective:	(02)03027		
Terminal Objective:	20005(01)432		
Knowledge/Ability:	295038 EK2.03 High Offsite Release Rate	Importance: 3.8	
Knowledge of the interrelations between HIGH OFFSITE RELEASE RATE and the following: Plant Ventilation Systems			

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #7 Signature: [signature] Date: 7/ /99

500000-01

88. Given the following conditions:

- Torus pressure is 32 PSIG and increasing
- Torus level is 461"
- Hydrogen Concentration is 2%
- RPV pressure is 60 PSIG
- CHRRMS read 200 R/hr
- All control rods are fully inserted

Which of the following best describes the required actions to control containment pressure?

a. Vent the Drywell through V-23-21 and V-23-22

b. Vent the Drywell through V-27-3 and V-27-4

c. Vent the Torus through V-28-17

d. Vent the Drywell through V-27-1 and V-27-2

Answer Key		
Choice		**Basis or Justification**
Correct:	B	This scenario style question will require the EOP's to answer
Distractors:	A	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
3	.8	3	80

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓ 98-1 Procedure Exam	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000 EMG 3200.02; 6231-PGD-2621 845.0008, .0010	
Learning Objective:	(02)03000	
Terminal Objective:	22505(01)502; 20005(01)435	
Knowledge/Ability:	500000 EK3.07	Importance: 3.1 / 3.7

Knowledge of the reasons for the following responses as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS: Operation of Drywell Vents

Prepared by: S. Sowell

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #88 Signature: [signature] Date: 7/17/99

500000-02

89. Which of the following best describes the required vent path used to maintain the Torus pressure below the Primary Containment Pressure Limit curve during conditions of high hydrogen concentrations in the Containment and Containment water level below the vents?

a. The Drywell hardened pipe vent

b. The Torus hardened pipe vent

c. The Standby Gas Treatment system

d. The Reactor Building Exhaust Ventilation system

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Because of the concern of overpressurizing SGTS, the Drywell is vented to the Reactor building and EF1-5 is used for venting the Containment as quickly as possible to reduce Hydrogen
Distractors:	A	Plausible distractor; the hardened vent is NOT to be used if Hydrogen is present in Containment
	B	Plausible distractor; the hardened vent is NOT to be used if Hydrogen is present in Containment
	C	Plausible distractor: SGTS duct work and filters can not handle the flow from the Containment

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.7	2	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Primary Containment EMG 3200.02; 6231-PGD-2621 845.0008;.0010		
Learning Objective:	(02)03000; (02)01300		
Terminal Objective:	20005 (01)424 34501(02)412		
Knowledge/Ability:	500000 EK1.01	Importance: 3.3/3.9	
Knowledge of the operational implications of the following concepts as they apply to High Containment H2 concentrations; containment Integrity			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #89 Signature: [illegible] Date: 7/5/99

201003-01

90. Given the following conditions:

- Reactor power is being increased using control rods.
- The selected control rod has been inadvertently withdrawn two notches past its intended position.
- The mis-positioned control rod is still selected

Which of the following describes the required actions?

a. Insert the control rod to its intended position

b. Notify the GSS and core engineering

c. Insert an Administrative Rod Block

d. If a Rod Block condition does not exist, continue power increase in accordance with the Control Rod Withdrawal Sequence

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Per GOP 201.3, the procedure states the definition of a mis-positioned rod and the required actions. This question tests the examinee's knowledge of what a mis-positioned rod is.
Distractors:	A	Allowed if the rod is mis-positioned (double notch) by one notch position; this question asks about a rod that is mis-positioned by two notches
	C	Administrative rod block is generally inserted for special conditions, for example, APRM/LPRM Bypass configuration per S.O. #21 (plausible distractor)
	D	Selected if examinee not aware of administrative definition of mis-positioned control rod

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.8	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Procedure 201.3 Section 5.4;6231-PGD-2621 832.0003		
Learning Objective:	(01)00726; (01)0018		
Terminal Objective:	20001 (02) 03; 20001 (02) 408;21701(01)004		
Knowledge/Ability:	201003 K5.04 CRDM	Importance: 3.1 / 3.4	
Knowledge of the operational implications of the following concepts as they apply to CRDM: Rod Sequence patterns			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☐	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #90 Signature: [signature] Date: 7/18/99

201003-02

91. Given the following conditions:

- During a plant startup, control Rod 10-19 drifts out
- The drifting control rod is inserted and isolated

Which of the following describes the possible cause if this control rod were to drift out after it has been isolated?

a. Stuck collet fingers

b. Leaking directional control valve

c. Leaking scram outlet valve

d. Stuck open ball check valve

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Mechanical failure of collet fingers
Distractors:	B	The HCU is isolated; therefore DCV's are isolated from the control rod.
	C	A leaking scram valve results in rod insertion, not withdrawal
	D	A stuck ball check valve results in rod insertion, not withdrawal

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	100

Source Documentation		
Source:	New Exam Item Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank ✓ NMP1 SRO #37
Reference(s):	6231-PGD-2621 828.0 .0011,.0036	
Learning Objective:	(01) 0078, 0079; (01)(02)02013	
Terminal Objective:	21704(01)002	
Knowledge/Ability:	201003 K4.07 CRDM	Importance: 3.2 / 3.2
Knowledge of CRDM design feature(s)/interlocks which provide for the following: Maintaining the Control rod at a given position		

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☐	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #91 Signature: [signature] Date: 7/18/99

233000-01

92. Given the following conditions:

- POOL LEVEL /TEMP HI annunciator is in alarm (G-4-a)
- Operator actions in accordance with Fuel Pool Cooling System Diagnostic and Restoration Procedures are being taken

Which of the following reasons describes why the Spent Fuel Pool temperature must be maintained less than 125° F?

a. Structural thermal gradient limits between the Spent Fuel Pool floor and the Shutdown Cooling Room

b. Evaporation of the Spent Fuel Pool, resulting in increased radiation levels

c. Inadvertent criticality occurring in the Spent Fuel Pool

d. Spent fuel Pool water level rising over the weir walls and flooding ventilation ducts

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Design basis for Fuel Pool Cooling temperature limitations
Distractors:	B	Plausible distractor
	C	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.9	2	90

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	2000-OPS-3024.16; 6231-PDG-2621 828.0 .0020		
Learning Objective:	(01) 07349		
Terminal Objective:	23101 (01) 519		
Knowledge/Ability:	233000 K3.01 Fuel Pool Cooling & Cleanup	Importance: 3.2 / 3.4	
Knowledge of the effect that a loss or malfunction of Fuel Pool cooling and cleanup will have on the following: Fuel Pool Temperature			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #72 Signature: [illegible signature] Date: 7/19/99

239001-01

93. Select the plant condition that will automatically close the MSIV's.

a. A loss of feedwater from 30% power causes a reactor scram to occur; RPV water level decreases to 96" TAF and is steady

b. The Main Generator is being synchronized to the grid in accordance with 201.3; Turbine pressure regulation causes additional Bypass Valves to open, Reactor pressure is < 850 PSIG and decreasing

c. A reactor startup is in progress in accordance with Procedure 201.2; Reactor pressure >850 PSIG and an IRM is selected to Range 10

d. The plant has just scrammed from 100% power; the mode switch is in Shutdown, reactor pressure < 850 PSIG and decreasing.

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Synchronizing the Turbine to the grid is performed IAW GOP 201.3; this implies that the mode switch is in RUN; MSL pressure < 850 PSIG with the mode switch in RUN results in a MSIV closure.
Distractors:	A	RPV water level isolation is Lo Lo (90"); selected if unsure of MSIV low water level isolation setpoint
	C	Selected if confused about pressure limitations and range 10 (value < 850 PSIG) for MCPR. This distractor as written is expected plant conditions when on Range 10 and in Startup
	D	Though pressure < 850 PSIG, with the mode switch in Shutdown, the MSIV isolation is bypassed

Psychometrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.8	2	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	6231-PGD-2621 828.0 .0026; 6231-PGD-2621 823.0 .0003		
Learning Objective:	(01) 00520; (02) 09892		
Terminal Objective:	34404 (02) 009		
Knowledge/Ability:	239001 K4.01 Main & Reheat Steam	Importance:	3.8 / 3.8
Knowledge of Main and Reheat steam system design feature(s) and/or interlocks which provide for the following: Automatic isolation of Steam lines			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #93 Signature: [signature] Date: 7/15/99

G2.3.11-01

94. Turbine Building Sump 1-5 RAD HI / LEVEL HI/ TROUBLE annunciator has just alarmed.

Which of the following best describes the required actions?

a. If the sump has been aligned overboard AND the Radiation Monitor indicates HIGH, confirm the sump pump(s) are tripped

b. If the sump has been aligned to the High conductivity tank AND the Radiation Monitor indicates HIGH, confirm the sump pump(s) are tripped

c. If the sump has a high water level, confirm the pump controls are in AUTO and at least one of the pumps is operating, then check the area for the source of leakage into the sump

d. If the sump has a high water level AND shows indication of an oily sheen, the sump can NOT be pumped

Answer Key		
Choice		**Basis or Justification**
Correct:	A	Per RAP P-5-f and ABN 27, the sump pumps auto shutoff if a high rad condition is detected while the sump is aligned overboard
Distractors:	B	Plausible distractor; variation of correct answer. The pumps do not shut of on high rad if the sump is aligned to the High conductivity tank
	C	Plausible distractor; per procedure, the controls for this sump are in OFF to prevent inadvertent discharge overboard
	D	Plausible distractor; if an oily sheen if on the water, the sump can not be pumped overboard,; it must be pumped to the high conductivity tank

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.7	3	70

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	ABN-3200-27; 351.1 Section 16; 6231-PGD-2621 828.0015		
Learning Objective:	(01)1412		
Terminal Objective:	29101(01)402		
Knowledge/Ability:	Generic 2.3.11	Importance: 2.7 / 3.2	
Ability to control radiation releases			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #74 Signature: [signature] Date: 7/18/99

G2-4-18-01

95. Which of the following EOP curves allows actions *irrespective of adequate core cooling* to ensure it is not violated?

a. Primary Containment Pressure Limit (PCPL)

b. Containment Spray Initiation Limit (CSIL)

c. Maximum Primary Containment Water Level Limit (MPCWLL)

d. Pressure Suppression Pressure (PSP)

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Per EMG 3200.10 containment flooding, If Primary containment water level and torus pressure cannot be maintained below MPCWLL, then terminate outside injection sources irregardless of adequate core cooling
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.7	3	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	EMG 3200.10; 2000-BAS-3200.02; 6231-PGD-2621 845.0020		
Learning Objective:	(01)03020		
Terminal Objective:	20005(01)404		
Knowledge/Ability:	Generic 2-4-18	Importance: 2.7 / 3.6	
Knowledge of the specific bases for EOP steps			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #95 Signature: [signature] Date: 7/13/99

G2.4.18-02

96. Which of the following best describes the basis for 60 PSIG above Torus pressure as stated in EMG-3200.8a "RPV FLOODING – NO ATWS" ?

(*Assume all EMRV's are open*)

a. Adequate core cooling is NOT assured *and* injection rate must be increased if RPV pressure remains 60 PSIG above Torus pressure

b. Insufficient natural circulation through the core exists to provide adequate core cooling if RPV pressure remains 60 PSIG above Torus pressure,

c. Adequate core cooling is assured if RPV pressure is less than 60 PSIG above Torus pressure

d. Steam flow through the core does NOT provide adequate core cooling if RPV pressure is less than 60 PSIG above Torus pressure

Answer Key		
Choice		**Basis or Justification**
Correct:	D	Adequate core cooling is assured as long as steam flow is removing heat from the core. This is met by maintaining >60 PSIG above Torus pressure; if pressure drops below 60 PSIG, it is assumed that not enough steam flow is present to cool the core.
Distractors:	A	This distractor is a correct answer with incorrect condition; > 60 PSIG, but the incorrect condition states that adequate core cooling is not assured
	B	This distractor states that natural circulation is insufficient; however, as the time maintaining > 60 minutes increases, injection rate may need to increase as the core becomes submerged. In this case, natural circulation would be sufficient to cool the core
	C	This distractor is the inverse of the correct answer.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	3	90

Source Documentation			
Source:	New Exam Item Modified Bank Item OC Exam Bank ✓ 98-1 Procedure Exam	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	EMG 3200.8a; 6231-PGD-2621 845.0018		
Learning Objective:	(01) 03099		
Terminal Objective:	2005(02)418		
Knowledge/Ability:	Generic 2.4.18	Importance: 2.7 / 3.6	
Knowledge of the specific bases for EOP's			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #96 Signature: [signature] Date: 7/13/99

G2.4.18-03

97. Given the following conditions:

- A design basis LOCA has occurred in the Drywell
- RPV water level is UNKNOWN due to reference leg flashing
- The requirements of Table FLD-1 can NOT be met.

- Eight (8) hours later, Containment Water level is 366" and RPV water level is still UNKNOWN
- It is determined that RPV venting is required

Which of the following is the basis for venting the RPV under these conditions?

a. provides a vent path for the Drywell to allow air and non-condensible gases to escape, thus preventing overpressurization of the Containment during containment flooding

b. prevents steam and non-condensible gases from building up pressure in the RPV, thus preventing reflooding of the core

c. to prevent the possibility of the line break being submerged, thus causing RPV pressure to increase above shutoff head of the injection systems

d. to help maintain the RPV depressurized in order to allow injection from fire Water and Condensate Transfer if Core Spray is unavailable.

Answer Key		
Choice		**Basis or Justification**
Correct:	B	Failure to vent the RPV will cause the buildup of gases to delay or prevent re-submergence of the core if the break is below TAF
Distractors:	A	Selected if the examinee does not know that Fig A MPCWLL is used to determine Containment flooding requirements for PC pressure. Additionally, PC pressure is controlled law EOP 3200.02 PC control
	C	Inverse of what is desired (the break being submerged), combined with a invalid operational concern
	D	Opening of the EMRV's in RPV Flooding to depressurize allows low pressure injection to occur. This systems inject into the RPV. If the RPV is not vented, pressure in the vessel could displace this injection water out of the break if the break is below TAF (suction line break)

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	1	4	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	2000-BAS-3200.02 Page 10-12; 6231-PGD-2621 845.0020	
Learning Objective:	(01)03013; (01)02089	
Terminal Objective:	23905(01) 401	
Knowledge/Ability:	Generic 2.4.18	Importance: 2.7 /3.6
Knowledge of the specific bases of the EOP's		

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #97 Signature: [signature] Date: 7/13/99

G2.4.25-01

98. A continuous Fire Watch is required IAW Procedure 120.2 FIRE SYSTEM IMPAIRMENT REPORTING AND FIRE WATCH INSTRUCTIONS.

Concerning Fire Watch requirements, which of the following is the responsibility of the Lead CRO?

a. The LCRO shall review and sign the Fire Watch Inspection Log once per shift

b. The LCRO shall tour the affected area at least once per shift

c. The LCRO shall contact the Fire Watch if the Continuous Fire Watch has not called the control room by 45 minutes after the hour

d. The LCRO shall designate when the continuous Fire Watch can be relieved.

Answer Key		
Choice		**Basis or Justification**
Correct:	C	The LCRO shall contact the Fire Watch if the continuous Fire Watch has not called the control room by 45 minutes after the hour
Distractors:	A	The GSS is responsible for reviewing and signing the Fire Watch Inspection Log once per shift.
	B	Per the stem, a continuous fire watch is required. Tours by the LCRO are not required for any fire watch assignment.
	D	The GSS is responsible for designating a Fire Watch relief, if necessary

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	1	2	100

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	Procedure 120.2; 6231-PGD-2621 830.0 .0005		
Learning Objective:	(2) 02444		
Terminal Objective:	29903(01)006		
Knowledge/Ability:	2.4.25	Importance: 2.9 / 3.4	
Knowledge of Fire Protection Procedures			

Prepared by: Joseph M. Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☐	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #93 Signature: [signature] Date: 7/15/99

G2.4.25-02

99. Which of the following conditions will require a continuous fire watch?

a. Battery Room A & B Halon 1301 System tank at 96% full charge weight and 91% full charge pressure

b. One thermal Fire Detection instrument for Emergency diesel Generator # 1 is inoperable; all other detectors are operable

c. Emergency Lighting Unit (ELU) # 40 has been declared inoperable.

d. The 4160 Volt Switchgear CO_2 roll down fire door has been accidentally damaged and may not be able to perform its designed function.

Answer Key		
Choice		**Basis or Justification**
Correct:	D	For this question, a copy of 120.2 TRM will be provided. It will require the examinee to know how to use the information provided in the Technical Requirements
Distractors:	A	Selected if examinee mis-interputs the requirements. As written, this distractor is desired conditions of the Halon system
	B	Selected if examinee mis-interputs the requirements. The technical requirements allow 1 detector to be oos.
	C	Selected if examinee mis-interputs the requirements. The technical requirements allow a 72 hour period to establish emergency lighting requirements.

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
1	.7	5	80

Source Documentation		
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank
Reference(s):	Technical Requirements (Att 101.2-3); 6231-PGD-2621	
Learning Objective:	(01) 00960	
Terminal Objective:	34101(02)411	
Knowledge/Ability:	2.4. 25	Importance: 2.9 / 3.4
Knowledge of Fire Protection Procedures		

Prepared by: Joseph M.Milligan

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #77 Signature: [signature] Date: 7/3/99

G2.4.41-01

100. An Unusual Event has been declared.

Prior to any required notification being performed, plant conditions changed and entry conditions for declaring an ALERT occurred, but immediately cleared, and conditions returned to the Unusual Event level.

Which of the following best describes the classification of this event?

a. An Unusual event will be reported.

b. An Unusual Event will be reported, with mention of the Alert Conditions being met but now cleared.

c. An Alert is to be declared and reported.

d. An Alert will be declared but an Unusual Event will be reported.

Answer Key		
Choice		**Basis or Justification**
Correct:	C	Per EPIP-OC-01, Section 5.2, the GSS/ED shall classify the emergency condition when an EAL has been confirmed to be attained or exceeded at the highest applicable emergency level.
Distractors:	A	Plausible distractor
	B	Plausible distractor
	D	Plausible distractor

Metrics			
Level of Knowledge	Difficulty	Time Allowance (minutes)	Discrimination
2	.7	2	80

Source Documentation			
Source:	New Exam Item ✓ Modified Bank Item OC Exam Bank	Old NRC Exam Other Exam Bank NRC Exam Bank	
Reference(s):	EPIP-IC-01 Section 5.2; 6231-PGD-2621 811.0001		
Learning Objective:	(01)08908		
Terminal Objective:	200005(02)401; 34403 (02)019		
Knowledge/Ability:	Generic 2.4.41	Importance:	2.3 / 4.1
Knowledge of EAL thresholds and classifications			

Prepared by: Michael Spenser

Item	Concern	Yes	No
1.	Does the concept being measured have a direct, important relationship to the ability to perform the job?	☑	☐
2.	Does the question match the testing objective and intent of the K/A?	☑	☐
3.	Is the question clear, concise, and easy to read? Could it be stated more simply and still provide the necessary information? Should it be reworded or split up into more than one question?	☑	☐
4.	Is each question stated positively, unless the intent is to test knowledge of what not to do?	☑	☐
5.	Does the question provide all necessary information, stipulations, and assumptions needed for a correct response? Is as much information as possible included in the stem?	☑	☐
6.	Is the question written at the highest appropriate level of knowledge or ability for the job position of the person being tested?	☑	☐
7.	Is the question free of unnecessary difficulty, trickiness, or irrelevancy?	☑	☐
8.	Is the question limited to one concept or topic, making it something other than a collection of true-false items?	☑	☐
9.	Does the question have face validity?	☑	☐
10.	Are key points underlined or highlighted?	☑	☐
11.	Is each question separate and independent of all other questions?	☑	☐
12.	Are the answer options homogeneous and highly plausible? Are common misconceptions used as distractors? Is the question free of trivial distractors?	☑	☐
13.	Are "none of the above" and "all of the above" avoided?	☑	☐
14.	Are there four answer options for each question?	☑	☐
15.	Are the answer options of the questions ordered sequentially?	☑	☐
16.	Is the question free of "specific determiners" (e.g., logical or grammatical inconsistencies, incorrect answers which are consistently different, verbal associations between the stem and the answer options)?	☑	☐

All no answers must be justified. Use additional paper if required.

Author: #100 Signature: [signature] Date: 7/18/99

Question: 008 (1.0 Point)

The reactor is at 60% power when the #11 Flow Converter input to the APRM's fails downscale. WHICH ONE (1) of the following will be generated in addition to a flow comparator rod block?

a. A flow biased half scram, and a flow biased rod withdrawal block on APRMs 11, 12, 13 and 14.

b. A flow biased half scram, and a flow biased rod withdrawal block on APRMs 15, 16, 17 and 18.

c. A flow biased rod withdrawal block on APRMs 11, 12, 13 and 14.

d. A flow biased rod withdrawal block on APRMs 15, 16, 17 and 18.

Answer: c

K/A: 215004 K4.07 / 3.7

Reference:

O1-OPS-001-215-1-02, EO-4.c, 7.e

Source: Q14498

Question: 027 (1.0 Point)

Following a scram from rated conditions the Reactor Water Cleanup system is being used to lower level. WHICH ONE (1) of the following describes the possible effect of raising reject flow during this evolution?

a. The system may isolate due to high filter demin. differential pressure from the flow change.

b. The system may isolate due to high pressure in the system downstream of HP PCV.

c. The system may isolate due to high system temperature from the flow change.

d. The system may isolate due to low flow from diverting flow to the reject line.

Answer: c

K/A: 204000 K3.02 / 3.1

Reference:

O1-OPS-001-204-1-01, EO-6.0

N1-OP-3

Source: new

Question: 037 (1.0 Point)

During plant startup control rod 10-19 drifts out, is inserted and isolated per N1-OP-5. WHICH ONE (1) of the following identifies the possible cause for rod 10-19 to begin to drift outward after it is isolated?

a. Stuck collet fingers.

b. Leaking directional control valve.

c. Leaking scram outlet valve.

d. Stuck open ball check valve.

Answer: a

K/A: 201003 K4.07 / 3.2

Reference:

O1-OPS-001-201-1-04, EO-3.0, 6.c

N1-OP-5

Source: new

Question: 047 (1.0 Point)

While operating at rated power a large break loss of coolant accident occurs inside the drywell. As the drywell pressure and temperature began to rise the operator noted that torus pressure rose at the same rate and remained the same as drywell pressure.

WHICH ONE (1) of the following identifies the possible explanation for this response ?

a. This is the expected response due to the design operation of the torus to drywell vacuum relief system.

b. This response may be due to the failure of the torus to drywell vacuum relief system valves .

c. This is the expected response due to the design operation of the reactor building to torus vacuum relief system.

d. This response may be due to the failure of the reactor building to torus vacuum relief system.

Answer: b

K/A: 295010 AK1.01 / 3.4

Reference: O1-OPS-001-223-1-02, EO-3.0, 5.0

Source: new

Question: 048 (1.0 Point)

Following a loss of coolant accident, Primary Containment pressure is being maintained less than the Primary Containment Pressure limit per N1-EOP-4. WHICH ONE (1) of the following would be lost if the Primary Containment pressure limit were exceeded?

a. **Ability to operate containment vent valves.**

b. **Ability to monitor containment pressure**

c. **Ability to operate RPV head vents.**

d. **Ability to monitor containment water level.**

Answer: a

K/A: 295010 AK3.01 / 4.0

Reference:

O1-OPS-006-344-1-04, EO-4.0

N1-EOP-04

N1-ODP-PRO-0302

Source: new

Question: 049 (1.0 Point)

Following a low power ATWS and MSIV isolation, reactor pressure is being maintained between 800 and 1000 psig with Emergency Condensers and ERV 111. Per the EOP bases, continuing to cycle ERV 111 open and closed for pressure control will result in WHICH ONE (1) of the following?

a. Localized heating of the torus

b. Excessive dynamic loading of ERV 111 Y-Quencher

c. Chugging at the discharge of ERV 111

d. Violation of the ERV solenoid EQ temperature rating

Answer: a

K/A: 295013 AA2.02 / 3.5

Reference:

N1-EOP-03

N1-ODP-OPS-0302

O1-OPS-001-218-1-01, EO-7.0

Source: new

Question: 060 (1.0 Point)

A failure to scram has occurred. Torus temperature has risen due to ERV operation but is now stable. Torus level is lowering for unknown reasons. WHICH ONE (1) of the following is the bases for the torus level at which the Heat Capacity Temperature limit will be exceeded irrespective of torus temperature?

a. Torus level LCO value.

b. Lowest indicated value for torus level.

c. Lowest safety related indicated value for torus level.

d. ERV tailpiece discharges become uncovered.

Answer: d

K/A: 295030 EK1.03 / 4.1

References:

O1-OPS-006-344-1-04, EO-4.0

N1-EOP-03

N1-ODP-OPS-0302

Source: new

Question: 062 (1.0 Point)

A plant scram has occurred due to a loss of feedwater. Core Spray is available. RPV level is approaching TAF. WHICH ONE (1) of the following identifies the reason for requiring an Emergency Depressurization at this time?

a. To reject heat to the pool while still within design limits.

b. To establish steam cooling flow path conditions.

c. To cause a level swell to drop the fuel temperature.

d. To maximize flow from injection systems.

Answer: d

K/A: 295031 EK3.05 / 4.3

References:

N1-ODP-OPS-0302

O1-OPS-006-344-1-02, EO-4.0

Source: new

Question: 065 (1.0 Point)

The following override statement exists in EOP-6:

"IF...TURBINE BUILDING VENTILATION IS SHUTDOWN, THEN...RESTART TURBINE BUILDING VENTILATION"

WHICH ONE (1) of the following is the basis for keeping the Turbine Building Ventilation System in operation while executing EOP-6 ?

a. Maintains Turbine Building pressure above Reactor Building Pressure.

b. Prevents a reactor scram due to high temperature in the MSL tunnel.

c. Prevents having an unmonitored ground release from the Turbine Building.

d. Ensures adequate dilution of the gases discharged through the stack.

Answer: c

K/A: 295038 EK2.03 / 3.8

References:

N1-EOP-06

N1-ODP-OPS-0302

O1-OPS-001-288-1-02, EO-9.0

Source: Q317

91. Oyster Creek is in the midst of a refueling outage. Which one of the following conditions would require an SRO specifically assigned to refueling to be present on the refuel bridge?

a. Partial core offload, fuel pool gates removed, removal of control rod 02-27 in progress from the refuel bridge.

b. Partial core offload, fuel pool gates removed, processing new fuel from inspection stand to fuel pool racks.

c. Full core offload, fuel pool gates removed, repositioning blade guides for control rod drive interference checks.

d. Partial core offload, fuel pool gates removed, withdrawing control rod 02-27 from control room in preparation for uncoupling.

94. Given the following conditions:

- EF 1-5 is OOS
- EF 1-7 is operating on the Turbine building
- EF 1-6 is operating on the Reactor building
- Reactor building Vent Monitor Channel I alarms High due to a faulty power supply

What is the expected response of the plant ventilation system?

a. SBGTS auto starts after a 2 minute T.D., EF 1-6 trips, EF 1-7 continues to operate.

b. SBGTS auto starts after a 2 minute T.D. EF 1-6 and 1-7 trip.

c. SBGTS instantaneously auto starts, EF 1-6 trips, EF 1-7 continues to operate.

d. SBGTS instantaneously auto starts EF 1-6 and EF 1-7 trip.

10. Given:

- A Recirc Pump is operating in Manual.
- The AUTO/MAN button is pushed.

What is the plant response?

A. A recirc flow transient would occur if a deviation exists between the Master Controller and Individual Controller setpoints.

B. The control system will not allow you to place the individual controller in manual unless the deviation has been balanced.

C. A bumpless transfer from manual to automatic control will occur since the control system automatically adjusts setpoint.

D. A scoop tube lockup occurs since going to manual without balancing the deviation would result in a recirc flow transient.

Answer: A

14. Given:

- The plant is at 50% power
- 1-2 RBCCW pump is tagged out for maintenance
- 1-1 RBCCW pump trips and cannot be restarted

What is the plant response and required operator action?

A. The cleanup system will isolate, recirc pump MG set temperatures will increase. The operators are required to scram the reactor and trip the recirc pumps.

B. The cleanup system will isolate, recirc pump motor temperatures will increase. The operators are required to scram the reactor and trip the recirc pumps.

C. The cleanup system will continue operating, recirc pump MG set temperatures will increase. The operators are required to scram the reactor and trip the recirc pumps.

D. The cleanup system will continue operating, recirc pump motor temperatures will increase. The operators are required to perform a normal plant shut down and trip the recirc pumps.

Answer: B

D. SRMs 21, 23 and 24 need to be calibrated/repaired.

Answer: A

2. An IRM Range 6/7 correlation is required:

A. because Range 6 and below are calibrated so SRM overlap is assured; while Range 7 and above are calibrated so APRM overlap is assured.

B. when switching from Range 6 to Range 7, different amplifiers and filters are used.

C. only when switching from Range 6 to Range 7 on a power increase.

D. to assure an MSIV closure on low pressure does not occur.

Answer: B

23. The plant is at 90% power with the EPR providing pressure control. The MPR setpoint is 935 psig. The EPR setpoint fails high. What would be the final reactor power and pressure condition as compared to the pre-transient condition? NEW

A. Reactor power would be the same since reactor pressure would be the same.

B. Reactor power would be greater since the reactor pressure would be greater.

C. Reactor power would be less since reactor pressure would be less.

D. Reactor power would be greater since reactor pressure would be less.

Answer: B

is ir

39. Given:

- Reactor power 28% with the generator on line
- Feed flow is 1.65 x 10^6 lbm/hr with A and C feed pumps running
- A feed water control malfunction causes feed flow to increase to 2.4 x 10^6 lbm/hr and causes RPV level to reach 177" for 10 seconds

What is the plant response?

A. The main turbine trips, the reactor scrams due to the turbine trip and all feed pumps trip

B. The main turbine trips, the reactor does not scram and A and C feed pumps trip

C. The main turbine trips, the reactor does not scram and A and C feed pumps do not trip

D. The main turbine does not trip, the reactor does not scram and A and C feed pumps trip

Answer: C

28. Given the following plant conditions:
- Control rods did not insert
- Reactor power 10%
- All scram solenoid lights are out
- Individual HCU red scram indicating lights are NOT lit
- SDV Vent & Drain valves are open
- Scram Contactor Open, G-1-c, annunciator in
- MSIVs are closed

Which of the following methods for scramming the control rods could be effective?

A. Operating subchannel test switches (6R & 7R)

B. Opening 100 amp breakers (6R & 7R)

C. Venting the scram air header (Reactor building 23')

D. Reseting and then reinitiating a scram manually (4F)

Answer: C

/99

Depressurization is required at -42" RPV water level. Select the basis for this action.

A. To reduce pressure for the low pressure injection systems.
B. To minimize energy in RPV prior to the loss of the Torus.
C. To provide final cooling of the fuel since all the sources of adequate core cooling are lost.
D. To provide adequate steam flow to maintain fuel clad temperature less than 1500 degrees F.

Answer: C

31. A transient has resulted in a primary system discharge to the containment. Evaluate the plant conditions listed below:

Torus Pressure is 32 psig and increasing
Torus Level is 461"
H_2 Concentration is 2%
RPV pressure is 60 psig
CHRRMS reads 200 R/Hr
All control rods fully inserted

Select the statement that describes the required operator action to control containment pressure in accordance with the SBEOP's:

A. Vent the Drywell through V-23-21, V-23-22.
B. Vent the Drywell through V-27-3, V-27-4.
C. Vent the Torus through V-28-17.
D. Vent the Drywell through V-27-1, V-27-2.

Answer: B

38. Which one of the following statements is CORRECT concerning the Minimum RPV Flooding pressure of 60 psig above Torus pressure referred to in EMG-3200.08A, "RPV Flooding - No ATWS"?

A. If 4 EMRVs are open and pressure remains above 60 psig, insufficient natural circulation to provide adequate core cooling exists and injection rate must be increased.

B. If there are no EMRVs open and pressure remains above 60 psig, sufficient natural circulation through the core exists to provide adequate core cooling.

C. Once RPV pressure decreases below 60 psig, adequate core cooling is assured.

D. Once RPV pressure decreases 60 psig, steam flow through the core does not provide adequate core cooling.

Answer: D

12/31/99

NOTE TO: NRC DOCUMENT CONTROL DESK
MAIL STOP 0-5-D-24

FROM: , LICENSING ASSISTANT
~~OPERATING LICENSING~~ BRANCH _ REGION I

SUBJECT: OPERATOR LICENSING EXAMINATION ADMINISTERED ON
Aug 27, Aug 30-Sep 2, 1999 AT Oyster Creek
DOCKET NO. 50-219

ON August 27, Aug 30, Sept 2 OPERATOR LICENSING EXAMINATIONS WERE ADMINISTERED AT THE REFERENCED FACILITY. ATTACHED YOU WILL FIND THE FOLLOWING INFORMATION FOR PROCESSING THROUGH NUDOCS AND DISTRIBUTION TO THE NRC STAFF, INCLUDING THE NRC PDR.

Item #1 a) FACILITY SUBMITTED OUTLINE AND INITIAL EXAM SUBMITTAL DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE A070.

b) AS GIVEN Written and OPERATING EXAMINATION, DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE A070.

Item #2 EXAMINATION REPORT WITH THE AS GIVEN WRITTEN EXAMINATION ATTACHED, DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE IE42.

As Given

Facility: **Oyster Creek** Examination Level (circle one): RO / SRO	Date of Examination: August 30, 1999 Operating Test Number:

Administrative Topic/Subject Description	Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions
A.1 Conduct of Operation Staffing Requirements	Two Administrative questions 2.1.4 Knowledge of Shift Staffing requirements SRO: 3.4 Note: This JPM can be performed while at the RSP
A.1 Conduct of Operation Plant Parameter Verification	One Administrative JPM 2.1.23 Ability to perform specific system and integrated plant procedures during different modes of plant operation SRO: 4.0
A.2 Equipment Control Pre-Critical check-off	One Administrative JPM 2.1.31 Ability to locate control room switches/controls and indications and to determine that they are correctly reflecting the desired plant lineup SRO : 3.9
A.3 Radiation Control Control of Radiation release: Turbine Building Ventilation	Two Administrative questions 2.3.11 Ability to control radiation releases SRO:3.2
A.4 Emergency Plan Classify an emergency or Abnormal Event	One Administrative JPM 2.4.41 Knowledge of EAL thresholds and classifications SRO: 4.1 At the end of each simulator Operating test, each examinee who was evaluated in the SRO position will classify the event per EPIP-OC-001 CLASSIFICATION OF EMERGENCY CONDITIONS

A070

Job Performance Measure Worksheet

Facility: Oyster Creek **Task No:** 2990301003

Task Title: Shutdown Crew Staffing Requirements

Job Performance Measure No: NEW (Administrative)

K/A Reference: 2.1.4 (2.3 / 3.4)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance

Classroom x Simulator x Plant x

READ TO THE EXAMINEE
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: N/A

Task Standard: Answer questions concerning Shutdown crew

Required Materials: None

General References: Conduct of Operations 106 Section 5.7.1.8

Initiating Cue: This JPM should be performed at RSP or LSP during Category B2 JPM's

Time Critical Task: NO

Validation Time: N/A

VERIFICATION OF COMPLETION

Job Performance Measure No. New

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

What is the purpose of the shutdown crew and how many members are assigned to it?

Response:

The purpose of the Shutdown crew is to be able to ensure a safe shutdown of the plant if the Control Room needed to be evacuated in accordance with ABN-3200.30, Control Room Evacuation

It consists of at least five (5) members who are qualified in accordance with the Control room Evacuation Procedure

Result: SAT or UNSAT

Question:

What member or members of the Station compliment is /are NOT allowed to be assigned to the Shutdown Crew?

Response:

Personnel filling other positions on the Shift Coverage Log may also be on the Shutdown Crew, WITH THE EXCEPTION OF MEMBERS ASSIGNED TO THE FIRE BRIGADE

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

What member or members of the Station compliment is /are NOT allowed to be assigned to the Shutdown Crew?

Question # 1

What is the purpose of the shutdown crew and how many members are assigned to it?

Facility: Oyster Creek **Task No:** 2000101404

Task Title: Perform Heat Balance and Feedwater Flow Calculation

Job Performance Measure No: New (Administrative)

K/A Reference: 2.1.23

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance x

Classroom Simulator Plant x

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	The plant is at power
Task Standard:	Calculate core power and gross Generator output using Attachments 1001.6-1 and 2
Required Materials:	Attachments from Procedure 1001.6 Calculator
General References:	Procedure 1001.6 Core Heat Balance and Feedwater Flow Calculation-Power Range Rev 19
Initiating Cue:	As the GSS, I am directing you to perform a manual heat balance to compare plant data to PCS (Plant computer system)
Time Critical Task:	No
Validation Time:	20 minutes

START TIME _____ (* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain current copy of 1001.6	Obtains 1001.6	
Note: Give candidate a copy of 1001.6 including Attachments		
2. Review Prerequisites, Precautions and Limitations	Reviews Prerequisites, Precautions and Limitations; verifies all prerequisites are met; reads and understands Step 4.3 (when performing a manual heat balance to compare to PCS, do not record any pressure, temperature or flow data from PCS)	
*3. Use Method 2 for Feedwater flow calculation	Determines from Step 5.1 that Method 2 for calculating feedwater flow is required and proceeds to Step 5.1.2	
*4. Record gauge reading	In the feedpump room, records gauge readings from the six (6) feedwater venturies (5.1.2.1)	
*5. Calculates average dp for each loop	Determines average feedwater flow per loop (5.1.2.2)	
*6. Record individual loop temperatures	Records individual loop temperatures at the outlet of IP Feedwater heaters from recorder 13R-5 • A loop-position 15 (TE14) • B loop-position 16 (TE15) • C loop-position 17 (TE16)	
NOTE: At this time, the candidate can return to the Control Room		
* 7. Obtain specific volume,, calculate feedwater flow for each loop, and sum the flows for total feedwater flow	From Attachment 1001.6-4, determines specific fvolume, then calculates individual feedwater flows (5.1.2.5) and sums up individuals for total feedwater flow (5.1.2.6)	
*8. Calculates Core thermal power	• Records data from steps 5.2.1 through 5.2.4 from Control room Panel indications • Determines Main steam and feedwater enthalpies and determines enthalpy difference (5.2.7) • Records data from Feedwater flow calculations (Attachment 1001.6-1) • Calculates MBTU/hr (5.2.9) and converts to MW (5.2.10) • Adds adjustments to MW for CRD , Cleanup, Recirc Pump and fixed losses (16.7 for 1 Cleanup pump or 22.5 Mw thermal if 2 cleanup pumps are in operation) and determines calculated core power • Record Gross Generator MW output	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*9. Compares calculated Core thermal power with PCS indicated thermal power	Uses 15 minute average value after reactor power is stable for at least 15 minutes	
10. Routes the completed heat balance and feedwater flow calculation worksheets for review	Gives the completed attachments to the GSS for review and signoff	
Note: Per Precaution /Limitation 4.4, if changes are required, changes shall be made IAW Procedure 100.22 AND the heat balance shall be repeated to verify that the change is correct		

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No.

Examinee's Name: ______________________________

Examiner's Name: ______________________________

Date performed: ________________

Number of attempts: _____

Time to complete: __________

Question Documentation:

Question: N/A

Response:

Result: SAT or UNSAT

Question: N/A

Response:

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Initial Conditions:	The plant is at power
Initiating Cue:	As the GSS, I am directing you to perform a manual heat balance to compare plant data to PCS (Plant computer system)

Facility: Oyster Creek **Task No:** 2150101001

Task Title: Perform Pre-Critical Checkoff Attachment 201.1-2 Section 12

Job Performance Measure No: New (Administrative)

K/A Reference: 2.1.31 (4.2 / 3.9)

Examinee: ________________ **NRC Examiner:** ________________

Date: ________

Method of testing:

Simulated Performance Actual Performance x

Classroom Simulator x Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Preparations for a reactor startup are in progress IAW 201.1 Approach to Criticality

Task Standard: Complete Pre-Critical Checkoff sheet Attachment 201.1-2 Section 12 Nuclear Instrumentation

Required Materials: Attachment 201.1-2

General References: Approach to Criticality Procedure 201.1

Initiating Cue: As the GOS, I am directing you to perform Section 12 of Attachment 201.1-2

Time Critical Task: No

Validation Time: 5 minutes

START TIME ____ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain current copy of procedure	Obtains copy of Attachment 201.1-2	
Note: Give candidate a copy of Attachment 201.2-4 with Steps 12.1, 12.2, and 12.3 initialed and dated		
*2. Two or more SRM's > 3 cps	Determines that all 4 SRM's are > 3 cps, then initials and dates Attachment	
*3. Record SRM count rates	Records SRM count rates, then initials and dates Attachment	
*4. SRM detectors at ALL IN	Checks all SRM detectors full in, then initials and dates Attachment	
*5. Check all SRM Channels operable	Checks all channels operable, then initials and dates Attachment	
*6. Selects SRM recorders to highest indicating channels	Selects SRM recorders to highest indicating channels, then initials and dates Attachment	
*7. IRM detectors at ALL IN	Checks all IRM detectors full in, then initials and dates Attachment	
*8. IRM range switches in Position 1	Checks all IRM range switches in Position 1, then initials and dates Attachment	
*9. IRM channels selected for recording	Checks all recorder switches are selected to IRM, then initials and dates Attachment	
*10. Check all IRM's operable	Checks all IRM's operable, then initials and dates Attachment	
*11. Check APRM channels operable	Checks APRM channels operable, then initials and dates Attachment	
12. Informs GOS that Pre-Critical Checkoff sheet Section 12 for Nuclear Instrumentation is completed		
CUE: SRM Test and Calibration, IRM Test and Calibration, and APRM Surveillance Test have been completed and are expected to remain current during the startup period		

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. New

Examinee's Name:________________________

Examiner's Name:________________________

Date performed:____________

Number of attempts:____

Time to complete:________

Question Documentation:

Question: N/A

Response:

Result: SAT or UNSAT

Question: N/A

Response:

Result: SAT or UNSAT

Examiner's signature and date: ________________________ ________

Initial Conditions: Preparations for a reactor startup are in progress IAW 201.1 Approach to Criticality

Initiating Cue: As the GOS, I am directing you to perform Section 12 of Attachment 201.1-2

Facility: Oyster Creek **Task No:** 2880101404

Task Title: Turbine Building Ventilation

Job Performance Measure No: New (Administrative)

K/A Reference: 2.3.11 (2.7 / 3.2)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance

Classroom x Simulator Plant x

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: N/A

Task Standard: Answer questions concerning Turb Bldg Ventilation

Required Materials: None

General References: TB HVAC Procedure 328; HVAC Flow P&ID BR 2009

Initiating Cue: This JPM should be performed while in the Turb Building during Category B2 JPM's

Time Critical Task: No

Validation Time: N/A

Job Performance Measure No. New

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

Recently, signs were posted on turbine building doors requiring them to be closed at all times. Why is this posting needed?
This is a closed book question.
Response:

Keeping Turbine building doors closed ensures the ventilation system can perform its designed function of maintaining the building at a slightly negative pressure, ensuring no unmonitored releases can occur.

If doors are left open , the correct flow paths and pressures cannot be maintained.

Result: SAT or UNSAT

Question:

Explain all Turbine Building Ventilation flowpaths through the building up to and including normal release paths.

Response:

Using P& ID BR 2009 Sheets 1 and 2, the candidate can give a detailed description of all turbine Building Flowpaths.

Turb Building HVAC consists of Turb Bldg South, North, Operating Floor and Feed and Condensate Pump Room subsystems

South: SF-1-and 2 draw outside air and supply it to Cond Demin area, Basement south end, 4160 VAC switchgear room and MVP and SJAE rooms.

Operating Floor: SF 1-3 or 4 and SF1-5 or 6 supply outside air to the Floor.

The floor is exhausted by fan EF1-33

North: SF1-5 and SF1-6 draw outside air and supply it to the north end of the TB. EF1-4 draws air of the north side and discharges it through the TB Stack

Feed and Condensate Pump Room: Sf1-7 supplies outside air to this room. Ef1-1 removes air from this room

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question #2

Explain all Turbine Building Ventilation flowpaths through the building up to and including normal release paths.

Question # 1

Recently, signs were posted on turbine building doors requiring them to be closed at all times. Why is this posting needed?

This is a closed book question.

Facility: Oyster Creek **Task No:** 2000502401

Task Title: PAR during a General Emergency

Job Performance Measure No: New (345-04)(Administrative)

K/A Reference: 2.4.41 (2.3 / 4.1)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance X

Classroom X Simulator X Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: The reactor is scrammed; an un-isoable Isolation Condenser tube break combined with major fuel damage has resulted in an uncontrolled release to the environment

Task Standard: Classify the event and Make a PAR

Required Materials: None

General References: EPIP-OC-01
EPIP-oC-02

Initiating Cue: Projected dose rates at the Site Boundary are 5.5 Rem Committed Dose Equivalent adult thyroid.
Classify the event based on current status of the plant and assume duties as the Emergency Director

Time Critical Task: No

Validation Time: 9 minutes

START TIME ______ (* denotes critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure	Obtains copy of EPIP-OC-01 CLASSIFICATION OF EMERGENCY CONDITIONS	
*2. Evaluate Appendix 1	From the conditions given, evaluates Appendix 1 and determines the following: • Per Category J Radiological Releases, with a valid integrated dose at the site boundary equal to or greater than 5000 mRem (CDE) adult thyroid, a General Emergency is to be declared	
Cue: Once the GE has been declared, that as the GSS, he now needs to assume the duties of the Emergency Director and he should implement EPIP-OC-02 NOTE: CDE: Committed Dose Equivalent: defined as the dose to a specific organ (adult thyroid) or tissue resulting from an intake of radioactive material.		
3. Obtain controlled copy of procedure	Obtains controlled copy of EPIP-OC-02	
4. Assume ED responsibilities	Reviews Exhibit 2	
5. Completes Exhibit 1 for General Emergency	Performs the following: • Announces himself as ED • Directs that offsite agencies be notified • Directs page announcements • Directs Security Shift Supervisor to implement EPIC-OC-40	
CUE: Give the following conditions to the candidate: 1. It is 6 AM on a summer morning 2. The weather is fair; no rain is forecasted, the wind is off the ocean at 5 mph		
*6. Makes PAR	Refers to Exhibit 1b, PAR LOGIC, and makes the following recommendation: Evacuate a 2 mile radius and 5 miles downwind and shelter any areas of the 10 mile EPZ not evacuated	
7. Continues assessment of PAR based on all available plant and field monitoring information		

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. New (345-04)

Examinee's Name: ______________________________

Examiner's Name: ______________________________

Date performed: ________________

Number of attempts: _____

Time to complete: __________

Question Documentation:

Question: N/A

Response:

Result: SAT or UNSAT

Question: N/A

Response:

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Initial Conditions:	The reactor is scrammed. An un-isoable Isolation Condenser tube break combined with major fuel damage has resulted in an uncontrolled release to the environment
Initiating Cue:	Projected dose rates at the Site Boundary are 5.5 Rem Committed Dose Equivalent adult thyroid. Classify the event based on current status of the plant **and** assume duties as the Emergency Director

As Given

System WalkThrough

Facility: **Oyster Creek**
Exam Level (circle one): RO / SRO(I) / SRO(U)

Date of Examination: August 30, 1999
Operating Test No.:

System / JPM Title / Type Codes*	Safety Function	Planned Follow-up Questions: K/A/G - Importance – Description
1. Perform rod coupling check/respond to uncoupled rod < 10% power (D) (S) (L) (A)	1	a. 201003 A2.02 Uncoupled Rod (3.7/3.8)
		b. 201003 K3.01 Reactor Power (3.2/3.4)
2. Perform ARI Logic Test (N) (S)	7	a. 202001 K1.27 ATWS Circuitry (4.1/4.3)
		b. 295001 AK1.04 Limiting Cycle oscillation(2.5/3.3)
3. Manually scram the reactor by venting the Scram Air Header (D) (P) (R)	1	a. 295015 AK2.11 Instrument Air (3.5/3.7)
		b. 295015 AA1.02 RPS (4.0/4.2)
4. Perform EDG Load Test (D) (S)	6	a. 2.1.12 Ability to apply Technical specifications for a system SRO: 4.0
		b. 2.1.12 Ability to apply Technical specifications for a system SRO: 4.0
5. Transfer Control of EDG to LSP-DG2 and start EDG-2 to re-energize Bus 1D (D) (P)	6	a. 2.4.27 Knowledge of fire in the plant procedure (3.0/3.5)
		b. 264000 A2.09 Loss of AC Power (3.7/4.1)
6. Perform Core Spray Operability Test (D) (S)	4	a. 209001 K4.04 Line Break detection (3.0/3.2)
		b. 209001 K3.02 ADS Logic (3.8/3.9)
7. Perform Station Blackout in-plant evolutions (Lineup TBCCW) (D) (P) (R)	8	a. 295003 AA2.04 System Lineups (3.5/3.7)
		b. 295003 AK1.06 Station Blackout (3.8/4.0)
8. Restart RB HVAC IAW Support Procedure 50 (S) (N)	5	a. 295034 EK2.01 Process Radiation Monitoring system (3.9/4.2)
		b. 290001 K6.01 Rx Bldg Ventilation (3.5/3.6)
9. Respond to an inadvertent isolation of RBCCW to the Drywell (N) (S)	8	a. 295016 AK2.02 Local control stations (4.0/4.1)
		b. 400000 A4.01 CCW indications and Control (3.1 / 3.0)
10. Anticipatory Scram Surveillance: Turbine Stop valves (M) (S)	3	a. 295005 Extraction Steam / Moisture Separator Isolations (2.5 /2.6)
		b. 295005 AK1.01 Pressure effects on reactor power (4.0 / 4.1)

* 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: Oyster Creek **Task No:** 2170401005

Task Title: Perform Rod Coupling check (alternate path)

Job Performance Measure No: 201-01

K/A Reference: 201003 A2.02 (3.7 / 3.8)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Reactor Startup in Progress; reactor power on Range 9 Rod 34-31 has been withdrawn to notch 48 in accordance with step 10 of the pull sheet A Core Engineer is present in the control room
Task Standard:	Insert rod 34-31 to 00
Required Materials:	Key for 6XR
General References:	Procedure 302.2 Rev 16 ABN 3200.06 Abnormal Control Rod Motion Rev 11
Initiating Cue:	Withdraw Control Rod 34-31 to position 49, then perform a rod coupling check on rod 34-31 in accordance with 302.2
Time Critical Task:	No
Validation Time:	15 minutes

START TIME _____ (* identifies Critical Task)

PERFORMANCE CHECKLIST	*STANDARD*	*INITIAL* SAT/UNSAT
1. Obtains current copy of procedure	Procedure 302.2 obtained Step 4.3.6	
Cue: Provide candidate with pull sheet marked up to step 10 for rod 34-31		
***2. Performs coupling check**	On panel 4F takes rod control switch to "Rod Out Notch" simultaneous with notch override switch to "Notch Override"	
3. Verifies black-black background on control rod 34-31	On Panel 4F, observes control rod 34-31 indicates black- black and annunciator H-5-a alarms	
4. Per ABN .06 Notifies Core Engineer, and POD	Notifies core engineer, and the Plant Operations Director of the uncoupled rod	
5. Obtains controlled copy of procedure	Obtains Procedure ABN-3200.06, step 3.4	
6. Gives the rod an insert signal	Takes rod control switch to "Rod In" or the notch override switch to the "Emergency In" position on Panel 4F	
NOTE: Rod will not move, display remains black-black		
7. Obtains controlled copy of procedure	Obtains Procedure 302.2, section 9, reviews perquisites, and verifies the following: ➢ CRD Hydraulic System is in operation ➢ 101, 102, and 108 valves are open	
CUE: Inform operator that the CRD Hydraulic System is in operation IAW 302.1; 101, 102, and 108 valves have been Verified open if requested. **CUE: As Director of Operations or core Manager, grant permission to Scram rod from 6XR**		
8. Reviews Precautions & Limitations IAW 9.2	Reviews Precautions and Limitations as listed in section 9.2	
CUE: Inform the operator that you will serve as the operator at 4F while actions are being carried out.		
9. Bypass Dilution pump trips	Places the Dilution pump AUTO/BYPASS switches to bypass.	
***10. Individually scrams the control rod from panel 6XR**	Obtain key for 6XR from GSS office, identify toggle switch for Control Rod 34-31 on 6XR and places the toggle to the scram (open) position.	

PERFORMANCE CHECKLIST	***STANDARD***	***INITIAL*** *SAT/UNSAT*
11. Verifies scram indication and rod movement	Verifies scram display for rod 34-31 is illuminated at 4F, and rod movement.	
CUE: Scram light is on, there is rod movement, and display is now green-green		
12. Returns toggle switch for control rod 34-31 on 6XR to normal	Returns toggle switch for control rod 34-31 on 6XR to normal (closed position).	
13. Verifies SCRAM light is "Out" on 4F core display	Verifies that the scram signal is removed	
CUE: Inform operator that the scram signal is removed. NOTE: Core Engineer is present in the control room		
14. Returns Dilution pump Bypass switch to AUTO	Places the Dilution pump AUTO/BYPASS switches to AUTO.	

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. 201-01

Examinee's Name:________________________________

Examiner's Name:________________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 201003 A2.02 Uncoupled Rod (3.7/3.8)

What is the safety significance if a rod coupling check is not performed?

Response:
The control rod may indicate it is at 48, but it may actually be at 00. If the coupling check is not performed, the rod could actually be uncoupled, and it could lead to a rod drop accident

Result: SAT or UNSAT

Question:

2. 201003 K3.01 Reactor Power (3.2/3.4)

The plant is at 30% power when an uncoupled rod is detected. How and why are the corrective actions different at this power level than when on IRM Range 9?

Response:
The actions are less severe for an uncoupled rod discovered at 30% due to voids in the core

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

The plant is at 30% power when an uncoupled rod is detected.

How and why are the corrective actions different at this power level than when on IRM Range 9?

Question # 1

What is the safety significance if a rod coupling check is not performed?

Initial Conditions:	Reactor Startup in Progress; reactor power is on Range 9 Rod 34-31 has been withdrawn to notch 48 in accordance with step 10 of the pull sheet A Core Engineer is present in the control room
Initiating Cue:	As the LOS, I am directing you to withdraw Control Rod 34-31 to position 49, then perform a rod coupling check on rod 34-31 in accordance with 302.2

Facility: Oyster Creek **Task No:** 2010201403

Task Title: Perform Alternate Rod Injection Logic Test

Job Performance Measure No: New (201-08)

K/A Reference: 295037 EA1.03 (4.1 / 4.1)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	The plant is at 100% power
Task Standard:	Successfully perform ARI Rod Injection Logic Test
Required Materials:	stopwatch
General References:	617.4.014 Rev 4
Initiating Cue:	As the GSS, I am directing you to perform surveillance 617.4.014 ARI Rod Injection Logic Test
Time Critical Task:	No
Validation Time:	10 minutes

START TIME _______(* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
Provide surveillance test package to candidate		
1. Obtains current copy of procedure	Verifies Procedure 617.4.014 is correct test procedure	
2. Obtains GSS permission to perform test	GSS signs, dates and time Section 3.1	
CUE: As GSS, sign date and time for surveillance to begin		
3. Reviews all applicable precautions and limitations	Reviews all applicable precautions and limitations	
4. Obtains controlled stopwatch and records its control number	Obtains controlled stopwatch and records its control number	
*5. Verifies initial conditions	Verifies initial conditions: • H-2-a (ARI INITIATED) and H-3-a (ARI OFF NORMAL) are clear • ARI NORMAL BYPASS switch behind Panel 8R is in NORMAL • ARI LOGIC INITIATED indicating light behind Panel 8R is extinguished	
*6. Place ARI NORMAL BYPASS switch behind 8R in BYPASS	Place ARI NORMAL BYPASS switch behind 8R in BYPASS and verifies the following: • ARI LOGIC INITIATED light (8R) remains extinguished • H-2-a ARI INITIATED remains clear • H-3-a ARI OFF NORMAL actuates	
*7. Depress ARI RV Lo-Lo Water Level test pushbutton	Depress ARI RV Lo-Lo Water Level test pushbutton (8R), then release and verify the following: • ARI LIGIC INITIATED light (8R) illuminates • H-2-a ARI INITIATED actuates • H-3-a ARI OFF NORMAL remains actuated • ARI solenoids did not actuate, as verified by scram valves remaining closed and SDV valves open on Panel 4F	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*8. Press ALT rod Injection Reset	After waiting at least 60 seconds, presses the ALT rod Injection Reset pb on Panel 4F, then verifies the following: • H-2-a ARI INITIATED clears • H-3-a ARI OFF NORMAL remains actuated • ARI LOGIC INITIATED light (8R) extinguishes)	
*9. Depress ARI RV High Pressure pushbutton	Depresses the ARI RV High Pressure test pb (8R) and verifies the following: • ARI LIGIC INITIATED light (8R) illuminates • H-2-a ARI INITIATED actuates • H-3-a ARI OFF NORMAL remains actuated • ARI solenoids did not actuate, as verified by scram valves remaining closed and SDV valves open on Panel 4F	
*10. Press ALT rod Injection Reset	After waiting at least 60 seconds, presses the ALT rod Injection Reset pb on Panel 4F, then verifies the following: • H-2-a ARI INITIATED clears • H-3-a ARI OFF NORMAL remains actuated • ARI LOGIC INITIATED light (8R) extinguishes)	
*11. Depress ALT Rod injection INITIATION pushbutton	Depresses the ARI RV Initiation pb (Panel 4F) and verifies the following: • H-2-a ARI INITIATED actuates • H-3-a ARI OFF NORMAL remains actuated • ARI solenoids did not actuate, as verified by scram valves remaining closed and SDV valves open on Panel 4F • ARI LIGIC INITIATED light (8R) illuminates	
*12. Press the ALT Rod Injection reset pushbutton	After waiting at least 60 seconds, presses the ALT rod Injection Reset pb on Panel 4F, then verifies the following: • H-2-a ARI INITIATED clears • H-3-a ARI OFF NORMAL remains actuated • ARI LOGIC INITIATED light (8R) extinguishes)	

The following steps 6.10 Verify the setting of the ARI Reset time delay relay will not be performed

CUE: Inform the candidate that Section 6.10 has been completed; the elasped time was 50 seconds

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*13. Return the ARI Normal Bypass switch to NORMAL	Returns the ARI Normal Bypass switch (8R) to NORMAL and verifies the following: • H-2-a ARI INITIATED clears • H-3-a ARI OFF NORMAL clears • ARI LOGIC INITIATED light (8R) extinguishes	
14. Review results of surveillance against Acceptance Criteria	Reviews results of surveillance against Acceptance Criteria and informs GOS/GSS that the surveillance is completed and acceptable	

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. New (201-08)

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 202001 K1.27 ATWS Circuitry (4.1/4.3)

What is the function of the Recirc Pump trip logic system?

Response:
The Recirc Pump trip logic uses high RPV pressure and low RPV level signals to trip the pumps in the event of an ATWS. Tripping the pumps provides for a rapid voiding of the core, causing a rapid power reduction

Reference: EOP Basis document 3200.02

Result: SAT or UNSAT

Question:

2. 295001 AK1.04 Limiting Cycle oscillation(2.5/3.3)

BWR's are susceptible to power oscillations. What are the operating conditions that can cause power oscillations to occur and explain why the oscillations occur?

Response:
Conditions of high power and low coolant flow setup the conditions for power oscillations. They occur as high power regions of the core void, forcing coolant to other regions of the core. As those regions up power and the other regions voiding downpower, the reverse occurs. The voided regions now re-flood and drive up power. This oscillation continues until core flow is increased or cram rods are inserted to lower overall reactor power
Reference:Tech Spec Basis 2.1

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

BWR's are susceptible to power oscillations. What are the operating conditions that can cause power oscillations to occur and explain why the oscillations occur?

Question # 1

What is the function of the Recirc Pump trip logic system?

Initial Conditions:	The plant is at 100% power
Initiating Cue:	As the GSS, I am directing you to perform surveillance 617.4.014 ARI Rod Injection Logic Test

Facility: Oyster Creek **Task No:** 2790502401

Task Title: Manually scram the reactor by venting the scram air header

Job Performance Measure No: 201-07

K/A Reference: 212000 A4.11 (3.7 / 3.7)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance X Actual Performance

Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	The plant has experienced a failure to scram and de-energizing the scram solenoids was not successful
Task Standard:	Rods are all inserted and air header is restored
Required Materials:	none
General References:	EMG-3200.01B RPV CONTROL - ATWS Support Procedure 21 Rev 3
Initiating Cue:	The GOS directs you to vent the scram air header using Support Procedure 21
Time Critical Task:	No
Validation Time:	7 minutes

START TIME ___ (* indicates Critical Task)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/ UNSAT
1. Obtain controlled copy of procedure	Obtains support procedure 21, Step 3.3	
*2. Closes V-6-175, Scram Air Header Isolation.	Closes V-6-175, Scram Air Isolation, Rx Bldg 23' east side of Drywell. (RB23SE)	
CUE: V-6-175 is closed		
*3. Opens V-6-409, Scram Air Header Vent Valve.	Opens V-6-409, Scram Air Header Vent, Rx Bldg 23' east side of Drywell. (RB23SE)	
CUE: V-6-409 is open		
4. Communicates with the Control Room.	Establishes communication with the Control Room via paging system, radio or telephone and reports scram air header vented.	
CUE: Upon request, the evaluator will provide the following information: Control Room informs operator that all rods are inserted.		
*5. Close V-6-409, Scram Air Header Vent Valve	Closes V-6-409, (Scram Air Header Vent)	
CE: V-6-409 closed		
*6. Opens V-6-175, Scram Air Header Isolation Valve	Opens V-6-175, (Scram Air Isolation)	
CUE: V-6-175 open		

COMPLETION TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure No. 201-07

Examinee's Name: ______________________________

Examiner's Name: ______________________________

Date performed: ________________

Number of attempts: _____

Time to complete: __________

Question Documentation:

Question:

1. AK2.11 Instrument Air (3.5/3.7)

Explain the response of the CRD Hydraulic system when the Scram air vent header valve is opened.

Response:
By closing valve 175 and opening 409, the following is accomplished:

- The scram air header is isolated from Instrument Air (closing 175)
- The air header is now depressurized by opening 409
- The scram inlet and outlet valves fail open
- HCU pressure /rector pressure insert/scram the rod
- The SDV vent and drain valve fail closed

Reference: BR 2013 and GE197E871

Result: SAT or UNSAT

Question:

2. 2. 295015 AA1.02 RPS (4.0/4.2)

An ATWS is in progress. The MSIV's are open. Explain how the CRD Hydraulic system responds when RPS subchannels are placed to TRIP.

Response:
The sub channels de-energize the scram pilot valves and do not after the rest of RPS

Reference: GE 237E566

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

An ATWS is in progress. The MSIV's are open.

Explain how the CRD Hydraulic system responds when RPS subchannels are placed to TRIP.

Question # 1

Explain the response of the CRD Hydraulic system when the Scram air vent header valve is opened.

Initial Conditions:	The plant has experienced a failure to scram and de-energizing the scram solenoids was not successful
Initiating Cue:	The GOS directs you to vent the scram air header using Support Procedure 21

Facility: Oyster Creek **Task No:** 2000501502

Task Title: Station blackout in-plant evolutions (Line-up TBCCW)

Job Performance Measure No: 262-08

K/A Reference: 295003 AK1.06 (3.8 / 4.0)

Examinee: ________________ **NRC Examiner:** ________________

Date: ________

Method of testing:

Simulated Performance X   Actual Performance

Classroom   Simulator   Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Station Blackout; Breakers US1T and US2T are racked in

Task Standard: TBCCW valves aligned IAW ABN 3200.37 Att4

Required Materials: MB1 key
Radio and flashlight

General References: 2000-ABN-3200.37 Rev 3

Initiating Cue: A station blackout has occurred. The GOS has directed you to lineup TBCCW valves for TBCCW heat exchanger 1-1 per ABN 3200.37 Attachment 4

Time Critical Task: No

Validation Time: 7 minutes

START TIME ___ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure.	Obtain controlled copy of ABN-3200.37.	
*2. Close V-3-58.	Closes V-3-58 in the Turbine Bldg. basement.	
CUE: V-3-58 closed.		
*3. Open V-3-59.	Opens V-3-59 in the Turbine Bldg. basement.	
CUE: V-3-59 open.		
*4. Close V-3-76 and V-3-77.	Closes V-3-76 and V-3-77 in the Turbine Bldg. basement.	
CUE: V-3-76 and V-3-77 are closed.		
*5. Open V-3-76 one turn open.	Throttles V-3-76 to a position not fully closed in the Turbine Bldg. basement.	
CUE: V-3-76 one turn open.		
6. Confirm V-3-74 is fully open.	Opens V-3-74 in the Turbine Bldg. basement.	
CUE: V-3-74 is full open.		

COMPLETION TIME_____

Job Performance Measure No. 262-08

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:
Question:

1. 295003 AA2.04 System Lineups (3.5/3.7)

In preparation for bringing a CT onto Bus 1B, direction is given to rack in TIE BREAKER US2T at USS 1A2 and TIE BREAKER US1T at USS 1A1. What is to be accomplished by performing these two breaker operations?

Response:
When 1B is re-energized from the CT, then 1D can be re-energized. USS 1B1 and 1B2 are now re-energized. At this time, the direction is given to close tie breakers US1T and US2T. This will re-energize USS 1A1 and 1A2. This will allow support system restoration to equipment to assure core cooling, Containment cooling, Cooling Water systems, Battery chargers, and Ventilation systems. (CRD Pump "A", CS Booster Pumps "A" and "D", "A" SDC PUMP, Fuel Pool cooling Pump "A", three Drywell Cooling Fans, RBCCW PUMP 1-1, and TBCCW Pumps 1-1 and 1-2)
Reference: ABN-3200.37

Result: SAT or UNSAT

Question:
2. 295003 AK1.06 Station Blackout (3.8/4.0)

What is the allowed cooldown rate during a Station blackout and why? Include in your answer when this limit allowed to be changed?
Response:
The allowed cooldown rate is < 10° F / hr. The reason for this limit is to conserve inventory in the RPV and to limit the makeup required to the shell side of the Isolation condensers. Once a high pressure injection system is available and adequate makeup for the IC's is available, the cooldown limits can be increased IAW EOP direction
Refernece: ABN 3200-37

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

What is the allowed cooldown rate during a Station blackout and why? Include in your answer when this limit allowed to be changed?

Question # 1

In preparation for bringing a CT onto Bus 1B, direction is given to rack in TIE BREAKER US2T at USS 1A2 and TIE BREAKER US1T at USS 1A1.

What is to be accomplished by performing these two breaker operations?

Initial Conditions:	Station Blackout is in progress; Breakers US1T and US2T are racked in
Initiating Cue:	A station blackout has occurred. The GOS has directed you to lineup TBCCW valves for TBCCW heat exchanger 1-1 per ABN 3200.37 Attachment 4

Facility: Oyster Creek **Task No:** 2640201003

Task Title: Perform EDG Load Test

Job Performance Measure No: 264-05

K/A Reference: 264000 A4.04 (3.7 / 3.7)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: _________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	The plant is at 100% power in a normal electric plant lineup
Task Standard:	EDG#2 operating and in parallel to Bus 1D
Required Materials:	None
General References:	Procedure 636.4.003 DG Load Test Rev 58
Initiating Cue:	The GSS has directed you to perform Diesel Generator Load test on EDG #2 per Procedure 636.4.003
Time Critical Task:	No
Validation Time:	15 minutes (27 minutes if EDG shutdown is performed)

START TIME ____ (* indicates Critical Step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtains controlled copy of procedure	Procedure 636.4.003, Diesel Generator Load Test	
2. Verifies all prerequisites	Contacts the EO to verify prerequisites are met	
CUE: As EO report the following as requested: -Fuel Oil tank at normal level (NORMAL) -Water level in coolant system is the 'Low' and 'High' marks (halfway between) -Lube oil level between -3" to +1" -Fuel oil storage tank level > 14,500 gallons. (15,000 gallons) -Oil level midpoint of sight-glass for each air filter. (at midpoint) -No flags or alarms at control panel in generator cubicle. (no alarms) -Compartment strip heaters and exhaust fan breaker is on. (on) -Power switches, in generator compartment, on for pumps: - DC Turbo Backup, AC Turbo Lube Oil, Lube Oil Circ, Fuel Oil Transfer (all on) -Lube Oil Circulating & AC Turbo Lube Oil running > 10 psig. (12 psig) -Keylock switches on LSP-DG2 are in normal (normal)		
3. System Dispatcher contacted	Contacts System Dispatcher and determines grid is stable.	
4. Prepare PCS	Displays computer point EDG2KW	
CUE: As System Dispatcher, report grid is stable.		
5. Reviews all applicable precautions and limitations	Reviews all applicable precautions and limitations	
CUE: As LOS, grant permission to perform test (Step 7.2) for scheduled surveillance		
6. Confirms EDG2 lineup on 8F/9F	Confirms EDG2 lineup on 8F/9F - UNIT STRAT & UNIT IDLE lights are extinguished - Alarms normal - Mode selector switch in PEAKING	
7. Dispatches EO	Sends an EO to the EDG to verify proper operation of the creepy crank when the diesel starts.	
CUE: As EO acknowledge directions.		

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*8 Starts EDG-2	Places the EDG-2 Normal start switch on 8F/9F momentarily to "Start" position then returns to "Normal" position	
9. Observes unit start & idling light on	Observes unit start & unit idling lights are illuminated on 8F/9F	
NOTE: The EDG will idle for approx. 90 sec., then accelerate to 900 RPM; EDG will then automatically synchronize, breaker will close, and rated load (2750 KW) will be picked up.		
10. Verifies EDG loads automatically.	Verifies EDG automatically comes up to speed, synchronizes with the line, breaker closes as and EDG loads to 2750 +- 50 KW and records KW value.	
*11 If 2750 KW is not obtained, Place EDG-1 Mode Selector Switch in "Transfer"	Places EDG-2 Mode Selector switch on 8F/9F in "Transfer" position	
12. Uses EDG-2 Governor Control Switch obtain a loading 2750 ± 50 KW	Places EDG-2 Governor Control switch on panel 8F/9F to "Raise" to obtain 2700 to 2800 KW	
13. Adjusts EDG-2 VAR loading to obtain 1000 Kvar lagging	Places EDG-2 Voltage/Kvar control switch on panel 8F/9F to "Raise" to obtain 200-2000 Kvar lagging	
NOTE: Using time compression, Inform the examinee that the 10 minutes interval has passed		
14 Records EDG parameters.	Records EDG parameters: - EDG output voltage (8F/9F) - EDG KW load (8F/9F)(PCS) - EDG KVARS (8F/9F) - EDG Amps (8F/9F) - Outside ambient temperature (33 ft Met)	
NOTE: Using time compression, Inform the examinee that the 1 hour has passed and local readings have been acquired.		
15. Records EDG-2 readings	Records EDG-2 readings - EDG KW load (8F/9F) - EDG KVARS (8F/9F) Directs EO to obtain local readings	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
CUE: As EO report the following as requested: -Turbo air box pressure (18 psig) -Fuel oil press (25 psig) -Lube oil press (80 psig) -Lube oil cooler outlet temp (160°F) -Lube oil cooler inlet temp (155°F) -Cooling Water Engine inlet temp (175°F) -Fuel oil storage tank level > 14,000 gallons. (14,750 gallons)		
16. Records time	Records time that 2750 Kw full load operation ends	
17. IF switch is in Transfer, Place the MODE Selector switch in the peaking position	Places the MODE Selector switch in the peaking position after the diesel drops to idle speed.	
*18. Stops EDG-2	Places the EDG-2 Normal start switch on 8F/9F momentarily to "Stop" position then returns to "Normal" position	
19. Records the diesel breaker counter number and elapsed time run hours	Directs the EO to obtain the diesel breaker counter number and elapsed time run hours locally.	
CUE: As EO report the diesel breaker counter number NOTE: The JPM may be terminated at this point.		
20. Confirms normal shutdown	Confirms normal shutdown: - EDG shuts down after ≈ 12-15min. - all alarms are reset in control room - Directs EO to confirm all alarms are reset locally	
CUE: As EO report all alarms are reset locally		
20. Confirms that local selector switches are in OFF	Directs EO to Confirm the following switches are in OFF • VOLTAGE/ FREQUENCY • SYNCH SELECTOR • EDG #2 AMPS	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
CUE: As EO report that all three selector switches are in OFF position		
CUE: Terminate the JPM at this point Step 7.27 does not need to be performed by the Candidate		

COMPLETION TIME: ____________

Job Performance Measure No. 264-05

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:_______________

Number of attempts:_____

Time to complete:_________

Question Documentation:

Question:

1. 2.1.12 Ability to apply Technical specifications for a system SRO: 4.0

The plant is at 100% power. EDG #2 is out of service for maintenance when it is discovered that ESW Pump 52A is inoperable. What must be done and why?

Response:
The reactor shall be placed in cold shutdown. ESW Pump 52A is powered from EDG#1. During the period when one EDG is inoperable, the containment spray and ESW loop connected to the operable diesel shall have no inoperable equipment.

Reference: Tech spec 3.4

Result: SAT or UNSAT

Question:

2. 2.1.12 Ability to apply Technical specifications for a system SRO: 4.0

The plant is at 100% power.
At 12:00 Noon, it is determined that a plant shutdown is required to meet a LCO ACTION statement requires the plant to be in cold shutdown. At what time does the shutdown need to begin and why?

Response:
The reactor shall be placed in cold shutdown means in 30 hours. The minimum time of initiation is derived by taking 30 hours and subtracting a minimum of 4 hours to maneuver the plant from power ops to shutdown, and then subtracting a minimum of 8 hours more to get the plant from shutdown condition to cold shutdown. Time to commence shutdown is 6 AM the next morning.

Reference: 106 Section 5.6.3

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

The plant is at 100% power.
At 12:00 Noon, it is determined that a plant shutdown is required to meet a LCO ACTION statement requires the plant to be in cold shutdown. At what time does the shutdown need to begin and why?

Question # 1

The plant is at 100% power.

EDG #2 is out of service for maintenance when it is discovered that ESW Pump 52A is inoperable.

What must be done and why?

Initial Conditions:	The plant is at 100% power in a normal electric plant lineup
Initiating Cue:	The GSS has directed you to perform Diesel Generator Load test on EDG #2 per Procedure 636.4.003

Facility: Oyster Creek **Task No:** 3080401402

Task Title: Operate EDG #2 control Transfer Switches from LSP-DG2

Job Performance Measure No: 308-02

K/A Reference: 264000 A4.04 (3.7 / 3.7)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance X Actual Performance

Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Control Room evacuated due to a fire Expected operator actions for control Room Evacuation have been completed "B" Isolation condenser is in service Offsite power to bus 1D is not available
Task Standard:	EDG #2 running and supplying power to Bus 1D
Required Materials:	None
General References:	Procedure 346 Rev 9
Initiating Cue:	The GOS has directed you to place LSP-DG2 in service and start EDG #2 in accordance with Procedure 346
Time Critical Task:	No
Validation Time:	7 minutes

START TIME ___(* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure.	Obtain controlled copy of procedure 346.	
2. Verifies all prerequisites are met.	Verifies all prerequisites are met.	
CUE: All prerequisites are met.		
3. Reviews all applicable precautions and limitations.	Reviews all applicable precautions and limitations.	
4. Obtains MB-1 key.	Key obtained from Control Room (Examiner may supply key).	
5. Establishes communication with RSP.	Comm established with phone, page or radio.	
6. Confirms tie breaker, ED, is open and racked out.	Calls EO.	
CUE: EO informs that tie breaker ED is opened and racked out.		
7. Confirms emergency bus breaker 1D is open.	Calls EO.	
CUE: EO informs that emergency bus breaker 1D is open.		
Note: Steps 8,9,10,11 must be performed in order.		
*8. Places the "DG2 Alternate Mode Selection Switch" on LSP-DG2 to Deadline.	Places DG2 Alternate Mode Selector Switch in "Deadline" position on LSP-DG2.	
CUE: DG2 Alternate Mode Selection Switch is in Deadline.		
*9. Places the "Normal-Alternate" switch #1 on LSP-DG2 to the alternate position.	Inserts key obtained from lock beside LSP-DG2 and places "Normal-Alternate"	
CUE: Switch #1 in "Alternate" position on LSP-DG2.		
*10. Places the "Normal-Alternate" switch #2 on LSP-DG2 to alternate.	Inserts key obtained from lock beside LSP-DG2 and places "Normal-Alternate" switch #2 in "Alternate" position on LSP-DG2.	
CUE: Switch #2 in "Alternate" position on LSP-DG2.		
*11. Places the "Normal-Alternate" switch #3 on LSP-DG2 to alternate.	Inserts key obtained from lock beside LSP-DG2 and places "Normal-Alternate" switch #3 in "Alternate" position on LSP-DG2.	
CUE: Switch #3 in "Alternate" position on LSP-DG2.		
*12. Places "DG2 Alternate Emergency Start" switch momentarily to start.	Places the "DG2 Alternate Emergency Start" switch momentarily in start on LSP-DG2.	
CUE: Examiner tells student that the EDG fast starts and loads in 12 seconds.		

COMPLETION TIME ____________

Job Performance Measure No. 308-02

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

1. 264000 K4.05 Load shedding and Sequencing (3.2/3.5)

Question:

Explain the reason for and the operation of the emergency buses load shedding and load sequencing logic.

Response:
Under LOCA conditions or loss of offsite power events, it is not desirable to allow the simultaneous starting of ECCS and auxiliary loads in order to minimize the voltage drop across emergency buses and to protect against overloading the EDG

Reference: Tech Spec 3.1

Result: SAT or UNSAT

Question:

2. 264000 A2.09 Loss of AC Power (3.7/4.1)

What are the loading requirements for the EDG's during a loss of offsite power and why? (Assume both EDG's are operating and carrying their respective buses and NO LOCA is in progress?

Response:
The EDG's are limited to< 1500KW loading. This allows for approximately 1300 KW margin to handle starting of ECCS equipment should a LOCA occur.

Reference: Attachment 2000-ABN-3200.36-2

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

What are the loading requirements for the EDG's during a loss of offsite power and why? (Assume both EDG's are operating and carrying their respective buses and NO LOCA is in progress?

Question # 1

Explain the reason for and the operation of the emergency buses load shedding and load sequencing logic.

Initial Conditions:	Control Room evacuated due to a fire Expected operator actions for control Room Evacuation have been completed "B" Isolation condenser is in service Offsite power to bus 1D is not available
Initiating Cue:	The GOS has directed you to place LSP-DG2 in service and start EDG #2 in accordance with Procedure 346

Facility: Oyster Creek **Task No:** 2090201003

Task Title: Perform Core Spray Pump Operability surveillance

Job Performance Measure No: 209-04

K/A Reference: 209020 A4.01 (3.8 / 3.6)

Examinee: ________________ **NRC Examiner:** ________________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Reactor @ 100% power; MAPLHGR is at 89.6% NZ01A has just been returned to service following breaker PM's Core Spray System II operability has been completed
Task Standard:	Core Spray Pump operability surveillance completed on system 1
Required Materials:	None
General References:	Core Spray Pump Operability Test 610.4.002 Rev 37
Initiating Cue:	As the LOS, I am directing you to perform Core Spray Pump Operability Test per procedure 610.4.002 on Core Spray Pumps NZ01A and NZ03A
Time Critical Task:	No
Validation Time:	15 minutes

START TIME ____ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
Cue: Provide Surveillance Test Package to Trainee		
1 Obtain controlled copy of procedure	Procedure 610.4.002 obtained.	N/A
2. Verifies all prerequisites	Verifies prerequisites met	
CUE: Prerequisites are met: System II operability verified; both EDG's are operable; MAPLHGR < 90% Attachment 610.4.002-1 is signed		
3 Reviews all applicable precautions and limitations	Reviews all applicable precautions and limitations	
*4 Confirms Core Spray System I is filled and vented	Confirms Core Spray System I is filled and vented by verifying: - Core Spray fill pump NZ04A is running (red light at MCC is on) - Pump discharge pressure PIT RV03A >35 psig	
CUE: As EO, report red light is ON at MCC for System A Keep Fill Pump		
*5 Enables V-20-27	Directs an Equipment Operator to enable V-20-27 by: - unlocking and turning on V-20-27 supply breaker at MCC1A21B - verifying breaker in V-20-27 starter is on.	
CUE: (CI)As EO report V-20-27 unlocked and turned on and breaker in V-20-27 starter is on.(Use LOA CSS17 set to "false")		
6 Notifies plant personnel	Notifies plant personnel using the plant paging system that Core Spray System I will be tested.	
*7 Starts Core Spray pump NZ01A	Starts Core Spray pump NZ01A using control switch on 1F/2F and verifies/records: - Records Core Spray pump discharge pressure - Mains from PIT-RV03A - Confirms discharge pressure > 150 psig.	
*8 Starts Core Spray Booster Pump	Starts Core Spray Booster pump NZ01A using control switch on 1F/2F and verifies/records: - directs EO to check for leakage from relief valve V-20-25	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
CUE: Report no leakage observable from V-20-25 when asked.		
*9. Directs EO to open V-20-27	Directs EO to open V-20-27 using the keylock switch on 51'NW	
CUE:(CI) As EO open V-20-27 (Use LOA CSS31 set to "open" return LOA CSS31 to normal after the valve is fully open; the valve MONV is full open at 0.28)		
CUE: Use time compression and inform the operator that 10 minutes have elapsed for the following step.		
*10 Records Data	Records the following Data and verifies values meet acceptance criteria: - Records Core Spray pump discharge pressure - Mains from PIT-RV03A ≥ 150 psig - Records Core Spray pump discharge pressure - Boosters from PT-RV41A ≥ 230 psig - System Flow from FIT-RV26A ≥ 3400 gpm	
*11 To Verify operability of Main Pump, Stops the Core Spray Booster pump, NZ03A	Stops the Core Spray Booster pump using the control switch on 1F/ 2F	
CUE: Use time compression and inform the operator that 10 minutes have elapsed for the following step.		
*12 Record Main Pump Data	After waiting 10 minutes, records the following data: - Core Spray Pump A discharge pressure - System 1 Flow	
CUE: Pump switching is not required; skip to step 6.15		
CUE:(CI) As EO report V-20-27 closed (Use LOA CSS30 set to "close" return LOA CSS30 to normal after the valve is open.)		
*13 Closes V-20-27	2F Directs EO to close V-20-27 using the keylock switch on 51'NW	
*14 Verify fill pump running	Directs EO to verify Core Spray Fill Pump running (red light at MCC 1B21B)	
CUE:(CI) As EO report Core Spray Fill Pump has red lit indication.		
*15 Stops the Core Spray Main pump	Stops the Core Spray Main pump using the control switch on 1F/2F	
*16 Verifies Indications	Verifies system indications as follows: - System Flow Permissive (B-3-e) clear	
*17 Relieves test line vacuum	Has EO open V-20-262 until core spray pump discharge pressure, Mains, PIT-RV03A > 35 psig.	
CUE:(CI) As EO report V-20-262 was opened and reclosed when no more vacuum detected.		

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*18 Disables V-20-27	Directs an Equipment Operator to turn off and lock V-20-27	
*18 Transfers data	Transfers data onto applicable attachments.	
19 Informs LOS	Notifies the LOS that the surveillance Testing of Core Spray System I is complete	

COMPLETION TIME______

Job Performance Measure No. 209-04

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 209001 K4.04 Line Break detection (3.0/3.2)

The plant is at 100% power. Annunciator B-5-f SPARGER 2 DP HI is in alarm. What is the safety significance of this alarm, and what must be done?.

Response:
This alarm is the Core Spray Line break detection. It means that if the alarm is valid, the core spray line penetration the shroud is broken and if needed, CS will not be able to deliver water to prevent core melting. Per the RAP, if the reading is valid, consider CS System 2 inoperable. Core Alphgr must be brought within 90% of limit within 2 hours

Reference: RAP B-5-f

Result: SAT or UNSAT

Question:

2. 209001 K3.02 ADS Logic (3.8/3.9)

A LOCA inside the Drywell concurrent with a LOOP and a failure of EDG #2 to re-energize Bus 1D has occurred. "A" Core Spray Pump has failed to autostart and cannot be manually started. What is the impact of these conditions on ADS? Assume that the ADS timers have not been bypassed

Response:
In this scenario, the "D Booster Pump will be operating. When the Div 2 ADS timer times out, relay 16K201B energizes, and all 5 EMRV's open

Reference: GE 729E182 (ADS) and NU 5060E6003 (Core Spray)

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

A LOCA inside the Drywell concurrent with a LOOP and a failure of EDG #2 to re-energize Bus 1D has occurred.

"A" Core Spray Pump has failed to autostart and cannot be manually started.

What is the impact of these conditions on ADS? Assume that the ADS timers have not been bypassed

Question # 1

The plant is at 100% power.

Annunciator B-5-f SPARGER 2 DP HI is in alarm.

What is the safety significance of this alarm, and what must be done?.

Initial Conditions:	Reactor @ 100% power; MAPLHGR is at 89.6%
	Core Spray Pump NZ01A has just been returned to service following breaker PM's
	Core Spray System II operability as been completed
Initiating Cue:	As the LOS, I am directing you to perform Core Spray Pump Operability Test per procedure 610.4.002 on Core Spray Pumps NZ01A and NZ03A

Facility: Oyster Creek **Task No:** 2000501439

Task Title: Restart Reactor Building HVAC after an Isolation

Job Performance Measure No: New (290-01)

K/A Reference: 295034 Ea1.03 (4.0 / 3.9)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Reactor building HVAC is isolated and on SGTS
Task Standard:	Restore Normal RB HVAC
Required Materials:	None
General References:	Support Procedure 50 Rev 9
Initiating Cue:	As the GOS, I am directing you to restore RB HVAC in accordance with Support Procedure 50
Time Critical Task:	NO
Validation Time:	5 minutes

START TIME _______ (* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of the procedure	Support Procedure 50 obtained	
2. Review Prerequisites	Prerequisite is reviewed	
3. Verify Rx Building Vent Effluent Monitors < 9 mr/hr	At panel 2R, verifies that Vent Manifold Rad Ch 1 and 2 are reading < 9 mr/hr	
*4. Remove and insert bypass plugs	In rear of Panel 11R, in the EOP BYPASS PLUGS panel, performs the following: • Remove the bypass plug from Position BP4 • Insert the Bypass Plug into Position BP1	
*5. Reset Rx Building Vent system	At Panel 11R, resets the Reactor Building Ventilation System by depressing the RESET pb	
*6. OPEN RB Main Exhaust Dampers	Opens the Rx Building Main Exhaust Dampers V-28-21 and V-28-22 (Panel 11R)	
The next steps should be completed immediately after starting the exhaust fan in order to preclude damage to the Ventilation system		
*7. Start EF 1-5	At Panel 11R, starts Exhaust Fan EF-1-5	
8. Confirm control switch for V-28-42 and V-28-43 in CLOSE	Confirms control switch for V-28-42 and V-28-43 in CLOSE	
*9. Start two Rx Building Supply Fans	Selects and starts 2 of the three supply fans (SF 1-12, SF 1-13, SF 1-14)	
10. Inform GOS that Rx Building Ventilation has been restored IAW Support Procedure 50	Informs GOS that Rx Building Ventilation has been restored IAW Support Procedure 50	

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. New (290-01)

Examinee's Name:________________________________

Examiner's Name:________________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:
1. 295034 EK2.01 Process Radiation Monitoring system (3.9 / 4.2)

The plant is in a refueling outage when it is discovered that Process Rad Monitor R014C-5 for the Reactor Building Operating Floor has failed down scale. What must be done?

Response:

The RB Operating Floor Rad Monitor is required to be operable during Refueling conditions> And since refueling is in progress, Secondary containment is also required. Therefore, per TS Table 3.1.1 sheet 5, a manual surveillance of the Operating Floor Radiation levels must be started. If after 24 hours and the monitor is still inop, isolate the Rx Building and initiate SGTS

Reference: Tech spec Table 3.1.1

Result: SAT or UNSAT

Question:
2. 290001 K6.01 Reactor building Ventilation (3.5 / 3.6)

The plant is at 100% power when it is determined that ne of the detectors for the RB Ventilation High Temperature detection system has failed. If plant operation is to continue, What must be done and why?

Response:

Per the RAP and Procedure 329, if any of the four detectors is inop, initiate SGTS and confirm shutdown of RB HVAC. The temperature detectors are part of the RB Fire Detection system. If a fire watch is posted on the 23', 51' and 75' elevations, then SGTS can be shutdown and normal HVAC restored.
Reference: RAP L-4-c, procedure 329

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question #2

The plant is at 100% power.

It is determined that one of the detectors for the RB Ventilation High Temperature detection system has failed.

If plant operation is to continue, What must be done and why?

Question # 1

The plant is in a refueling outage.

It is discovered that Process Rad Monitor R014C-5 for the Reactor Building Operating Floor has failed down scale.

What must be done?

Initial Conditions:	Reactor building HVAC is isolated and on SGTS
Initiating Cue:	As the GOS, I am directing you to restore RB HVAC in accordance with Support Procedure 50

Facility: Oyster Creek **Task No:** 2080401004

Task Title: Respond to inadvertent isolation of RBCCW to the Drywell

Job Performance Measure No: 400-01 (new)

K/A Reference: 400000 A3.01 (3.0 / 3.0)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: The plant is at 100% power. All equipment operable.

Task Standard: Respond to loss of RBCCW IAW RAP

Required Materials: None

General References: RAP C-2-c

Initiating Cue: You are the CRO. Respond to plant conditions as necessary.

Time Critical Task: Yes (1 minute after verification of RBCCW isolation)

Validation Time: 2 minutes

START TIME _____ (* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
CI: When ready to start JPM, enter RBCCW Malfunction RBC6A (V-5-147 and 166), then immediately clear the malfunction		
*1. Respond to annunciator C-2-c RBCCW ISOL	Announces RBCCW isolation to the Drywell has occurred	
*2. Responds to CCW low flow annunciators	When the five CCW FLOW LO annunciators alarm, announces low flow to the Recirc Pumps	
*3. Verifies validity of alarms	Checks and verifies, then announces to crew that RBCCW valves V-5-147 and V-5-166 are closed.	
*4. Responds to event IAW RAP C-2-c	Checks plant indications and confirms that the isolation is spurious, • Depresses RESET pb's on 1F/2F for RBCCW • Re-opens V-5-147 and V-5-166 • Verifies CCW FLOW LO alarms have cleared	
NOTE: the candidate may also decide that the low flow to the Recirc Pumps may warrant a reactor scram and tripping the Recirc Pumps within 1 minute		
*5. Responds to event IAW RAP E-7-d	Verifies RBCCW flow low is in for multiple pumps. If RBCCW can not be restored within 1 minute: • Inserts a manual scram • Trips all operating Recirc Pumps	

COMPLETION TIME______

Job Performance Measure No. 400-01

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:_______________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question: 295016 AK2.02 Local control stations (4.0/4.1)

The plant is at power when a control Room Evacuation is required. None of the operator actions have been performed. What must be done and how?

Response:
There are backup methods if the expected operator actions for abandoning the Control room are not performed.

- Trip the RPSMG Set output circuit breakers and turn off SW-773-169/170 in the lower cable spreading room
- Manually trip/open the Recirc Pump breakers at Bus 1A and 1B
- Manually trip/open the Feed Pump breakers on Bus 1A and 1B

Reference: Attachment 2000-ABN-3200.30-1

Result: SAT or UNSAT

Question:
400000 A4.01 CCW indications and Control (3.1 / 3.0)

What is the purpose/function of the RBCCW Pump control switch NORMAL/BYPASS on the breaker? **THIS IS a CLOSED REFERENCE QUESTION**

Response:
This breaker control switch determines the response of the RBCCW pumps during sequential loading of the EDG's following a loss of power.
In NORMAL, the pump auto starts 166 seconds into the DG loading sequence (assuming NO LOCA). NOTE: the pumps trip on a LOCA signal
The BYPASS position allows operators to restart the pump on the EDG during a LOOP/LOCA
Reference: 6231-PGD-2621 828.0035

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

What is the purpose/function of the RBCCW Pump control switch NORMAL/BYPASS on the breaker?

THIS IS A CLOSED REFERENCE QUESTION

Question #1

The plant is at power when a control Room Evacuation is required.

None of the operator actions have been performed.

What must be done and how?

Initial Conditions: The plant is at 100% power.
All equipment operable.

Initiating Cue: You are the CRO. Respond to plant conditions as necessary.

Facility: Oyster Creek **Task No:** 2120201303

Task Title: Perform Anticipatory Scram Turbine Stop Valve Closure Test

Job Performance Measure No: 212.06

K/A Reference: 295024 EA1.18 (3.6 / 3.6)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: _________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: The plant is at 90%.

Task Standard: Exercise and test Main Turbine Stop Valves 1 and 2

Required Materials: None

General References: 619.4.002 Rev 9

Initiating Cue: As the GOS, I am directing you to perform surveillance 619.4.002 Anticipatory Scram Turbine Stop Valve Testing

Time Critical Task: No

Validation Time: 15 minutes

START TIME _______ * donates critical step

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure	Obtains Ops. Surveillance Procedure 619.4.002.	
NOTE: give candidate copy of procedure		
2. Verify all prerequisites are met	Verifies all prerequisites met • No half scrams are present • Generator load > 45% • Scram Group solenoids lights are lit • COND VAC LO/ TURB TRIP I (II) and SCRAM CONTACTOR OPEN are clear	
Cue: As LOS, grant permission to perform surveillance; additionally, if asked, no other testing is in progress		
3. Review Precautions and Limitations	Reviews Precautions and limitations	
NOTE: the performance and review of this surveillance is IAW Procedures 116 and 125.1		
*4 Selects #2 Stop Valve	At Panel 14R, places the switch marked MAIN STOP VALVE TEST SELECT in the #2 position.	
*5 Tests #2 stop valve	At Panel 14R, momentarily depresses the MAIN STOP VALVES TEST pushbutton • At Panel 14R, verifies that #2 Stop Valve Closes • At Panels 6R & 7R, verifies Relays 1K11, 2K12, 1K51 & 2K52 are energized	
Cue: (Floor Instructor) Relays 1K11, 2K12, 1K51 & 2K52 are energized.		

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*6 Selects #1 Stop Valve	At Panel 14R, places the switch marked MAIN STOP VALVE TEST SELECT in the #1 position. • At Panel 14R, verifies #2 Stop Valve opens • At Panel 14R, verifies all Stop valves open	
*7 Tests #1 stop valve	At Panel 14R, momentarily depresses the MAIN STOP VALVES TEST pushbutton • At Panel 14R, verifies #1 Stop Valve Closes	
NOTE: #2 Stop Valve will continuously cycle between the full open and 10% closed position with the ANTICIPATORY SCRAM TEST switch in the 1-2 position		
*8 Performs anticipatory scram test on #2 stop valve.	At Panel 14R, places the ANTICIPATORY SCRAM TEST switch in the 1-2 position. When #2 Stop Valve reaches 10% closed: • At Panel 6R, verifies relay 1K51 & 1K11 are de-energized (a half scram has occurred) • At Panel 6R, verifies Scram Solenoid lights out	
CUE: relays 1K51 & 1K11 are de-energized at 6R		
8. Verify of front panel indications	Verifies the following: • *"SCRAM CONTACTOR OPEN"* G-1-c in alarm • *"COND VAC LO/TURB TRIP I"* J-1-b in alarm • <u>SOE 11</u>, <u>Tripped</u>; *"SOE 11 COND LO VAC SCRAM"* at the plant computer	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*10 Secures #2 Stop Valve Anticipatory Scram test	At Panel 14R, places the ANTICIPATORY SCRAM TEST switch in the off position. • At Panel 14R, verifies #2 Stop Valve opens	
*11 Reset of half-scram	Resets half scram When confirmation received: • At Panel 6R, verifies relay 1K51 & 1K11 energized at 6R • At Panel 6R, verifies Scram Solenoid lights lit at 6R.	
CUE: relays 1K51 & 1K11 are energized at 6R		
12 Verify front panel indications	Verifies the following: • Alarm *"COND VAC LO/TURB TRIP I"* J-1-c is clear • Alarm *"SCRAM CONTACTOR OPEN"* G-1-c is clear • SOE 11, Normal; *"SOE 11 COND LO VAC SCRAM"* at the plant computer	
At this time, the JPM is terminated		

Completion Time:____________

Job Performance Measure No. 212.06

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:
295005 Extraction Steam / Moisture Separator Isolations (2.5 / 2.6)
Question:
What is the function/purpose of the Extraction relay dump valve?

Response:
The extraction relay dump valve dumps Instrument Air off all the bleeder trip valves (extraction steam non-return valves) on a turbine trip. This allows for the BTV's to unlatch and close on reverse flow through them to prevent the volume of steam and water in the Feedwater heaters from flashing and overspeeding the Turbine.

Reference: BR2013 Sheet 7 (F-9); BR 2002 Sheet 3

Result: SAT or UNSAT

Question: CLOSED BOOK
295005 AK1.01 Pressure effects on reactor power (4.0 / 4.1)
Abnormal Operational Transients (AOT's) are analyzed to ensure the Reactor coolant system does not exceed ASME and ANSI transient codes for high pressure.

Which of the following analyzed events that challenge RPV pressure limits is more severe and why: Turbine trip from 100% power or all MSIV's inadvertently closing at 100% power?

Response:
Turbine trip from 100% power is more severe a pressure transient because of the rapid closing of the Turbine Stop Valves (0.1 seconds). The TSV closure scram at 10% SV position initiates a reactor scram, but the pressure transient is more severe than the MSIV closure initiated at <90% MSIV opening because the MSIV's have not yet started to throttle back on steam flow, so the pressure transient is much less severe than the turbine trip. However, in both cases, 1325 PSIG is not exceeded.

REFERENCE: 6231-PGD-2621 823.0003

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Question # 2

Abnormal Operational Transients (AOT's) are analyzed to ensure the Reactor coolant system does not exceed ASME and ANSI transient codes for high pressure.

Which of the following analyzed events that challenge RPV pressure limits is more severe and why: Turbine trip from 100% power or all MSIV's inadvertently closing at 100% power?

THIS IS A CLOSED BOOK QUESTION

Question # 1

What is the function/purpose of the Extraction relay dump valve?

Initial Conditions:	The plant is at 90%.
Initiating Cue:	As the GOS, I am directing you to perform surveillance 619.4.002 Anticipatory Scram Turbine Stop Valve Testing

As Given Scenarios / Outlines

SCENARIO A-1 ELECTRICAL ATWS

SCENARIO OBJECTIVE

Evaluate the operators in using RPV CONTROL – with ATWS

SCENARIO SUMMARY

67% power; all equipment operable. Per General Operating Procedures, continue to increase power to 100%.

EVENTS

- Power increase using Recirc Flow
- Respond to Rx Building Operating Floor Radiation Monitor Failure /SGTS fails to auto start
- Loss of IP-4B
- Generator Field Ground / Generator Trip
- Electrical ATWS

SCENARIO SEQUENCE

The crew will increase power using Recirc flow. After the increase in power has been performed, an upscale failure of the Rx Building Operating Floor Radiation Monitor will occur. This will, after a 2 minute Time Delay, isolate Secondary Containment but SGTS will fail to auto initiate. The crew will manually initiate SGTS. After the Rad Monitor and the timer relay in SGTS initiation logic is fixed, the crew will restore normal Reactor Building Ventilation. After ventilation is restored, a loss of IP-4B occurs. 15 minutes later, AOG isolates. The crew will monitor condenser vacuum. As soon as AOG isolates, the cause of IP-4b loss is corrected, and the crew will re-energize IP-4B and restore Off-Gas flow through the Stack. After AOG is restored, a Main Generator filed ground alarm occurs. Investigation reveals arcs and sparks in the exciter housing. The crew will decide to scram the reactor and trip the turbine. However, the reactor does not scram (electrical ATWS). A turbine trip occurs. Bypass Valves are initially available for pressure control, but a slow loss of condenser vacuum will result in a transition of pressure control from the Bypass Valves/EMRV's to EMRV's/Isolation Condensers. Driving control rods will not work. After the crew lowers water level to between 30' and - 30', or initiates SLC, venting the scram air header will allow rods to insert, terminating the ATWS event.

EVENT 1 – Change in Reactor power

Objective: Normal plant event in evaluating examinee's control of reactivity (N) (R) CRO-A;SRO

EVENT 2 – Failure of Rx Building Operating Floor Radiation Monitor/ Failure of SGTS to auto start

Objective: Instrument failure resulting in isolation of Rx Building HVAC and manual initiation of SGTS (I) (N), then restoration of Rx Building HVAC

Malfunctions required: 2 Upscale failure of Rx Building Operating Floor Rad Mon and failure of SGTS to auto initiate

EVENT 3 – Loss of IP-4B

Objective: Evaluate the examinee's response to plant instrument and component failures (I, C) CRO-A; CRO-B; SRO

Malfunctions Required: 1 Loss of IP-4B

Success Path: dispatch Electrical Maintenance and EO to Panel IP-4B; Electrical Maintenance fixes faulted breaker; EO restores power to IP-4B; AOG is restored.

EVENT 4: Generator Field Ground

Objective: Evaluate the examinee's actions and decision making process when it is determined that the Main Generator exciter (Component) is arcing and sparking. (C) CRO-B; SRO

Malfunctions Required: 1 Main generator Trip (prelude to this is an annunciator indicating Generator ground)

Success Path: The SRO determines that a reactor scram / turbine trip is required

EVENT 5: Electrical ATWS (this file contains 4 malfunctions; failure to Auto scram, failure to Manual scram, failure of ARI and failure of Rod Power switch))

Objective: Evaluate examinee's implementation of the EOP's during ATWS event (M) CRO-A, CRO-B, SRO

Malfunctions required: file ATWS

Success Path: Establish RPV pressure control, water level control +30" to –30", inject SLC before exceeding BIIT, vent the scram air header

SCENARIO RECAPITULATION

Total Malfunctions:	6
Abnormal Events:	2
Major Transients:	1
EOP's entered:	3
EOP Contingencies:	0

Facility: Oyster Creek **Scenario No.:** A-1 (New) **Op-Test No.:**

Examiners: ____________________ **Operators:** ____________________

____________________ ____________________

____________________ ____________________

Objectives:

Evaluates applicants ability to increase reactor power IAW General Operating Procedures
Evaluates applicants response to a Radiation Monitor Failure/failure of SGTS to auto start
Evaluate applicants ability to respond to a loss of Instrument Panel IP-4B
Evaluate applicants response to a field ground/loss of field Generator trip/turbine trip
Evaluate applicants ability to execute EOP's during an electrical ATWS event

- Recognize loss of condenser as a heat sink, then control RPV pressure with Isolation Condensers / EMRV's
- Lower RPV water level as directed by EOP
- Initiate SLC prior to exceeding BIIT Limit
- Place containment Spray in Torus cooling
- Attempt to manually insert control rods using RMCS
- Successfully vent the scram air header to terminate the ATWS event

Initial Conditions:
The plant is at 67% power; all equipment is operable.

Turnover:
Per 201.3, continue to increase power to 100%.

Event No.	Malf. No.	Event Type*	Event Description
1	-	R	Increase in reactor power using Recirc flow
2	MAL RMS4J	I,N	Respond to RxBuilding Rad Monitor Failure (INSTRUMENT FAILURE EVENT)
3	MAL EDS8C	C	Loss of IP-4B (COMPONENT FAILURE) Recover AOG after system isolates
4	OVR GEN3 MAL GEN1	C	Respond to Field ground annunciator Respond to loss of field generator trip/turbine trip
5	FILE ATWS	M C	Electrical ATWS / turbine Trip with Bypass Valves available. However, a slow loss of vacuum occurs (blade thrown through condenser shell). Loss of condenser as a heat sink: when the low vacuum trip closes the bypass Valves, pressure control will now be with the Isolation condensers and EMRV's maintained open. Torus water temperature will increase, requiring injection of SLC

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

Op-Test No.:	Scenario No.: A-1	Event No.: 1	Page 2 of 11

Event Description: Increase in reactor power using Recirculation Flow

Time	Position	Applicant's Actions or Behavior
	SRO(N)	Directs CRO to increase reactor power to 75% in accordance with 201.3 Plant Startup from Hot Standby to Rated Power Step 5.20 (Core Engineering instructions will be to increase recirc flow) Conducts Pre-evolution brief; included in this brief should be directions to check at least 6 Cond Demins, 3 condensate and 3 Feedwater Pumps are in service at 70% power **Comments:**
	CRO-A (R)	Increases reactor power using Recirc flow in accordance with 301.2 Reactor Recirculation System Section 6.0 1. Reviews Precautions and Limitations • Do not withdraw control rods while making recirc flow changes • All flow changes consistent with the requirements of 202.1 POWER OPERATION • Maintain flow > 6.4 x 10^4 gpm while in RUN • Monitors NI's for indication of power oscillations • Operation in the Exclusion Region is not permitted 2. Verifies individual MG Set Speed Controllers on each recirc pump are in AUTO 3. Slowly increases total recirc flow using MASTER RECIRC SPEED CONTROLLER manual adjustment knob 4. Monitors pressure, flow and NI's and Generator output as recirc flow is increased 5. Notifies SRO at 70% power 6. Continues power increase to 75% power. 7. At 75%, notifies SRO **Comments:**
	CRO-B	Monitors plant response to increasing Recirculation flow

		This concludes Event 1

Op-Test No.:	Scenario No.: A-1	Event No.: 2	Page 3 of 11

Event Description: Upscale failure of Rx Building Operating Floor Ro14B-9 Radiation Monitor
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B	Responds to annunciators on Panel 10F 10F-1-k and 10F-4-m Notifies SRO that in 2 minutes, the Reactor Building ventilation will isolate and SGTS will initiate **Comments:**
	CRO-A	Checks Rad Monitors on Panel 2R and reports R014B-9 is pegged upscale, and R014C-9 is normal
	SRO	Briefs crew of impending Secondary Containment Isolation
	CRO-B	When Rx Bldg/SGTS alarms annunciate on Panel L, verifies Rx building Isolation and auto Start of SGTS on Panel 11R IAW SGTS Procedure 330 Section 5.3.1 Reports failure of SGTS to initiate 1. Manually starts both SGTS Fans and verifies valves open 2. Verifies Rx Bldg supply and exhaust Fans trip (SF-1-12, SF-1-13, SF-1-14, EF-1-5) 3. Verifies Rx Bldg Main Header Supply valves close 4. Verifies V-28-21, V-28-22, V-28-42, V-28-43 and V-28-48 closes 5. After 2-3 minutes, manually shutdown SGTS System 2 **Comments:**
	CRO-A	Notifies I and C Department of failed Rad Monitor and failure of SGTS
	SRO	Refers to Tech Spec Table 3.1.1 Section J and action required. When it is reported that the Rad Monitor and SGTS initiation logic are repaired, directs SRO-B to restore Reactor Building Ventilation
	CRO-B	Restores Rx Building Ventilation to Normal IAW SGTS Procedure 330 and Rx Bldg Vent Procedure 329 1. Per Section 6.3.1.2 CRO-A resets Rx Building Vent Manifold CH1 2. Verifies SGTS system 1 is shutdown and Rx Building Isolation Reset has double indication, then depresses RESET pb 3. Per Procedure 329, confirm control switch for V-28-21 and 22 is in OPEN 4. Reset RB HVAC and confirm V-28-21 and 22 open 5. Confirm control switch for V-28-42 and 43 is in CLOSED 6. Start EF-1-5, then start two supply fans (SF-1-12, 13, 14) and verify supply valves open 7. Check building pressure is negative at .25" water **Comments:**
	SRO	**This concludes Event 2**

Op-Test No.: Scenario No.: A-1 Event No.: 3

Event Description: Loss of Instrument Panel IP-4B.
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B/A	Acknowledges multiple Control room annunciators; reports annunciator 9XF-7-b IP-4B PWR LOST is in alarm **Comments:**
	CRO-B	Responds to a loss of IP-4B in accordance with RAP 9XF-7-b **Comments:**
		Reports that OG will isolate in 15 minutes **Comments:**
		Performs confirmatory actions; checks RAP listed indications and alarms **Comments:**
		Informs SRO of Tech spec 3.7 requirements **Comments:**
		Refers to DWG 3C-733-11-008 for IP-4B Panel Schedule (if time permits) NOTE: load listing is also found in 2000-OPS-3024.10f Section 4.4 **Comments:**
		Refers to OPS-3024.10f for Power Restoration Actions **Comments:**
		Event 3 continued on next page

Event Description: Loss of Instrument Panel IP-4B (continued)

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CRO to implement actions of RAP 9XF-7-b **Comments:**
		Refers to Tech Spec 3.7; determines that IP-4B is Tech spec related equipment and states that LCO 3.7 is in effect; cold shutdown within 30 hours. **Comments:**
		Directs CRO to dispatch EO to IP-4B to investigate Directs CRO to notify Electrical Maintenance to investigate loss of IP-4B **Comments:**
	CRO-B	Notifies SRO when AOG isolates; monitors condenser vacuum **Comments:**
	EO/CRO	Reports that Electrical Maintenance has determined that the supply breaker to IP-4B was faulted and a new breaker has been installed **Comments:**
	SRO	Directs power to be restored to IP-4B **Comments:**
		Event 3 continued on next page

Op-Test No.:	Scenario No.: A-1	Event No.: 3 Page 6 of 11
Event Description: Loss of Instrument Panel 4B (continued)		
Time	**Position**	**Applicant's Actions or Behavior**
	CRO-B	Re-energizes IP-4B in accordance with 2000-OPS-3024.10f 1. Directs EO to open all breakers on IP-4B 2. Directs EO to close feeder breaker to IP-4B 3. Directs EO to re-close all breakers on IP-4B **Comments:**
		Re-opens V-7-31 to restore OffGas flowpath 1. Places OG mode selector switch to ISOLATE and BYPASS (10XF) 2. Depresses MAIN STEAM ISOLATION RESET pb (4F) 3. Confirms V-7-31 opens **Comments:**
	SRO	Directs placing AOG back in service **Comments:**
	CRO-B/A	Re-establishes TIP Nitrogen Purge **Comments:**
		This concludes Event 3

Op-Test No.:	Scenario No.: A-1	Event No.: 4	Page 7 of 11

Event Description: Respond to field ground annunciator / Respond to loss of field generator trip/turbine trip
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B	Acknowledges and reports annunciator R-4-a FIELD GROUND is in alarm **Comments:**
	CRO-B	Responds to annunciator in accordance with RAP R-4-a. 1. Dispatches an operator and electrician to Main Generator and exciter area to observe any visual evidence of arcing or damage 2. Notifies the SRO that if the ground is severe enough, exciter output may be lost or generator may trip **Comments:**
	SRO	When the report comes in that there is arcing in the exciter housing, directs a reactor scram to be inserted, followed by tripping the turbine *NOTE: A time period of 1 minute will be given for the crew to trip the Turbine after inserting the scram. If the turbine is not tripped inn that 1 minute, a Generator trip will be inserted.* **Comments:**
	CRO-A	When directed by SRO, inserts a manual scram. Reports failure to scram **Comments:**
	CRO-B	When directed by SRO, trips Turbine Generator. OR....Reports automatic trip of Generator has occurred. **Comments:**
		This concludes Event 4

Event Description: Electrical ATWS

Time	Position	Applicant's Actions or Behavior
	CRO-A	Performs expected operator action for scram 1. Depress RPS manual scram pb's 2. Place the mode switch to SHUTDOWN 3. Verify that all control rods are fully inserted; reports that the reactor did not scram 4. Confirms or manually initiates ARI; reports that ARI failed to insert rods **Comments:**
	SRO	Enters EMG-3200.01B RPV CONTROL –with ATWS 1. Directs pressure control using Bypass Valves and EMRV's 2. IF water level < 160", directs initiation of Isolation condensers (if not already in service due to high pressure auto initiation) 3. Directs ROPS bypassed 4. Directs Support Procedure #1 to be performed (Initiations and Isolations) 5. Directs bypassing ADS 6. Directs Support Procedure #16 to be performed(MSIV LO-LO Bypass) 7. Directs Support Procedure #18 to be performed(RBCCW to Drywell Bypass) 8. Directs all operating Recirc Pumps to be tripped **Comments:**
	CRO-A *** Critical task (bypassing ADS)**	Performs actions as directed by SRO 1. Monitors and controls pressure augmenting Bypass valves with sustained opening of EMRV's 2. Trips all operating Recirc Pumps 3. Controls RPV water level IAW Reactor Scram until directed to lower level 4. Initiates Isolation condensers, if directed 5. Bypasses ADS **Comments:**
		Event 5 continued on next page

Op-Test No.:	Scenario No.: A-1	Event No.: 5	Page 9 of 11
Event Description: Electrical ATWS (continued)			

Time	Position	Applicant's Actions or Behavior
	CRO-B	1. Reports turbine Trip and decreasing condenser vacuum 2. Verifies proper operation of the Bypass Valves **Comments:**
	CRO-B	Performs actions as directed by SRO 1. If time permits, performs Support Procedure #1 2. Performs Support Procedures #16 and #18 **Comments:**
	SRO	1. Confirms Torus water temperature is below BIIT 2. After Support Procedure 16 is completed, directs water level to be lowered to below 30" **Comments:**
	CRO-A *Critical Task	1. Terminates and prevents injection into the vessel except for CRD and boron to lower RPV water level 2. Maintains RPV water level between +30" and –30" using Feedwater and CRD in accordance with Support Procedure 19 **Comments:**
		Event 5 continued on next page

Op-Test No.:	Scenario No.: A-1	Event No.: 5	

Event Description: electrical ATWS (continued)

Time	Position	Applicant's Actions or Behavior
	CRO-B	Reports Bypass Valves are closed due to low condenser vacuum; maintains pressure control within directed band using maintained open EMRV's and Isolation condensers **Comments:**
	SRO *Critical Task	1. Determines that Torus water temperature can not be maintained below BIIT, and directs initiation of SLC 2. Enters EMG-3200.2 Primary Containment Control for Torus water high temperature **Comments:**
	CRO-A	Initiates SLC; confirms RWCU is isolated. **Comments:**
	SRO	Directs insertion of control rods in accordance with Support Procedure 21 **Comments:**
	CRO-A	1. Places mode switch to REFUEL, starts both CRD pumps, and maximizes Drive Water dp. 2. Attempt to manually inserts Control rods; reports that rods will not insert **Comments:**
	CRO-B	1. Reports De-energizing Scram Solenoids and individual scramming did not insert rods 2. Directs EO to vent the Scram Air header **Comments:**
		Event 5 continued on next page

Event Description: Electrical ATWS (continued)

Time	Position	Applicant's Actions or Behavior
	SRO	Directs Support Procedure 1 to be performed AFTER water level is lowered **Comments:**
	CRO-B	Performs Support Procedure #1 **Comments:**
	SRO	After the scram air header is vented and all rods in, directs SLC to be terminated and exits RPV Control – with ATWS and enters EMG-3200.1A RPV Control – No ATWS at Step A **Comments:**
	CRO-A	1. Reports all rods are full in 2. When directed, terminates boron injection **Comments:**
	SRO	1. Directs RPV water level to be slowly raised to 138" 2. Directs pressure control to be on 1 Isolation condenser (maintain RPV pressure > 450 PSIG) 3. Directs Torus Cooling (both loops) to be placed in service; reports only System 1 will align for Torus Cooling **Comments:**
		Terminating Cue: When actions are being taken to raise RPV water level and address elevated Torus water temperatures, the scenario is terminated.

Scenario A-2 Loss of Coolant Accident

Scenario Objective
Evaluate the operators in using RPV Control – No ATWS and Emergency Depressurization

SCENARIO SUMMARY

The plant is at 100% power; all equipment operable. Isolation Condenser Surveillance 609.4.001 Valve Operability and In-service Test is scheduled to be performed.

EVENTS

- Isolation Condenser Valve Operability
- A3 Feedwater high water level trip due to instrument failure
- Loss of DC-F
- Increasing Drywell pressure
- Loss of 4160 VAC Bus 1D
- Large break LOCA in Drywell requiring ED

SCENARIO SEQUENCE

The plant is at 100% power. Isolation Condenser "A" surveillance is to be performed. After the surveillance is completed, an isolation of Feedwater A3 on a high water level trip occurs. The next event is a loss of DC-F. The crew responds to a loss of CRD and Cleanup. After maintenance fixes the breaker to DC-F, the crew will re-energize DC-F. After DC-F is re-energized, a small leak will occur inside the Drywell. Attempts to vent the Drywell will not be able to keep pressure < 3 PSIG, therefore, the SRO will direct a manual scram to be inserted. "A" Core Spray Pump does not start. At 12 PSIG Torus pressure, the crew will spray the Drywell. At this time, a loss of 4 KV Bus 1D occurs. This results in reduced Core Spray pumps. At this time, however, the LOCA becomes much larger. Attempts to maintain level with Feedwater are not successful (loss of Feedwater Pumps). As water level drops below 0" TAF, Emergency Depressurization will be required. At this time, the crew will be able to recover water level > TAF using Core Spray and Condensate.

EVENT 1
Objective: Normal plant event to evaluate applicants performance of Isolation Condenser valve Operability surveillance (N) CRO-A; SRO

EVENT 2
Objective: Instrument failure to evaluate applicants response to an isolated Feedwater heater (I) CRO-B; SRO

Malfunction required: 1 Component Level Failure of heater level controller

EVENT 3
Objective: Component Failure to evaluate applicants ability to respond to a loss of 125 VDC power panel DC-F (C) CRO-A; CRO-B; SRO

Success Path: Dispatch electrical Maintenance to DC-F, then re-energize DC-F after the faulted breaker is repaired

Malfunction required: 1 Loss of DC-F

EVENT 4
Objective: To evaluate applicants response to a slow increase in Drywell pressure (Recirc loop leak) (C) CRO-A; SRO

Malfunction required: 2 Small leak from Recirc Loop and failure of "A" Core Spray Pump to start

EVENTS 5 and 6
Objective: To evaluate applicants ability to execute EOP's during a LOCA inside the Drywell
(M) CRO-A; SRO

Success Path: Initiate Containment Spray

Malfunction required: None (continuation of Event 5 malfunction)

EVENT 7
Objective: To evaluate the crews' assessment of operable equipment due to a loss of 4160 VAC Bus 1D (C)
CRO-A; CRO-B; SRO

Malfunction required: 1 Loss of 4160 VAC Bus 1D

EVENTS 8 and 9
Objective: To evaluate the crews response and implementation of EOPs during a large break LOCA inside the Drywell with reduced ECCS capability (M) CRO-A, CRO-B; SRO

Success path: Emergency depressurize when RPV water level < TAF;
Recover RPV water level > TAF using reduced ECCS capacity (System 2 Core Spray) and Condensate

Malfunctions required: 2 Increased severity of the leak inside the Drywell; loss of feedwater capability (loss of Feedwater Pumps)

SCENARIO RECAPITULATION

Total Malfunctions:	8
Abnormal Events:	3
Major Transients:	1
EOP's entered:	3
EOP Contingencies:	1

Facility: Oyster Creek **Scenario No.:** A-2 (New) **Op-Test No.:**

Examiners: ____________________ **Operators:** ____________________

____________________ ____________________

____________________ ____________________

Objectives:

Evaluate applicants performance of Isolation Condenser valve Operability surveillance
Evaluate applicants response to a failed level controller causing high water level in FWH 3A
Evaluate applicants ability to respond to a loss of 125 VDC power panel DC-F
Evaluate applicants response to a slow increase in Drywell pressure (Recirc loop leak)
Evaluate applicants ability to execute EOP's during a LOCA inside the Drywell

- Initiate Containment Spray
- Respond to a loss of 4160 VAC Bus 1D; Respond to injection valve failures System 1 Core spray
- Emergency depressurize when RPV water level < TAF
- Recover RPV water level > TAF using reduced ECCS capacity (System 2 Core Spray)

Initial Conditions:

The plant is at 100% power.

Turnover:

Maintain 100% power operations for the shift.

Isolation Condenser surveillance 609.4.001 Valve operability and In-service test is scheduled to be performed.

Event No.	Malf. No.	Event Type*	Event Description
1	-	N	Perform Isolation condenser Valve operability surveillance
2	CLF FWH1	I, R	Respond to a high water level in Feedwater heater A3 (INSTRUMENT FAILURE)
3	MAL EDS9F	C	Respond to a loss of 125 VDC Power Panel DC-F (COMPONENT FAILURE)
4	MAL NSS4	C	Respond to an increase in Drywell pressure (small leak)
5	-		If time permits, perform Scram Setup actions, then insert a manual scram.
6	-	M	At 12 PSIG Torus pressure, initiate Containment Sprays.
7	MAL EDS2B	C	Evaluate impact on EOP strategy when 4160 VAC Bus 1D is de-energized
8	MAL NSS4 (INCREASE SEVERITY)	M C	Respond to a large break LOCA inside the Drywell. After Containment Sprays have been initiated, the leak becomes a large break LOCA. RPV water level rapidly drops; Multiple failures combined with the Bus 1D lockout reduces injection flow to the vessel. RPV water level drops below TAF, requiring Emergency depressurization. Observe for Reference Leg flashing. (Reference leg flashing does not occur)
9	-	M	Recover RPV water level > TAF using System 2 Core Spray and Condensate (Feedwater Pumps are not availabe)

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

Event Description: Performance of Isolation condenser Valve Operability surveillance IC-A

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CRO-A to perform Isolation Condenser Valve Operability 609.4.01 Section 6.4
	CRO-A/SRO	1. Reviews Prerequisites Section 3.0 2. Reviews Precautions and Limitations Section 4.0 **Comments:**
	CRO-A	1. Obtains stopwatch and records its Control Number 2. Obtains SRO's permission to initiate surveillance **Comments:**
	CRO-A	Performs surveillance on IC-A in accordance with Section 6.4 1. Records closing and opening time of V-14-30 2. Records closing and opening time of V-14-31 3. Records closing time of V-14-36 4. Records opening and closing time of V-14-34 5. Re-opens V-14-5 and 20 (Panel 11F) 6. Records opening time of V-14-36 **Comments:**
	CRO-B	Performs independent verification of Control room handswitches per Step 6.7 **Comments:**
	CRO-A	Records valve stroke times on data sheet **Comments:**
	SRO	Verifies Acceptance Criteria of Data sheet 609.4.001-1 **Comments:**
		This concludes Event 1

Op-Test No.:	Scenario No.: A-2	Event No.: 2	Page 3 of 11

Event Description: Isolation of Feedwater Heater A3
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B	Responds to annunciators N-1-d , N-2-d, and N-3-d; determines from RAP's that the potential cause appears to be an high level. **Comments:**
	CRO-B	Dispatches an EO to the Feedwater Heater panels to verify V-1-50 open and verify feedwater heater level. NOTE: High water level in 1A3, low water level in 1A2 **Comments:**
	SRO	Directs actions IAW ABN-3200.16 Expected operator action is to reduce power as necessary to maintain pre-trip power (<100%) **Comments:**
	CRO-A	Monitors Reactor power, Off-Gas Activity and Main Steam line rad levels; when directed, Reduces Reactor Power using recirc flow to ensure gross Mwe < 603 Mwe **Comments:**
	CRO-B	Per Procedure 317.1, reports that whenever 1 HP heater is OOS, the load limit on the turbine is < 603 Mwe gross output **Comments:**
	SRO	Directs power reduction
	CRO-A	Using Recirc flow, reduces reactor power until Generator megawatt output < 603 Mwe **Comments:**
	SRO; CRO-B	When EO reports high water level in 1A3 and low water level in 1A2, Notifies Maintenance of the trip of A3 heater on high water level **Comments:**
	SRO	When Maintenance reports LC-1 for heater 1A3 has failed low, causing V-4-16 to close, conducts brief with the crew **Comments:**
		This concludes Event 2

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

Event Description: Respond to a loss of 125 VDC Power Panel DC-F
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B/A	Acknowledges multiple Control Room annunciators; reports annunciator 9XF-6-d DC-F PWR LOST is in alarm **Comments:**
	CRO-B	Responds to a loss of DC-F in accordance with RAP 9XF-6-d 1. Reports CRD "A" Pump has tripped 2. Reports Cleanup system Isolation **Comments:**
	SRO	Directs "B" CRD Pump to be started. **Comments:**
	CRO-A	Starts CRD Pump "B" **Comments:**
	CRO-B	Performs RAP Confirmatory actions; checks all Automatic actions have occurred, and performs Manual Corrective actions. Dispatches an EO to 125 VDC distribution Center C to check DC-F feeder breaker Informs SRO of Technical Specification requirements 3.5 and 3.7 **Comments:**
	SRO	Refers to Tech Spec sections 3.5 and 3.7; determines that DC-F is Tech spec related equipment, but determines that V-5-167 automatic isolation feature in inoperable, therefore, the reactor shall be placed in cold shutdown condition within 24 hours.(TS.3.5.3a(2)) **Comments:**
		EVENT 3 continued on next page

Event Description: Respond to a loss of 125 VDC Power Panel DC-F (continued)

Time	Position	Applicant's Actions or Behavior
	CRO-B	Refers to SDRP 2000-OPS-3024.10C section 4.6 **Comments:**
	SRO	Directs Electrical Maintenance to investigate loss of DC-F **Comments:**
	EO/CRO	Reports that Electrical Maintenance has determined that the supply breaker from DC-C to DC-F was faulted and a new breaker has been installed.
	SRO	Directs power to be restored to DC-F **Comments:**
	CRO's	Re-energizes DC-F in accordance with 2000-OPS-3024.10C 1. Confirm mode switch Containment Spray System 1 in TORUS COOLING 2. Directs EO to close breaker 4 at DC-C 3. Check MSIV 4A and 4B position indication; Reset MSIV isolation signal (4F); momentarily take MSIV handswitch for 4A and 4B to open to re-energize DC solenoids 4. Reset ATWOS Channel B and D Logic 5. Reset Isolation condenser logic and reopen IC B valves V-14-1 and V-14-19 6. Reset Drywell Isolation Logic (4F) **Comments:**
		This concludes Event 3

Op-Test No.:	Scenario No.: A-2	Event No.: 4 and 5	

Event Description: Respond to an increase in Drywell Pressure
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-A/B	Report increasing Drywell pressure; increasing unidentified leakage rate in the Drywell **Comments:**
	CRO-A	Checks integrator in Panel 3F and reports unidentified leak rate Responds to annunciator C-3-f DW PRESS HI/LO **Comments:**
	SRO	May direct venting the Drywell via SGTS **Comments:**
	CRO-B	If directed, vents the Drywell via SGTS in accordance with procedures 330 Section 4.3. and 312.11 Section 4.3.4 1. Manually starts SGTS 1(2) by placing the select switch to SYS 1(2), starts Exhaust fan EF1-8(EF1-9),verifies SGTS valves open, then verifies orifice valve V-28-24(V-28-28) closes, then closes Crosstie valve V-28-48 (Panel 8R) 2. Vents the Drywell to SGTS by opening Drywell Vent valves V-23-21 and 22 (Panel 12XR) **Comments:**
	SRO	When it is determined that Drywell pressure is still increasing even after the venting lineup is established, or the SRO decides a reactor scram is appropriate, the SRO will conduct a brief and direct actions for inserting a manual scram. **Comments:**
	SRO-A	If time permits, Reduces Reactor Recirc flow to minimum (>6.4 E4 gpm) **Comments:**
		Event 4 and 5 continued on next page

Op-Test No.:	Scenario No.: A-2	Event No.: 4 and 5	Page 7 of 11

Event Description: Respond to an increase in Drywell Pressure (continued)

Time	Position	Applicant's Actions or Behavior
	CRO-B	If time permits, transfers 4160 VAC buses 1A and 1B to the Startup Transformers **Comments:**
	CRO-A/B	Notifies System Dispatch that Oyster Creek will be taken off line
	SRO	Directs inserting a manual scram **Comments:**
	CRO-A	When directed, inserts a scram in accordance with ABN-3200.01 Reactor Scram 1. Depresses the manual scram buttons 2. Places the mode switch in Shutdown 3. Verifies all rods are inserted 4. Inserts SRM and IRM detectors **Comments:**
	CRO-A/B	Controls RPV water level as follows: 1. Trips 2 Reactor Feedwater Pumps when RPV water level starts to increase after the initial shrink 2. At 140" TAF, closes the Block valve for the operating Feedwater Pump (A or C) 3. Controls water level 138" to 175" TAF **Comments:**
	CRO-B	Verifies Turbine trip and pressure control is being maintained on the Bypass Valves when RPV pressure > 920 PSIG **Comments:**
	SRO	Directs CRO's to stablize the plant in accordance with ABN-3200.01 Reactor Scram and EOP EMG-3200.01RPV CONTROL-NO ATWS **Comments:**
		This concludes Events 4 and 5

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

Event Description: Perform RPV CONTROL-NO ATWS and PRIMARY CONTAINMENT CONTROL –Initiate Drywell Sprays

Time	Position	Applicant's Actions or Behavior
	SRO	At Drywell Pressure of 3 PSIG, Enter Primary containment control EOP EMG-3200.02 1. Directs Support Procedure 27 to be performed 2. Directs Support Procedure 1 to be performed 3. Directs lineup of Drywell Sprays per support Procedure 29 **Comments:**
	SRO	Directs plant operation in accordance with EOP EMG 3200.01 RPV Control-No ATWS 1. Directs water level control to be 138' to 175"TAF 2. Directs pressure band to be 800 – 1000 PSIG **Comments:**
	CRO-A	Reports failure of "A" Core Spray Pump to start Line up Drywell Sprays per SP 29 Step 2.1, 2.2 and 3.1 1. See attached support Procedure 29 **Comments:**
	SRO ***critical task**	When Torus pressure > 12 PSIG, directs initiation of Drywell Sprays per SP 29 **Comments:**
	CRO-A	Initiates Drywell sprays per Support Procedure 29 Section 3.2 – 3.7 and maintains Drywell pressure per step 3.8 **Comments:**
		This concludes Event 6

Op-Test No.:	Scenario No.: A-2	Event No.: 7	Page 9 of 11
Event Description: Loss of 4160 VAC Emergency Bus 1D			

Time	Position	Applicant's Actions or Behavior
	CRO-B	Reports loss of Emergency bus 1D. Reports annunciator T-2-e BUS 1D MN BRKR 1D 86 LKOUT TRIP is in alarm. (Note: the bus can not be –re-energized with a lockout signal present) **Comments:**

	CRO-B/SRO	Evaluate impact of loss of 1D on plant operations.
		
		Loss of ESW Pumps C and D
		Loss of Core spray Pumps B and D
		Loss of 460 VAC bus 1B1 and associated Turbine building loads
		Loss of 460 VAC bus 1B2 and Vital MCC 1B2
		    Core Spray booster Pumps B and C
		    Containment Spray Pumps C and D
		    CRD Pump B and SLC Pump B
		Loss of 460 VAC Bus 1B3
		
		Comments:

		This concludes Event 7

Op-Test No.:	Scenario No.: A-2	Event No.: 8 and 9	Page 10 of 11

Event Description: Large Break LOCA Inside Drywell; Recover RPV water level > TAF using Core Spray
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO	Reports RPV water level is rapidly decreasing
	SRO	Determines water level cannot be maintained above 61"TAF and performs LEVEL RESTORATION per EMG-3200.01 RPV control –No ATWS 1. Directs ADS timers to be bypassed 2. Confirms initiation of Isolation Condensers 3. Directs lineup of injection systems per support Procedure 8 and 9 **Comments:**
	CRO-A	Places the ADS timers in Bypass Reports status of Isolation condensers Reports D Core Spray Pump and D booster pump are running; **Comments:**
	CRO-B	Reports trip of operating Feedwater Pump and that NO Feedwater pump can be restarted **Comments:**
	SRO * critical task	At 0" TAF, directs Emergency Depressurization in accordance with EMG-3200.04A 1. Directs ROPS to be bypassed 2. Directs all EMRV's to be opened **Comments:**
	CRO's	Bypass ROPS Open all EMRV's **Comments:**
		Events 8 and 9 continued on next page

Op-Test No.:	Scenario No.: A-2	Event No.: 8 and 9	Page 11 of 11

Event Description: Large Break LOCA inside Drywell; Recover RPV water level > TAF using Core Spray and condensate (continued)

Time	Position	Applicant's Actions or Behavior
	SRO	Directs injection with all Available systems: Core Spray, Condensate, SLC and Fire Water, if SP 5 has been directed to be performed **Comments:**
	CRO-A/B	Recovers RPV water level > TAF using Core Spray Sys 2 and Condensate **Comments:**
	CRO-B	Initiates SLC, if directed Monitors RPV water level for signs of Reference leg flashing Monitors RPV water level recovery and helps CRO –A recover water > TAF using Condensate **Comments:**
	SRO	When RPV water level > 61", directs water level to be restored and maintained between 175" and 61" TAF **Comments:**
	CRO's	Co-ordinate to maintain RPV water level between 61" and 175" TAF **Comments:**
		When RPV water level is restored, the scenario is terminated

SCENARIO A-3 STEAM LINE BREAK IN TURBINE BUILDING

SCENARIO OBJECTIVE

To evaluate the operators in using Radioactivity Release Control and Emergency Depressurization

SCENARIO SUMMARY

A power reduction is in progress to remove the Turbine Generator from service for maintenance repair.
The shift will maintain the reactor critical and steaming to the condenser via Bypass valves. Expected time for Generator repair is 12 hours.

EVENTS

- Continue power reduction to < 37% using control rods
- Remove the turbine Generator from service IAW Procedure 203.1 Section 5.20
- Respond to INSTRUMENT FAILURE Event (CRD Flow transmitter failure)
- Recognize increasing OffGas / MSL Radiation levels and take actions IAW 2000-ABN-3200.26
- At 800 mr/hr MSL rad levels, insert a manual scram and close MSIV's
- MSIV's in MSL fail to fully close
- Respond to reports of a large steam leak in the Turbine Building
- When Radiation release limits exceed General Emergency levels, Emergency depressurization is required

SCENARIO SEQUENCE

A power reduction is in progress to remove the Turbine Generator from service for maintenance repair. The shift will maintain the reactor critical and steaming to the condenser via Bypass valves. Expected time for Generator repair is 12 hours. The crew will continue the power reduction by inserting control rods until reactor power is about 30%. At this time, the crew will remove the Generator from the grid. After the TG is tripped, and the ring bus is closed back in, an instrument will cause the CRD Flow control valve to close. The crew will respond and place the CRD Flow Controller in MANUAL and restore CRD system parameters. Next, failed fuel causes increasing radiation levels to be seen on Off Gas and Main Steam Lines. The crew will respond IAW 2000-ABN-3200.26, and at 800 mr/hr MSL readings, the crew will scram the reactor and close the MSIV's. However, the "B" MSL MSIV's do not fully close. A report of a large steam leak in the Turbine Building and offsite release rates will prompt the operators to implement Radioactivity Release control EOP. Control Room HVAC will be shifted to Partial Recirc. Turbine Operating Floor fan EF1-33 will be secured. When Radiation release limits exceed General Emergency levels, Emergency depressurization is required.

EVENT 1

Objective: To evaluate applicants ability to reduce reactor power using control rods (R) CRO-A; SRO

EVENT 2

Objective: To evaluate applicants ability to remove the Turbine Generator from service and maintain the reactor critical, steaming to the Condenser via Bypass Valves (N) CRO-B; SRO

EVENT 3

Objective: To evaluate applicants response to a failed CRD Flow transmitter (I) CRO-A; SRO

Malfunctions required: 1 CRD Flow transmitter fails high

EVENTS 4 and 5
Objective: To evaluate applicants response to increasing OffGas/ MSL Radiation levels per the Abnormal Procedure (C) CRO-A; CRO-B; SRO

Malfunction required: 1 Failed Fuel

EVENTS 6 and 7
Objective: To evaluate applicants ability to execute EOP's during a Radioactive Release (C) (M) CRO-A; CRO-B; SRO

- Recognize failure of MSIV's' to close
- Performs actions to mitigate the consequences of a large steam leak in the Turbine Building

Success path: When General emergency levels for Rad Release are exceeded, initiates Emergency Depressurization

Malfunctions required: 2 Failure of "B" MSL MSIV's to close and steam line break in Turbine Building

SCENARIO RECAPITULATION

Total Malfunctions:	4
Abnormal Events:	2
Major Transients:	1
EOP's entered:	3
EOP Contingencies:	1

Facility: Oyster Creek **Scenario No.:** A-3 (New) **Op-Test No.:**

Examiners: ______________________ **Operators:** ______________________

______________________ ______________________

______________________ ______________________

Objectives:

Evaluate applicants ability to reduce reactor power using control rods

Evaluate applicants ability to remove the Turbine Generator from service and maintain the reactor critical, steaming to the Condenser via Bypass Valves

Evaluate applicants response to a failed CRD flow control transmitter

Evaluate applicants response to increasing OffGas/ MSL Radiation levels per the Abnormal Procedure

Evaluate applicants ability to execute EOP's during a Radioactive Release

- Recognize failure of MSIV's' to close
- Performs actions to mitigate the consequences of a large steam leak in the Turbine Building
- When General emergency levels for Rad Release are exceeded, initiates Emergency Depressurization

Initial Conditions:

The plant is at 40% power.

Turnover:

A power reduction is in progress to remove the Turbine Generator from service for maintenance repair.

The shift will maintain the reactor critical and steaming to the condenser via Bypass valves. Expected time for Generator repair is 12 hours.

Event No.	Malf. No.	Event Type*	Event Description
1	-	R	Continue power reduction to < 37% using control rods.
2	-	N	Remove the turbine Generator from service IAW Procedure 203.1 Section 5.20
3		I	Respond to a failed CRD flow transmitter
4	MAL RXS2	C	Recognize increasing OffGas / MSL Radiation levels and take actions IAW 2000-ABN-3200.26
5	MAL NSS13A-D	C	At 800 mr/hr MSL rad levels, insert a manual scram and close MSIV's. MSIV's in MSL fail to fully close.
6	MAL NSS19	M	Respond to reports of a large steam leak in the Turbine Building
7	-	M	When Radiation Release limits exceed General Emergency levels, Emergency Depressurization is required.

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

Op-Test No.:	Scenario No.: A-3	Event No.: 1 and 2	

Event Description: Continue power reduction to < 37% using control rods

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CRO-A to continue power reduction TO 30% in accordance with 203.1 PLANT SHUTDOWN TO HOT STANDBY
	CRO-A	Continues control rod insertion in accordance with instructions provided by Core Engineering **Comments:**
	CRO-B	Adjusts EPR setpoint to maintain reactor pressure 980-1020 PSIG Monitors Moisture Separator drain tank level for erratic behavior **Comments:**
	SRO	Directs CRO-A to stop inserting control rods at 30% reactor power Directs CRO-B to remove Turbine Generator from service in accordance with 203.1 Section 5.20 **Comments:**
	CRO-B	Cautions the crew of the potential for a reactor scram due to drift of PSH switches 1. Notifies System Dispatcher 2. Decreases Generator load slowly using the Speed Load changer, while maintaining reactive load > 25 MVARs 3. At 50 MWe, trips the turbine 4. Turns amplidyne control switch 43CS to OFF 5. Transfers pressure control to the MPR IAW Procedure 315.1 Section 8.3 • Lower MPR setpoint until MPR relay position indicator moves in the direction to reach the EPR setting 6. Raise EPR setpoint to its top stop (1010 PSIG) **Comments:**
	CRO-A/B	Verifies TSV's, CV's, I&RHV's close and Bypass valves open (4 ½ -5 Byp) Confirms 230 KV breakers GC1 and GD1 are open **Comments:**
		EVENTS 1 and 2 continued on next page

Op-Test No.:	Scenario No.: A-3	Event No.: 1 and 2	

Event Description: Continue power reduction to < 37% using control rods

Time	Position	Applicant's Actions or Behavior
	CRO-B	Confirms Generator Field Breaker is open **Comments:**
	CRO-B	OPENS V-1-65, 66, 67, 68 on Panel 13R Resets Main Generator Protection reset button (Panel 11XR) and resets generator lockout relays 86G and 86GB **Comments:**
	CRO-B	Opens Bank 1A and 1B 230 KV MODS from 12F-1. Dispatches an EO to verify locally open **Comments:**
	CRO-B	Obtains permission from System dispatcher and synchs and re-closes GC1 and GD1 **Comments:**
	CRO-B	Directs EO to increase TBCCW flow to oil coolers as required to lower oil temperature to 80° - 90° F Monitors Turbine speed decreasing. At 900 RPM, starts Turbine Bearing lift pumps **Comments:**
		This concludes Events 1 and 2

Op-Test No.:	Scenario No.: A-3	Event No.: 3	

Event Description: Loss of CRD System flow due to a failed flow transmitter
This event is started by direction of the NRC Lead Evaluator
NOTE: this event can be initiated at any time during Events 1 and 2

Time	Position	Applicant's Actions or Behavior
	CRO-A	If undetected by CRD instrumentation, responds to CRD HIGH TEMP annunciator. Recognizes loss of CRD parameters and determines that the flow controller has failed. **Comments:**
	SRO	Directs the CRD flow controller to be placed in MANUAL **Comments:**
	CRO-A	Places the Flow controller in Manual and restores CRD system parameters **Comments:**
	SRO/CRO-A	Notifies Maintenance of the flow controller failure **Comments:**
		This concludes Event 3

Op-Test No.:	Scenario No.: A-3	Event No.: 4	Page 5 of 8

Event Description: Increasing Off Gas /Main Steam Line Radiation levels
This event is started by direction of the NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-A/B SRO	Recognizes increasing Off Gas radiation levels/MSL radiation levels **Comments:**
	CRO-B	Responds to annunciator OFF GAS HI IAW RAP 10F-2-c. **Comments:**
	SRO	Directs implementation of 2000-ABN-3200.26 **Comments:**
	CRO-A	May continue insertion of control rods in order to reduce reactor power **Comments:**
	CRO-B	Performs ABN INCREASE IN MSL/OG ACTIVITY 1. Notifies chemistry 2. If OG HI-HI (10F-1-c) alarms, informs SRO that AOG will isolate in 15 minutes 3. Responds to RAD HI (J-5-b); directs EO to reduce H2 Injection flow to 5-6 SCFM 4. Monitors MSL Rad Monitors on 1R/2R 5. Informs SRO of requirements to scram and close MSIV's at 800 mr/hr **Comments:**
	SRO	At 800 mr/hr MSL Rad Monitor readings, directs manual scram and closing of MSIV's **Comments:**
		This concludes Event 4

Op-Test No.:	Scenario No.: A-3	Event No.: 5	Page 6 of 8

Event Description: Insert manual scram and close MSIV's / MSIV's in MSL "A" Fail to close

Time	Position	Applicant's Actions or Behavior
	CRO-A	When directed, inserts a scram in accordance with ABN-3200.01 Reactor Scram 1. Depresses the manual scram buttons 2. Places the Mode Switch in Shutdown 3. Verifies all rods are fully inserted 4. Inserts SRM and IRM detectors **Comments:**
	SRO	Directs MSIV's to be closed **Comments:**
	CRO-B	Places MSIV handswitches to CLOSE; reports loss of indication and both "B" MSL MSIV's **Comments:**
	CRO-A/B	Controls RPV water level 138" to 175" TAF Verifies MPR controlling reactor pressure using Bypass Valves; may initiate Isolation Condensers for pressure control based on the decision to close the MSIV's **Comments:**
	SRO	When RPV water level < 138", enters EOP RPV control-NO ATWS 1. Directs RPV water level control 138" – 175" 2. Directs RPV pressure control 800- 1000 PSIG **Comments:**
	SRO	If Isolation Condensers are initiated, Enters EOP Secondary Containment Control for high radiation conditions. 1. Directs CRO-B to obtain Secondary containment temperature and radiation readings 2. Determines No Primary System is leaking into Secondary Containment **Comments:**
		This concludes Event 5

Op-Test No.:	Scenario No.: A-3	Event No.: 6	Page 7 of 8
Event Description: Large Steam Leak in the Turbine Building			

Time	Position	Applicant's Actions or Behavior
	CRO-A/B	Acknowledge report of steam leak in condenser area; informs SRO
	SRO	Direct CRO-B to secure/isolate any steam valves that are open in an attempt to isolate leak (MSIV's in "B" steam line have failed to fully close) **Comments:**
	CRO-A/B	Make Site Announcement of steam leak in Turbine Building and for all personnel to evacuate the Turbine Building **Comments:**
	SRO	When the report comes in from Radiation Protection that steam is coming out of the Turbine Building AND Main Stacks AND Off-Site radioactivity release rate is greater than ALERT limits, enter EOP Radioactivity Release Control EMG-3200.12 Directs implementation of Support Procedure 51 **Comments:**
	CRO-B	Places Control Room HVAC in Partial Recirc Performs Support Procedure 51 (Panel 11R) 1. Stops EF 1-33 2. Verifies TB HVAC is operating **Comments:**
	SRO	Determines that Core Damage conditions of Table 14 are met. Continues attempts to close MSIV's (notifies Maintenance for help) Waits for report from Radiation Protection concerning Off-Site Dose projections **Comments:**
		This concludes Event 6

Op-Test No.:	Scenario No.: A-3	Event No.: 7	Page 8 of 8
Event Description: Radiation Release Rates exceed General Emergency levels			

Time	Position	Applicant's Actions or Behavior
	SRO *Critical Task	When it is reported that Radiation release rates will exceed General Emergency levels (1100 mr/hr at Site Boundary), determines that Emergency Depressurization is required. **Comments:**
	SRO	Enter EMG –3200-04A ED NO ATWS 1. Directs support Procedure 10 to be performed 2. Directs ROPS Bypass 3. Confirms Torus water level > 90" 4. Directs opening all EMRV's **Comments:**
	CRO-A	Performs Support Procedure 10 (Panel 1F/2F at Core Spray) 1. Depress OVERRIDE switches for all sensors that are lit 2. Depress ALL ACTUATED switches whether lit or unlit 3. Confirm Core Spray parallel valves closed 4. Place Core Spray booster pumps to STOP 5. Place Core Spray pumps to STOP 6. Verify KEEP FILL TROUBLE (B-3-d) not in alarm **Comments:**
	CRO-B	Bypasses ROPS (Panel 4F) **Comments:**
	CRO-A	Opens all 5 EMRV's **Comments:**
	SRO	After the blowdown is over, directs Torus Cooling to be placed in service. Enters EOP EMG 3200-02 Primary Containment control if Torus water temperature exceeds 95° F **Comments:**
	SRO	Directs RPV water level to be maintained 138" to 175" using Feedwater/condensate **Comments:**
		When RPV water level is restored, the scenario is terminated

Competencies	Applicant #1 RO/SRO-I/SRO-U				Applicant #2 RO/SRO-I/SRO-U				Applicant #3 RO/SRO-I/SRO-U			
	SCENARIO				SCENARIO				SCENARIO			
	1	2	3	4	1	2	3	4	1	2	3	4
Understand and Interpret Annunciators and Alarms	2	2	4		2	4	3		2	4	4	
Diagnose Events and Conditions	3	3	6		3	7	3		3	3	4	
Understand Plant and System Response	3	2	2		3	8	1		3	3	2	
Comply With and Use Procedures (1)	1	3	7		3	8	1		3	3	2	
Operate Control Boards (2)	5	9	-		5	-	1		-	6	2	
Communicate and Interact With the Crew	5	9	5		5	8	5		5	9	5	
Demonstrate Supervisory Ability (3)	-	-	4		-	9	-		5	-	-	
Comply With and Use Tech. Specs. (3)	-	-	-		-	3	-		3	-	-	

Notes:

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

Instructions:

Circle the applicant's license type and enter the event numbers that test the competency for each scenario in the set.

Author: Joseph M McGuire
Chief Examiner:

SCENARIO B-3 SECONDARY CONTAINMENT CONTROL

SCENARIO OBJECTIVE

Evaluate the operators in using Secondary Containment control

SCENARI SUMMARY

The plant is at 66% power following a trip of "C" Reactor Feedwater Pump. All actions to stabilize the plant have been performed. Extraction steam to FWH's 1C2 and 1C3 has been isolated.

Following turnover, increase reactor pressure back to 1020 PSIG using the EPR , then prepare "C" Reactor Feedwater Pump for return to service, then raise power using Recirc flow back to 100%.

EVENTS

- Failure of EPR
- Return "C" Feedwater Pump to service
- 10% power increase using Recirc Flow
- Failure of output signal to "C" Recirc Pump
- Failure of Cleanup to isolate / Cleanup System piping rupture into Sec Containment
- Emergency Depressurization when two areas exceed Max Safe limits on temperature

SCENARIO SEQUENCE

After the crew has the shift, direction will be given to raise rector pressure back to 1020 PSIG. During this evolution, the EPR will fail to increase pressure. The crew will transfer to the MPR and continue raising pressure. After this event, the crew will restore "C" Feedwater Pump to service. After the Feedwater Pump is back in service, the crew will start increasing power using recirc flow. During this power increase, the output signal from "C" Recirc Pump Controller will fail downscale. The crew will respond by placing the controller in manual per ABN 3200.03 and then refer to SDRP 3024.22.

The next event will be a piping rupture of Cleanup. Area temperatures on the 51' elevation of the RB will slowly increase. At the temperature alarms, a report from a handyman will say that he sees steam in the Reactor Building 51" elevation. Attempts to isolate Cleanup will fail. The crew will enter Secondary containment control and manually scram the reactor. When two area temperatures in the Reactor building exceed Max Safe, Emergency Depressurization will be required.

BACKUP SCENARIO

Facility: Oyster Creek	Scenario No.: B-3	Op-Test No.:
Examiners: ______________________		Operators: ______________________
______________________		______________________
______________________		______________________

Objectives:
Evaluate applicants performance tp recognize failure of EPR and to control pressure on MPR
Evaluate applicants performance in returning "C" Reactor Feedwater Pump to service
Evaluate applicants ability to increase reactor power using Recirc Flow
Evaluate applicants response to a loss of output signal to "C" Reactor Recirc Pump
Evaluate applicants ability to execute EOP's during a high energy release into the Secondary Containment
Cleanup System piping rupture on 51' elevation (leak cannot be isolated)
Two areas > Max Safe Temperature, requiring Emergency Depressurization

Initial Conditions:
The plant is at 66% power following a trip of "C" Feedwater Pump

Turnover:
The plant is at 66% power following a trip of "C" Reactor Feedwater Pump. All actions to stabilize the plant have been performed. Extraction steam to FWH 1C2 and 1C3 has been isolated.
Following turnover, increase reactor pressure back to 1020 PSIG using the EPR , then prepare "C" Reactor Feedwater Pump for return to service, then raise power using Recirc flow back to 100%.

Event No.	Malf. No.	Event Type*	Event Description
1		I	Failure of EPR (INSTRUMENT FAILURE)
2		N	Return "C" Feedwater Pump to service IAW Procedure 317
3		R	10% increase in Reactor power using Recirc Flow
4		I,C	Failure of output signal to "C Reactor Recirc Pump (INSTRUMENT FAILURE)
5		C,M	Cleanup System piping rupture in Secondary Containment with failure of V-16-1 and V-16-14 to isolate
7		M	When two areas exceed Max Safe levels for temperature, Emergency depressurization of the RPV is required

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

BACKUP SCENARIO

No change on Prel. Outline   As Given Written

U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information	
Name:	Region: I
Date: August 27, 1999	Facility/Unit: Oyster Creek
License Level: SRO	Reactor Type: GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

____
Applicant's Signature

Results	
Examination Value	100 Points
Applicant's Score	_______ Points
Applicant's Grade	_______ Percent

G2.1.1-01

1. You are the on coming CRO. During the panel walkdown you observe a graph on a back panel which converts percentage of tank level to gallons. This graph was not there the last time you had this watch.

Which of the below describes the manner you can verify this graph is an approved operator aid?

a. The operator log contained an entry discussing the use of this aid

b. It is signed by the Plant Operations Director or designee

c. It is signed by the Group Operating Supervisor

d. It is initialed by the Site Shift Manager

G2.1.12-03

2. Given the following conditions:

- At 8 AM, July 6,1999, Diesel Generator 1 starting motor battery cable was discovered to be frayed and broken.
- At 9 AM, July 6, 1999, the GSS was informed of the broken cable
- At 10 AM, July 6, 1999, it was determined that the damage to the cable occurred at 4 AM July 6, 1999.

Which of the following is the correct time the Diesel Generator is to be declared inoperable?

a. 4 AM

b. 8 AM

c. 9 AM

d. 10 AM

G2-1-12-04

3. The plant is at 100% power. Chemistry has just completed its daily sample of the SLC Storage Tank.

Given the following information:

- SLC Storage Tank level: 3200 gallons
- SLC Storage Tank temperature: 100° F
- Weight % of sodium Pentaborate: 14%

Which of the following best describes the actions, if any, that need to be taken?

a. The weight % sodium pentaborate needs to be increased

b. The storage tank level needs to be increased

c. The temperature of the storage tank needs to be decreased

d. No actions are required

G2.1.33-01

4. Which one of the following situations, if not corrected within eight (8) hours, would require shutdown and cooldown of the reactor?

a. Drywell Sump Flow Integrator indicates 270 gallons pumped during the last hour; Drywell Equipment Drain Tank level has been increasing 300 gallons every 15 minutes.

b. Drywell Sump Flow Integrator indicates 210 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 330 gallons every 15 minutes.

c. Drywell Sump Flow Integrator indicates 90 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 345 gallons every 15 minutes.

d. Drywell Sump Flow Integrator indicates 150 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 315 gallons every 15 minutes.

G2.1.34-01

5. Given the following conditions:

- Reactor startup in progress
- Reactor power 5%
- Main turbine warm-up in progress
- Chemistry reports reactor coolant sample results:
  - conductivity 8 μS/cm
  - chlorides 0.3 ppm

Which one of the following best describes the required actions?

A. No action is required because no Technical Specification limitations have been exceeded.

B. A shutdown must be initiated immediately because the low steaming rate (< 100,000 lbm/hr) limitations have been exceeded.

C. A shutdown must be initiated immediately because the high steaming rate (> 100,000 lbm/hr) limitations have been exceeded.

D. No action is required as long as coolant quality does not maintain these values for greater than 72 hours for this incident.

G2.1.4-01

6. The plant is at 100% power with minimum staffing requirements when the CRO At-The-Controls becomes ill with 4 hours shift time remaining and must go home.

Which of the following best describes the actions needed for continued plant operation?

a. The ill CRO must be formally relieved by the other CRO and staffing requirements must be returned to minimum within 2 hours

b. The ill CRO can not leave the Control Room exclusion area until minimum staffing requirements are met

c. The ill CRO must be formally relieved by the other CRO and minimum staffing requirements are waived until shift change

d. The ill CRO can leave the control room provided both SRO licensed supervisors remain in the Control room until staffing requirements are returned to minimum.

G2.2.1-01

7. Given the following conditions:

- On July 1st, a reactor scram from 100% power occurred
- During this scram event, all systems operated as designed

It is now July 5th, and a reactor startup is to be performed in accordance with Procedure 201.1 APPROACH TO CRITICALITY.

Which of the following best describes the Pre-Critical check off that must be performed for the CRD hydraulic system?

a. The scram insertion times for all operable control rods have been evaluated and are within Technical Specification limits

b. The scram insertion times for the eight (8) control rods selected to the brush recorder have been evaluated and are within Technical Specification limits.

c. At least one (1)control rod shall be scram time tested.

d. All control rods must be operable.

G2.2.11-01

8. Which of the following situations does the GSS have sole authority for approval of a Temporary Procedure Change?

a. While reviewing EOP 3200.01A RPV Control-No ATWS, the LOS submits a Temporary Procedure Change to the EOP for a more accurate wording of the intent of a specific step

b. A Control Room Operator submits a Temporary Procedure Change for re-ordering the steps for placing a second Reactor Feed Water Pump in service

c. While preparing to place a RWCU Filter Demineralizer in service, the EO submits a Temporary Procedure Change deleting a prerequisite because it is not applicable for current conditions

d. While performing a surveillance, a Temporary Procedure Change is submitted to change a valve stroke time acceptance criteria

G2.2.22-03

9. Given the following conditions:

- Reactor at 90% power
- A planned outage is scheduled to start in 4 days
- EMRV NR-108C has just been declared inoperable
- The cause of the failure of the EMRV is under investigation

Which of the following best describes the required conditions for operation?

a. Reactor operation may continue until the scheduled shutdown because the minimum Technical Specification requirements are still met.

b. The reactor must be shut down and depressurized below 110 psig within 24 hours as required by Technical Specifications

c. Reactor operation may continue for up to 3 more days provided both Isolation Condenser isolation and makeup valves are verified operable on a daily basis.

d. If both loops of Core Spray and both Diesel Generators are operable, reactor operation can continue and the planned outage can occur as scheduled.

G2.2.29-01

10. Oyster Creek is in a refueling outage.

Which one of the following conditions would require a SRO *specifically assigned to refueling* to be present on the refuel bridge?

a. Partial core offload, fuel pool gates removed, removal of control rod 02-27 in progress from the refuel bridge

b. Partial core offload, fuel pool gates removed, processing new fuel from inspection stand to fuel pool racks

c. Full core offload, fuel pool gates removed, repositioning blade guides for control rod drive interference checks

d. Partial core offload, fuel pool gates removed, withdrawing control rod 02-27 from control room in preparation for uncoupling

202002-01

11. "A" Recirc Pump is operating in MANUAL and is being transferred to AUTO.

Which of the following explanations best describes the expected plant response when the AUTO/MANUAL pushbutton on the controller is depressed?

a. A recirculation flow transient would occur if a deviation exists between the Master and Individual Controller setpoints

b. The Recirc Flow control system will not allow you to place the individual controller into AUTO unless the deviation signal has been balanced

c. A bumpless transfer from MANUAL to AUTO control will occur because the control system automatically adjusts setpoints

d. A Scoop Tube lockup occurs because going to AUTO without balancing the deviation between the Master and Individual controller would result in a recirculation flow transient

207000-02

12. Given the following conditions:

- Operation of the plant is being controlled from the Remote Shutdown Panel
- RPV pressure is 1050 PSIG and rising
- RPV water level is 100" and dropping
- Isolation Condenser Transfer Switches for Train "A" and "B" are in ALTERNATE

Concerning the Isolation Condensers, which of the following will occur if an initiation signal is received?

a. Only the "A" Isolation Condenser will automatically initiate

b. Only the "B" Isolation Condenser will automatically initiate

c. Initiation signals are bypassed; the operator must open the DC Condensate Return Valve to place "A" Isolation Condenser in service

d. Initiation signals are bypassed; the operator must open the DC Condensate Return Valve to place "B" Isolation Condenser in service

207000-04

13. Which of the following describes plant operation if 125 VDC MCC DC-2 is de-energized?

a. Operation can continue if "A" Isolation Condenser is operable

b. Operation can continue if "B" Isolation Condenser is operable

c. Operation can continue if both Isolation Condensers are operable

d. Operation can continue if DC-2 can be supplied from another DC source via an ATS

209001-01

14. Given the following conditions:

- The plant is in cold shutdown.
- Core Spray system is in Standby readiness
- Core Spray System high Drywell pressure detector RV46A has failed high.

Which of the following best describes the response of Core Spray to this event?

a. Both "A" and "B" Main Pumps start, then "A" and "B" Booster Pumps start and all parallel valves open

b. Both "A" and "B" Main Pumps start, then "A" and "B" Booster Pumps start; parallel valves must be manually opened if injection is required

c. System 1 "A" Main Pump starts, then System 1 "A" Booster Pump starts, then System 1 parallel valves open. System 2 Pumps do not start

d. Core Spray SYSTEM 1 AUTOSTART and DEMAND FOR PUMPS ON annunciators alarm, but no pumps start

209001-02

15. Given the following conditions:

- A valid Core Spray initiation signal is present
- System 1 Priority Booster Pump failed to start

Which of the following best describes the ***automatic*** response of the Core Spray system booster pumps?

a. ONLY "B" Booster Pump is operating

b. ONLY "C" and "B" Booster Pumps are operating

c. ONLY "C" Booster Pump is operating

d. ONLY "B", "C" and "D" booster Pumps are operating

209001-03

16. The plant is at 100% power

Given the following conditions:

- A loss of offsite power has occurred
- One of the Diesel Generators can NOT be started
- RPV water level is decreasing due to a LOCA

Which of the following assures increased confidence that at least one loop of Core Spray will inject into the vessel?

a. Coping strategy has the CT's energizing the 4160 VAC system within 1 hour

b. Parallel Injection valve V-20-41 can be powered from whichever Diesel Generator is operating

c. Both Core Spray Fill Pumps continue to operate, minimizing water hammer

d. Diesel Generator Sequential Timing assures that the Main and Booster Pumps do NOT start at the same time, overloading the available DG

212000-02

17. In accordance with 201.2 PLANT HEATUP TO HOT STANDBY, which of the following best describes when the mode switch can be placed to RUN?

a. When at least 2 Bypass Valves are fully open

b. When reactor pressure is greater than 850 PSIG

c. If operating in IRM Range 10, the mode switch must be in RUN prior to exceeding 25% power

d. All IRM's are reading high on Range 9 and all APRM downscale indicator lights have cleared

215004-01

18. Given the following conditions:

- A reactor startup is in progress
- Reactor power is approximately 5.5×10^4 cps on all SRM's

Which of the following describes how a SRM detector that cannot be fully withdrawn affects continued control rod withdrawals?

A. Control rod withdrawals will **NOT** be permitted because of administrative controls.

B. Control rod withdrawals will be possible as soon as the remaining SRM's are fully withdrawn and read less than 500 cps.

C. Control rod withdrawals will be possible until power reaches 1×10^5 cps. and then will not be allowed (Rod Block) until IRM's are at or above Range 8.

D. Control rod withdrawals will be possible until power reaches 1×10^5 cps. and then will not be allowed (Rod Block) until IRM's are at or above Range 8 **AND** the affected SRM is bypassed.

215005-01

19. Which of the following conditions requires an immediate manual scram to be inserted?

a. While reducing power using recirc flow, inadvertent entry into the Exclusion Region on the Power Operation curve occurs

b. Total Recirculation flow is 10×10^4 gpm and APRM's 4 and 8 show oscillations of 6% power peak to peak over a 3 minute period

c. Withdrawing control rods to establish the 100% rod pattern line when a single Recirc Pump trip causes entry into the Exclusion Area on the Power Operation curve

d. Recirc flow has been reduced to minimum and APRM's 4 and 8 indicate a 6% peak to peak oscillation

215005-02

20. The reactor is at 50% power when Flow Converter 1 input to the APRM's fails downscale.

In addition to a Flow Comparator Rod Block, which of the following conditions will occur?

a. A flow biased half scram and a flow biased rod withdrawal block on APRM's 1,2,3, and 4.

b. A flow biased half scram and a flow biased rod withdrawal block on APRM's 5,6,7,and 8.

c. A flow biased rod withdrawal block on APRM's 1,2,3, and 4

d. A flow biased rod withdrawal block on APRM's 5,6,7,and 8.

218000-01

21. A plant transient is in progress.

- The ADS timers have initiated.
- Reactor pressure is 1055 PSIG and increasing.

Which of the following best describes the affect on EMRV "A" if its control switch is placed to OFF?

a. The valve will **not** function as a relief valve, but its ADS function remains operable

b. The valve will function as a relief valve and its ADS function remains operable

c. The valve will function as a relief valve, but its ADS function will **not** work

d. Neither the relief or ADS mode of operation will work.

218000-02

22. Given the following conditions:

- A plant transient has occurred.
- The ADS timers have initiated, BUT have NOT yet timed out.
- RPV water level is now 70" TAF and increasing

Which of the following best describes the response of ADS?

a. The timing sequence will not be affected. The ADS valves will open when the timer times out.

b. The timing sequence will stop. The ADS valves will **not** automatically open.

c. The timing sequence will stop, however, the timer will **not** reset to zero.

d. The timing sequence will re-set to time ZERO, then initiate the ADS timer again.

223001-02

23. While operating at rated power, a large break loss of coolant accident occurs inside the Drywell.

As the Drywell pressure and temperature began to rise, the operator noted that Torus pressure rose at the same rate and remained the same as Drywell pressure.

Which of the following identifies the possible explanation for this response?

a. This is the expected response due to the design of the Torus to Drywell Vacuum Relief system

b. This response may be due to the failure of the Torus to Drywell Vacuum Relief system valves to operate as designed

c. This response may be due to a crack in the Drywell vent pipes, discharging steam into the Reactor Building

d. This response may be due to the failure of the Reactor Building to Torus Vacuum Relief system to operate as designed

295001-01

24. Given the following conditions:

- The plant is at 100% power with all Recirc Pumps operating
- "C" Recirc Pump trips

Which of the following best describes the basis for the expected operator actions?

a. To satisfy Recirc MG Set Motor starting interlocks

b. Minimizes the possibility of a LOCA occurring on the affected loop

c. Minimizes reverse coolant flow through the affected loop

d. To prevent windmilling of the affected Recirc Pump

295001-02

25. The plant was initially at 100% power when it is noticed that Turbine Generator Megawatt output is changing 6 MWe peak to peak

Of the following, which one is most likely to cause this event to occur?

a. Extraction steam isolations

b. Recirc Pump speed control

c. A control rod is drifting

d. Condenser vacuum is degrading

295002-01

26. Given the following conditions:

- The plant is at 100% power
- Annunciator OFF GAS PRES HI alarms (Panel 10F)
- Radwaste Control Room has just called and reported a loud bang was heard in the AOG building.

Which of the following best describes the plant response to this event?

a. SJAE Steam supply valve V-1-11 closes

b. SJAE Air Inlet Valves close

c. Air Extraction Valves V-7-1 through V-7-6 close

d. AOG system trips into ISOLATE

295002-02

27. Given the following conditions:

- The plant is at 75% power
- SJAE STEAM HI/LOW PRES annunciator has just alarmed
- SJAE inlet steam pressure as read on 7F indicates 75 PSIG and dropping
- Condenser vacuum is 27.5" and degrading

Which one of the following diagnostic actions would **NOT** be successful in terminating this event and stabilizing the plant??

a. Swapping Pressure Controllers from V-1-37 to V-1-38

b. Verifying Steam Supply valve V-1-11 is full open

c. Placing all SJAE elements in service

d. Locally verifying air pressure supply is available to the pressure regulator

295005-01

28. Which of the following best describes the reason why reactor power shall not exceed 40% until all Bypass Valves are closed??

a. If the turbine tripped, the scram could be from Reactor high pressure instead of Fast Closure of the Turbine Stop Valves

b. If the turbine tripped, the additional steam loading on the condenser could result in degrading condenser vacuum

c. If the turbine tripped, a drop in Main Steam Line pressure could causes the MSIV's to close

d. If a loss of Stator Water Cooling occurred, a runback signal would not be generated

295005-02

29. Given the following conditions:

- The plant is at 100% power
- A neutral ground overcurrent condition is detected on Auxiliary Transformer 1A and trips the AUX TRANS LOCKOUT relay on Panel 12R

Which of the following best describes the plant status due to this event?

a. Bus 1A dead bus transfers to Startup Transformer SA.
A manual reactor scram is required due to loss of multiple major plant pumps.

b. Bus 1A de-energizes.
EDG #1 fast starts and re-energizes Bus 1C.
A manual reactor scram is required due to loss of multiple major plant pumps.

c. A Turbine trip / reactor scram occurs.
Bus 1A is de-energized.
EDG #1 fast starts and re-energizes Bus 1C.
Bus 1B dead bus transfers to Startup Transformer SB.

d. A Turbine trip / reactor scram occurs.
Bus 1A transfers to Startup Bus SA.
Bus 1B transfer to Startup Bus SB

295008-02

30. Assuming no operator actions are taken to control RPV water level after a scram, AND all equipment operates as designed, which of the following best describes the plant response?

a. If ROPS is in NORMAL, all operating Feedwater Pumps will trip

b. If ROPS is BYPASSED, all operating Feedwater Pumps will trip

c. RPV water level will continue to rise due to CRD and leakage past the MFRV

d. RPV water level will continue to drop due to steaming demand of SJAE and Bypass Valves

295008-03

31. Given the following conditions:

- The plant was at 100% before a reactor scram occurred due to a loss of condenser vacuum
- "A" and "B" Reactor Feedwater Pumps are manually tripped.
- Direction is given by the GOS to control RPV water level low in the control band

Which of the following best describes why this direction would by given?

a. Exceeding 175" TAF will require the operator to trip "C" RFP

b. Isolation Condensers may be used for pressure control

c. The loss of condenser vacuum makes use of RWCU letdown unavailable

d. Decay heat could cause RPV water level to swell up above 175"

295018-01

32. Given the following conditions:

- The plant is at 50% power
- 1-2 RBCCW Pump is tagged out of service for maintenance
- 1-1 RBCCW Pump trips and cannot be restarted

Which of the following best describes the plant response AND the expected operator actions?

a. The cleanup system will isolate.
Recirc Pump motor temperatures will increase.
The operators are required to perform a normal plant shutdown, then trip all operating Recirc Pumps

b. The cleanup system will isolate.
Recirc Pump motor temperatures will increase.
The operators are required to scram the reactor and trip all operating Recirc Pumps

c. The cleanup system will continue operating.
Recirc Pump motor temperatures will increase.
The operators are required to perform a normal plant shutdown, then trip all operating Recirc Pumps

d. The cleanup system will continue operating.
Recirc Pump motor temperatures will increase.
The operators are required to scram the reactor and trip all operating Recirc Pumps

201001-01

33.

Prior to a reactor startup with plant cold, the CRO adjusts the CRD Drive Water Pressure Control Valve to maintain 250 PSID between drive water header pressure and reactor pressure.

How is this pressure differential maintained as reactor pressure increases during the ensuing startup? **(Assume the CRD system is operating as designed)**

A. The Pressure Control Valve automatically operates to maintain CRD system pressure above reactor pressure

B. The CRO will periodically adjust the Flow Control Valve to maintain CRD system pressure above reactor pressure

C. The operator needs to continuously adjust the Pressure Control Valve to maintain the required differential pressure

D. The Flow control valve automatically opens to maintain constant flow, therefore a constant differential pressure across the Pressure Control Valve

201002-01

34. Given the following conditions:

- A reactor startup is in progress
- No control rod is selected for withdrawal
- Control Rod 24-17 is banked at position 12

One minute later
- ROD DRIFT annunciator H-6-a is in alarm
- Control Rod 24-17 is found at position 16 and drifting out

Which of the following describes the expected operator actions?

a. Apply an EMERG ROD IN signal using the NOTCH OVERRIDE switch, then turn off rod power when the rod is returned to position 12

b. Apply an EMERG ROD IN signal using the NOTCH OVERRIDE switch, insert the rod to position 00, then turn off rod power

c. Apply an insert signal to the rod and return the rod to position 12

d. Apply an insert signal to the rod and insert the rod to position 00

201006-01

35. Which of the following describes the LOW POWER MODE OPERATION of the Rod Worth Minimizer?

A. It enforces the rod sequence to limit the rate of heat production to < 280 calories/gram of fuel during rod withdrawal when reactor power is < 10%

B. It enforces a rod insert sequence to ensure the correct rod pattern is established prior to initiating a reactor shutdown

C. It enforces rod withdrawal with a banked position withdrawal sequence to minimize clad damage if a control rod drop accident were to occur

D. It enforces rod movement to provide insert and withdraw blocks during a rod sequence exchange

202001-01

36. The plant is at 100% power.

Given the following conditions:

- Increased leakage to the DWEDT

and the following indications on "A" Reactor Recirc Pump

- Seal Cavity # 1 pressure constant @ 1050 PSIG
- Seal Cavity # 1 temperature slowing increasing
- Seal Cavity #2 Pressure @ 450 PSIG and slowly decreasing
- Seal cavity #2 temperature slowly increasing

Which of the following best describes the condition of "A" Reactor Recirc Pump?

a. # 2 seal is degrading, # 1 seal is operating as designed

b. # 2 seal has failed

c. # 1 seal is degrading, # 2 seal is operating as designed

d. # 1 seal has failed

204000-01

37. Given the following conditions:

- Reactor at 100% power
- Cleanup System Pressure Control Valve PCV–ND11 set to maintain system pressure at 90 psig
- The air supply line to PCV–ND11 fails at the connection to the valve positioner.

Which of the following explanations correctly describes the expected system response?

A. The PCV fails open, and the RWCU system isolates on a Filter high flow isolation signal.

B. The PCV fails shut, diverting flow through the bypass orifice, with system pressure stabilizing at some new value less than 125 psig.

C. The PCV fails open, raising system pressure and lifting relief valves to the condenser, and, if necessary, to the Torus.

D. The PCV fails shut, and the RWCU system isolates on a Filter Low Flow isolation signal.

204000-02

38. While operating at power, annunciator D–1–d "RWCU HELB (I)" alarms.

Which of the following best describes the expected plant / operator response?

a. If annunciator D-2-d RWCU HELB (II) is in alarm, confirm automatic isolation of RWCU has occurred.

b. RWCU will isolate.

c. If RWCU is still in service, RWCU has failed to isolate as designed; immediately isolate RWCU by closing motor operated isolation valves.

d. Verify RWCU system temperature, RBCCW operation and supply temperature, and adjust as required to restore Cleanup Room temperature to less than 180°F.

204000-03

39. Following a scram from rated conditions, RWCU is being used to lower RPV water level.

Which of the following best describes a possible effect of raising letdown flow during this evolution?

a. The system may isolate due to high filter demin differential pressure

b. The system may isolate due to high pressure in the system downstream of HP PCV

c. The system may isolate due to high system temperature

d. The system may isolate due to low flow from diverting flow to the reject line

205000-01

40. Given the following conditions:

- A loss of Shutdown Cooling has occurred
- Reactor water temperature is 180 ° F
- No Recirc Pumps are in operation

Which of the following best describes why reactor water level is raised > 185" TAF?

a. To increase the volume of cold water in the reactor vessel

b. To flood up to the Isolation Condenser Steam lines for Alternate Decay Heat Removal

c. To submerge the Steam Separators to enhance natural circulation in the core

d. To prevent cavitation of the Cleanup Pumps, which will now be used for decay heat removal

215003-01

41. A reactor startup is in progress following a forced outage.
During the shutdown, IRM 11 drawer voltage preamplifier was replaced.

Step 5.11 of Procedure 201.2 PLANT HEATUP TO HOT STANDBY requires IRM Range 6/7 overlap check to be performed.

This is required because:

a. it assures a proper overlap between the SRM's and the IRM 11 reading.

b. it verifies the correct correlation between Range 6 & 7 when the voltage pre-amplifier switches from the low frequency to the high frequency amplifier.

c. further calibration of the IRM's can not be performed when the range attenuation is selected for Range 7 or higher.

d. it assures that when the IRM's are positioned at various heights in the core, the correct reading is obtained and used for Rod Block/RPS instrumentation.

245000-01

42. Given the following conditions:

- The plant is at 55% power (363 MWe)
- At T = 0, STATOR COOLING TROUBLE annunciator alarmed due to high outlet temperature
- At T = 5 minutes, STATOR TEMP HI annunciator alarms, and generator Mwe starts decreasing

Which of the following best describes the required operator action(s) for the given conditions?

a. Verify Generator Amps decrease to less than 4800

b. Verify Generator output drops to less than 264 MWe and 3 Bypass Valves are open

c. Trip the turbine when < 264 MWe

d. Manually scram the reactor

271000-01

43. Given the following conditions:

- Reactor power was increased from 55% to 65%
- Following the power increase, an increase in Off Gas activity was noted. (OFF GAS HI (10F-2-C) is in alarm)
- OFF GAS HI-HI (10F-1-C) annunciator has just alarmed
- Operator actions are being performed IAW Procedure 2000-ABN-3200.26 INCREASE IN MAIN STEAM LINE/OFFGAS ACTIVITY
- OFF GAS MODE SELECTOR SWITCH (10XF) is in NORMAL; Drain Valve handswitch for OG-AOV-016 and V-7-29 is in AUTO (10XF)

Which of the following best describes the response of AOG?

a. AOG will ISOLATE and BYPASS

b. AOG will ISOLATE after a 15 second time delay

c. If the OFF Gas HI-HI alarm does not clear after 15 minutes, AOG will ISOLATE

d. If the OFF Gas Hi and HI-HI alarms do not clear after 15 minutes, AOG will ISOLATE

290003-02

44. In accordance with plant procedures, when is Control Room HVAC placed in Full Recirculation Mode?

a. During normal plant operations

b. During conditions of fire or smoke

c. During radiological releases

d. During toxic/hazardous gas releases

300000-01

45. A reactor scram from 100% has occurred due to a loss of offsite power.

Which of the following best describes the impact on plant operations if the Instrument Air compressors can NOT be restarted?

a. The Condensate Storage Tank will drain to the hotwell, affecting Isolation Condenser shell side makeup

b. The MFRV's lockup, requiring the Heater String outlet valves to be used for RPV water level control

c. The outboard MSIV's will fail closed, isolating the reactor from the Main Condenser, requiring EMRV's for pressure control

d. The CRD Flow Control Valve will fail closed, making CRD unable to maintain RPV water level

295018-02

46. Given the following conditions:

- The plant is at 100% power
- Leakage into RBCCW from a Recirc Pump Seal Cooler has been confirmed to be greater than 6 gph.

Which of the following best describes the required actions?

a. Remove the suspected Recirc Pump from service; commence a plant shutdown

b. Remove the suspected Recirc Pump from service and isolate the loop; commence a plant shutdown

c. Remove the suspected Recirc Pump from service, then idle the loop

d. Scram the reactor, then trip all Recirc Pumps. Isolate the suspected Recirc Pump loop and 3 additional loops

295019-01

47. Given the following conditions:

- An Instrument Air header line break occurs on the discharge of the Air Receivers
- The break can NOT be isolated
- Instrument Air pressure as read on Panel 7F is dropping
- CONTROL AIR PRESSURE LO annunciator has just alarmed
- The direction is now given to manually scram the reactor.

Which of the following best describes the systems available for level / pressure control? (Assume Instrument Air header pressure continues to decrease)

a. Bypass Valves, LFRV "A" and/or "C", CRD

b. EMRV's, CRD, RWCU letdown

c. Bypass Valves, Feedwater on "A" or "C" block valve, RWCU letdown

d. EMRV's, Isolation Condensers, Feedwater using heater string outlet valve(s).

295021-01

48. The plant is in a cold shutdown with Shutdown Cooling in service.

A loss of RBCCW occurs (neither RBCCW pump can be started).

Given the following conditions:

- The MSIV's are closed; condenser vacuum is not established
- No Reactor Recirc Pumps are operating
- RPV coolant temperature is 155 °F and increasing at 1°/ minute
- RPV water level is 190" and slowly increasing

Which of the following methods would be used to restore cooling to the RPV?

A. Start at least one Reactor Recirculation Pump, allowing forced circulation to cool the RPV

B. Manually initiate the Isolation Condensers

C. Establish Torus Cooling, then open at least one EMRV to allow the RPV to steam to the Torus

D. Establish Torus Cooling, then raise RPV water level to establish a flow path through an open EMRV to the Torus

295022-01

49. Given the following conditions:

- A reactor startup is in progress.
- Reactor pressure is 600 PSIG; MSIV's are open; condenser vacuum is 26"
- "A" CRD PUMP has tripped

Which of the following best describes the expected operator actions?

a. If CRD HI TEMP annunciator alarms, manually scram the reactor

b. If a CRD Pump cannot be restarted and two Accumulator alarms have been received, manually scram the reactor

c. If ACCUMULATOR PRESS LO/LEVEL HI annunciator alarms, manually scram the reactor

d. If a CRD Pump cannot be restarted, manually scram the reactor

295028-01

50. Given the following conditions:

- At 12:00 AM, the Reactor scrammed due to a LOCA inside the Drywell
- At 12:30 AM, RPV Flooding due to loss of level instrumentation was entered
- At 1:00 AM, Torus pressure is 8 PSIG and ALL EMRV's are open; RPV pressure is steady at 75 PSIG
- At 1:30 AM, RPV pressure dropped to 60 PSIG, but was quickly raised to 85 PSIG and is now steady; Torus pressure is 8 PSIG

At what time will the conditions of Table FLD-3 be initially established?

a. 2:05 AM

b. 2:35 AM

c. 2:42 AM

d. 3:14 AM

295032-01

51. Given the following conditions:

- Reactor power is 100% when a leak occurs in Cleanup system
- CU ROOM HI TEMP annunciator is in alarm
- Cleanup can NOT be isolated
- Temperature in the CU Hx Room (IB06-13) is 200° F and increasing
- All other Cleanup area temperatures are < 180° F

Which of the following best describes the required actions?

a. Continue efforts to isolate Cleanup

b. Commence a reactor shutdown

c. Manually scram the reactor

d. Emergency Depressurization is required if IB06-13 exceeds 210° F

295033-01

52. Given the following conditions:

- The plant is at 100% power
- A steam leak from the "B" Isolation Condenser Condensate return line is in progress
- All attempts to isolate the leak have failed

- Rx Building pressure indicates +0.5" WC
- 75' Isol Cond Vlvs West is 220° F
- 95' Isol cond area North is 165° F
- 95' Isol Cond area radiation level > 1000mr/hr
- 95' Liquid Poison area radiation level > 1000mr/hr
- Rx Building Ventilation has isolated on high radiation
- 1-7 Sump high level alarm is annunciated

Which of the following best describes the required actions?

a. Commence a reactor shutdown

b. Manually scram the reactor

c. Emergency Depressurization is required

d. Implement Support Procedure 50 to re-establish Rx building Ventilation

600000-01

53. Given the following conditions:

- A plant transient is in progress
- The GOS directs "A" EMRV to be placed in "DISABLE"

Which of the following is **NOT** a reason for this action to be performed?

a. To prevent spurious operation of the EMRV

b. A fire in the Recirc MG Set room

c. The EMRV is open and reactor pressure is 920 PSIG and decreasing

d. To ensure the EMRV is available for pressure control, if needed

223001-03

54. Given the following conditions:

- Reactor power was at 50% when a small LOCA occurred.
- Drywell Pressure is 4.5 PSIG and slowly increasing
- Drywell Temperature is 180° F and slowly increasing
- RPV water level dropped as low as 100"

Which of the following best describes the status of Drywell Cooling?

a. RBCCW to the Drywell is isolated; all operating Drywell Cooler fans are tripped

b. RBCCW is still being supplied to the Drywell; all operating Drywell Cooler fans have tripped

c. RBCCW to the Drywell is isolated; Drywell Cooler fans are still operating

d. RBCCW is still being supplied to the Drywell; Drywell Cooler fans are still operating

223001-04

55. Which of the following best describes the affect of a loss of both Nitrogen Compressors during power operation?

a. Drywell oxygen concentration would increase

b. Inboard MSIV's could drift closed

c. Drywell pressure control is lost AND Drywell pressure will decrease

d. Nitrogen Makeup to the Drywell is lost

241000-01

56. The plant is at 100% power with the EPR providing normal pressure control.

Which of the following describes the plant response if the EPR pressure setpoint fails high?

a. Reactor power will be higher because reactor pressure will be lower.

b. Reactor power will be lower because reactor pressure will be higher.

c. Reactor power will be higher because reactor pressure will be higher.

d. Reactor power will remain constant because reactor pressure remains constant

241000-02

57. Given the following conditions:

- A reactor startup is in progress; the Mode Switch is in STARTUP
- All IRM's are operable and on Range 10
- Reactor power is 10%
- Reactor pressure is 1020 PSIG on the EPR; the MPR is properly adjusted per operating procedures

Which of the following best describes the plant response if the Reactor pressure input (*steam line pressure detector*) to the EPR fails low?

(Assume No Operator actions are performed)

a. The MPR will now control reactor pressure

b. At 850 PSIG, the MSIV's will close

c. A Reactor high pressure scram will occur

d. At 600 PSIG, a reactor scram will occur.

259002-01

58. Given the following conditions:

- Reactor power is 25% with the generator on line
- Feedwater flow is 1.65 X10^6 lbm/hr with A and C Feedwater pumps operating
- A Feedwater Level control malfunction causes feed water flow to increase to 2.4 x 10^6 lbm/hr
- Reactor Water level reaches 177" for 10 seconds

Which of the following best describes the plant response?

a. The Main Turbine trips,
The Reactor scrams due to the turbine trip,
All Feedwater Pumps trip

b. The Main Turbine trips,
The Reactor does not scram,
A and C Feedwater Pumps trip

c. The Main Turbine trips,
The Reactor does not scram,
A and C Feedwater Pumps do not trip

d. The Main Turbine does not trip,
The Reactor does not scram,
A and C Feedwater Pumps trip

261000-01

59. Given the following conditions:

- The plant is at 100% power
- Drywell pressure has slowly increased from 1.1 to 1.2 PSIG
- The GSS has decided to vent the Primary containment via SBGTS to maintain Drywell pressure below 1.3 PSIG
- Drywell Airborne Activity is increasing

Which of the following best describes the required actions in order to accomplish this task?

A. Manually start SGTS, shutdown RBHVAC, and vent the Primary Containment via Torus vent valves V-28-47 and V-28-18

B. Vent the Drywell to RBHVAC via Drywell Vent valves V-23-21 and V-23-22

C. Vent both the Drywell and the Torus via SBGTS

D. Implement Support Procedure 31

295003-02

60. The plant was at 100% power when a Station Blackout occurred.

Given the following conditions:

- All control rods are full in.
- RPV pressure is 700 PSIG and decreasing
- RPV water level is +30" fuel zone indication and decreasing
- Drywell pressure is 14 PSIG and increasing
- Torus pressure is 12 PSIG and increasing
- Fire Protection is aligned in accordance with support Procedure 5

Which of the following best describes the required actions?

a. When RPV water level < 0", Emergency Depressurization is required

b. Initiate Drywell Spray

c. Based on current conditions in the Drywell, Emergency Depressurization is required

d. Lower RPV pressure as necessary to allow Firewater to inject

295003-03

61. Given the following conditions:

- A LOCA inside the Drywell concurrent with a loss of off-site power has occurred
- Only one (1) EDG has started and is supplying its respective bus

Which of the following combinations of operating equipment can be possible for the given conditions?

a. Containment Spray Pump 51A
ESW Pump 52A
Core Spray Main Pump 1A
Core Spray Booster Pump 3C

b. Containment Spray Pump 51B
ESW Pump 52D
Core Spray Main Pump 1D
Core Spray Booster Pump 3D

c. Containment Spray Pump 51B
ESW Pump 52A
Core Spray Main Pump 1A
Core Spray Booster Pump 3D

d. Containment Spray Pump 51C
ESW Pump 52D
Core Spray Main Pump 1B
Core Spray Booster Pump 3D

295006-01

62. Procedure 203.4 PLANT COOLDOWN FOLLOWING RX SCRAM has been entered following a scram from 75% power.

Which of the following best describes the correct operating requirements for the Recirc Pumps during the cooldown?

a. If all operating Recirc Pumps have tripped, start at least one Recirc Pump for forced circulation through the core

b. Maintain total Recirc flow > 6.4×10^4 gpm and comply with Reactor Recirc Pump Speed limitations

c. Maintain total Recirc flow > 4.8×10^4 gpm and comply with Reactor Recirc Pump speed limitations

d. Reduce Recirc Pump speed to minimum of 11.5 hz on the Master Recirc Speed Controller (Panel 4F)

295007-01

63. In which of the following conditions has a Safety Limit been exceeded?

a. Core flow is 4.8×10^4 gpm
RPV pressure is 825 PSIG
MCPR is determined to be 1.05

b. The reactor is in cold shutdown
SDC is in service; No Recirc Pumps are operating
RPV water level drops to 61" TAF

c. Core flow is 4.8×10^4 gpm
RPV pressure is 750 PSIG
Reactor power is 2.5%

d. A RPV pressure transient occurred
The reactor automatically shutdown on high pressure
A Safety Relief Valve lifted for 1 second, then closed

295010-01

64. Which of the following best describes what could be lost if the Primary Containment Pressure Limit were exceeded?

a. Ability to operate containment vent valves

b. Ability to monitor containment pressure

c. Ability to operate RPV head vents

d. Ability to monitor containment water level

295013-01

65. Given the following conditions:

- A low power ATWS with MSIV isolation is in progress
- Reactor pressure is being maintained between 800 and 1000 PSIG using Isolation Condensers and EMRV "A".

Which of the following best describes the adverse effect of manually opening and closing ONLY EMRV "A" for pressure control?

a. Localized heating of the Torus

b. Failure of the EMRV blowdown piping vacuum breakers to operate

c. Over-pressurization of the Torus, which could lead to Containment failure

d. Violation of the EMRV solenoid EQ temperature rating

295014-02

66. Given the following conditions:

- The plant is at 42% power on the 80% rod pattern line
- A loss of extraction steam to Feedwater Heater 1A3 occurs

Which of the following best describes the required actions?

a. Reduce Recirc Flow until minimum flow is reached

b. Insert Cram rods to exit the Exclusion Region

c. Secure Extraction Steam to any other operating high pressure feedwater heater

d. Manually scram the reactor

295015-01

67. Given the following conditions:

- An ATWS is in progress; Reactor power is 10%
- All Scram Group solenoid lights are NOT illuminated
- Individual HCU red scram indicating lights are NOT illuminated
- SDV Vent and Drain Valves are open
- SCRAM CONTACTOR OPEN (G-1-c) is in alarm
- MSIV's are closed

Which of the following methods for scramming the control rods could be effective for the given conditions?

a. Operating sub-channel test switches

b. Opening the 100 AMP breakers

c. Venting the Scram Air Header

d. Resetting and then manually re-initiating a scram

295015-02

68. Given the following conditions:

- A manual scram was inserted due to Main Generator electrical control problems
- Six (6) control rods did not fully insert; they are stuck at various positions between 48 and 24 and can NOT be moved
- All other systems operated as designed

- Reactor Engineering has determined the reactor is shutdown even though boron has NOT been injected.
- The decision is made to cooldown the reactor and establish SDC.

Which of the following potential adverse affects could occur because of the cooldown?

a. Thermal stratification of the lower inlet plenum

b. The depressurization could cause re-criticality to occur

c. SLC will need to be initiated, resulting in Cleanup isolation

d. Torus water temperature could exceed HCTL limitations

295016-01

69. Given the following conditions:

- Reactor startup is in progress; reactor power is 10%
- The GSS orders a Control Room Evacuation due to a fire

Which of the following best describes the expected operator actions?

a. Reduce Recirculation flow to minimum;
Manually scram the reactor
Transfer house loads to the Startup transformers, then trip the turbine

b. Manually scram the reactor and confirm all rods inserted past 02;
Ensure one (1) Feedwater Pump is in service;
Ensure feedwater level control is set for post scram level;
Trip all operating Recirc Pumps, then trip the Turbine

c. Manually scram the reactor and start a second CRD pump;
Trip all operating Feedwater Pumps;
Trip all operating Recirc Pumps;
Transfer house loads to the Startup Transformers, then close the MSIV's

d. Manually scram the reactor and confirm all rods inserted past 02;
Trip all operating Recirc Pumps;
Close the MSIV's and trip all operating Feedwater pumps

295023-01

70. Given the following conditions:

- Refueling activities are in progress
- A bundle from the Fuel Pool is being placed in the core
- All SRM's read 4 cpm

As the fuel bundle is being lowered into the core. SRM count rate starts increasing.

Which of the following is the expected operator action?

a. At 16 cpm, stop any fuel movement until directed by the GSS

b. At 32 cpm, return the bundle to the Fuel Pool

c. At 64 cpm, return the bundle to the Fuel Pool

d. At 128 cpm, return the bundle to the Fuel Pool

295023-02

71. During fuel movement over the Spent Fuel Pool, the BACKUP HOIST LIMIT light on the Interlock Status Display Module illuminates.

Which of the following best describes why that light would illuminate?

a. The Fuel Hoist is extended too far

b. The Fuel Hoist is overloaded (too much weight)

c. The Fuel Hoist is at its Maximum up limit

d. The Fuel Hoist is clear of the Spent Fuel Racks

295024-01

72. Given the following conditions:

- A LOCA has occurred. All control rods are full in.
- Torus pressure is 25 PSIG; Torus water level is 150" and decreasing
- Torus water temperature is 108° and increasing
- RPV water level decreased to +30" TAF, and is now increasing
- RPV pressure is 200 PSIG and decreasing
- CHRMS reads 200 R/hr

All systems have responded as designed.

Which of the following best describes the required actions?

a. Stop injection from Core Spray, then manually open all EMRV's

b. Vent the Torus through Nitrogen Purge Valves V-23-15 and V-23-16

c. Initiate Drywell sprays

d. Emergency Depressurization is required

261000-02

73. Given the following conditions:

- EF 1-5 is OOS
- EF 1-7 is operating on the Turbine Building
- EF 1-6 is operating on the Reactor Building
- Reactor Building Vent Monitor Channel 1 alarms HIGH due to a faulty power supply

What is the expected response of the Plant Ventilation system?

A. SGTS automatically starts after a 2 minutes TD, EF 1-6 trips, EF 1-7 continues to operate

B. SGTS automatically starts after a 2 minute TD, EF 1-6 and 1-7 trip

C. SGTS instantaneously automatically starts, EF-1-6 trips, EF-1-7 continues to operate .

D. SGTS instantaneously automatically starts , EF 1-6 and 1-7 trip

264000-01

74. Given the following conditions:

- Reactor power is at 1%; the mode switch is in STARTUP
- A reactor scram occurs due to a loss of Off-site power
- Both EDG's start and re-energize their respective buses

Which of the following systems will automatically restart?

a. Both CRD Pumps and Core spray Pumps A and B

b. Both SGTS systems and ESW Pumps A and B

c. Service Water Pumps and RBCCW Pumps

d. Drywell Cooler Fans and TBCCW Pumps

264000-02

75. Given the following conditions:

- The plant was at 75% power when a LOCA occurred
- Drywell pressure is 5 PSIG
- Breaker S1B failed to close
- EDG 2 DISABLED alarm is annunciated due to low lube oil pressure

Which of the following best describes the current status of the EDG's?

a. EDG 1 has Fast Started and is unloaded; EDG 2 is tripped

b. Both EDG 1 and EDG 2 have Fast Started and are running loaded.

c. EDG 1 has Idle Started; EDG 2 is tripped

d. EDG 1 has Idle started; EDG 2 has Fast Started and running loaded

290001-01

76. Which of the following conditions would violate Secondary Containment Integrity requirements?

a. One of the doors at the Reactor Building Southeast corner Elevation 23' is open; the other door is closed

b. Only one Standby Gas Treatment System (SGTS) is operable

c. Reactor Building Vent Exhaust Valve V-28-21 is open and determined to be inoperable

d. Reactor Building Pressure is being maintained at 0.27" water vacuum

295026-02

77. Which of the following correctly describes the basis for initiating boron injection ***before*** exceeding the Boron Injection Initiation Temperature (BIIT)?

a. Ensures that Torus temperature will not exceed 150° F during the blowdown phase if a LOCA were to occur

b. Ensures the reactor will be shutdown and in hot standby before the Torus reaches the heat capacity temperature limit

c. Ensures that Torus temperature will not be so high that it results in increasing Drywell pressure

d. Ensures the reactor will be shutdown and in hot standby conditions before the Torus reaches the heat capacity level limit

295026-03

78. Given the following conditions:

- An ATWS is in progress
- RPV pressure is 900 PSIG with two (2) EMRV's manually opened
- Both Isolation Condensers are in service; the Main Condenser is unavailable
- Torus water level is 160"; Torus water temperature is 141° F and increasing
- Reactor power is 15%; SLC failed to initiate

Which of the following best describes the required actions?

a. When Torus water temperature reaches 160°, Emergency Depressurization is required

b. When Torus water temperature reaches 180°, Emergency Depressurization is required

c. When Torus water temperature reaches 160°, take action to reduce RPV pressure < 900 PSIG

d. When Torus water temperature reaches 180°, take action to reduce RPV pressure < 900 PSIG

295030-01

79. Given the following conditions:

- An ATWS is in progress
- Torus temperature has risen due to EMRV operation, but is now stable
- Torus water level is lowering for unknown reasons

Which of the following is the bases for the Torus level at which the Heat Capacity Temperature limit will be exceeded irrespective of Torus temperature?

a. EMRV Y-quenchers are uncovered

b. Lowest indicated value for Torus level

c. Lowest safety related indicated value for Torus level

d. Drywell Vent header ram's head openings are uncovered

295030-03

80. Given the following conditions:

- A LOCA has occurred
- Two Core Spray Pumps are injecting
- Two Containment Spray Pumps are operating; total flow is 5,000 GPM
- Torus water temperature is 160° F
- Torus Pressure is 10 PSIG
- Torus Water level is 75"

Based on these conditions, which of the following is the Maximum Core Spray flow available?

a. 8,000 gpm

b. 9,000 gpm

c. 10,000 gpm

d. 11,000 gpm

295031-01

81. Given the following conditions:

- A plant scram has occurred due to a loss of feedwater
- Core Spray is available
- RPV pressure is 750 PSIG
- RPV water level is approaching 0" TAF

Which of the following should be performed and why?

a. Open an EMRV to reject heat to the pool while still within design limits

b. Emergency Depressurize to establish steam cooling flow path conditions

c. Open all Bypass Valves to cause a level swell to drop the fuel temperature

d. Lower reactor pressure to allow maximum flow from available injection systems

295031-02

82. During STEAM COOLING, Emergency Depressurization is required at –42" TAF RPV water level.

Which of the following best describes the basis for this action?

a. to reduce pressure for the low pressure injection systems

b. to minimize energy in the RPV prior to a loss of the Torus

c. to provide final cooling of the fuel since all other sources of adequate core cooling have failed

d. to provide adequate steam flow to maintain fuel clad temperature less than 1500° F

295031-03

83. RPV FLOODING – NO ATWS is in progress.

At the completion of the Minimum Core Flooding Interval, which of the following best describes where RPV water level is expected to be?

a. At a level above the Steam Separators

b. At the top of active fuel

c. At Minimum Steam Cooling Water Level

d. At Minimum Zero injection Water level

295031-04

84. Given the following conditions:

- The plant is at 100% power
- At 12:00 AM, a large break LOCA occurred in the Drywell
- At 12:30 AM, RPV Flooding- NO ATWS is entered
- At 1:00 AM, the conditions of Table FLD-1 have been met
- At 1:30 AM, the conditions of Table FLD-2 have been met
- At 2:00 AM, it is determined that the conditions of Table FLD-3 have been met.

Based on these conditions, which of the following times is the Maximum Core Uncovery Time Limit?

a. 5 minutes

b. 5 ½ minutes

c. 6 minutes

d. 7 minutes

295037-02

85. Given the following conditions:

- A transient occurred which resulted in a failure to scram
- EMG 3200.01B RPV CONTROL – with ATWS has been entered

Which of the following actions for inserting rods could result in Reactor Building airborne activity levels increasing?

a. De-energizing the scram solenoids

b. Increasing CRD cooling water differential pressure

c. Operating individual scram test switches

d. Bypassing the RWM and manually inserting control rods

295037-03

86. An ATWS is in progress.

In accordance with the EOP, if any EMRV is cycling on high pressure, direction is given to manually open EMRV's until any Bypass Valve starts to close.

Which of the following best describes the reason for this direction?

a. To prevent directing steam away from the condenser and into the Torus

b. To provide adequate operating margin below the setpoints of "A" and "D" EMRV's

c. To ensure pressure reduction is within the design of the operating Isolation Condenser

d. To limit the number of EMRV lifts, thus reducing the chances of a stuck open EMRV occurring

295038-01

87. The following statement exists in the Radioactivity Release Control EOP:

"IF...THE RELEASE IS FROM THE TURBINE BUILDING
THEN...OPERATE AVAILABLE TURBINE BLDG VENTILATION PER SUPPORT PROC 51"

Which of the following best describes the basis for keeping Turbine Building Ventilation in operation while executing Radioactivity Release Control?

a. Maintains Turbine Building pressure above Reactor Building pressure

b. Prevents a reactor scram due to high temperature in the Turbine Building Steam Tunnel

c. Prevents having an unmonitored ground release from the Turbine Building

d. Ensures adequate dilution of the gases discharged through the Main Stack

500000-01

88. Given the following conditions:

- Torus pressure is 32 PSIG and increasing
- Torus level is 461"
- Hydrogen Concentration is 2%
- RPV pressure is 60 PSIG
- CHRRMS read 200 R/hr
- All control rods are fully inserted

Which of the following best describes the required actions to control containment pressure?

a. Vent the Drywell through V-23-21 and V-23-22

b. Vent the Drywell through V-27-3 and V-27-4

c. Vent the Torus through V-28-17

d. Vent the Drywell through V-27-1 and V-27-2

500000-02

89. Which of the following best describes the required vent path used to maintain the Torus pressure below the Primary Containment Pressure Limit curve during conditions of high hydrogen concentrations in the Containment and Containment water level below the vents?

a. The Drywell hardened pipe vent

b. The Torus hardened pipe vent

c. The Standby Gas Treatment system

d. The Reactor Building Exhaust Ventilation system

201003-01

90. Given the following conditions:

- Reactor power is being increased using control rods.
- The selected control rod has been inadvertently withdrawn two notches past its intended position.
- The mis-positioned control rod is still selected

Which of the following describes the required initial action?

a. Insert the control rod to its intended position

b. Notify the GSS and core engineering

c. Insert an Administrative Rod Block

d. If a Rod Block condition does not exist, continue power increase in accordance with the Control Rod Withdrawal Sequence

201003-02

91. Given the following conditions:

- During a plant startup, control Rod 10-19 drifts out
- The drifting control rod is inserted and isolated

Which of the following describes the possible cause if this control rod were to drift out after it has been isolated?

a. Stuck collet fingers

b. Leaking directional control valve

c. Leaking scram outlet valve

d. Stuck open ball check valve

233000-01

92. Which of the following reasons describes why the Spent Fuel Pool temperature must be maintained less than 125° F?

a. Structural thermal gradient limits between the Spent Fuel Pool floor and the Shutdown Cooling Room

b. Evaporation of the Spent Fuel Pool, resulting in increased radiation levels

c. Inadvertent criticality occurring in the Spent Fuel Pool

d. Spent fuel Pool water level rising over the weir walls and flooding ventilation ducts

239001-01

93. The MSIV's have automatically closed.

Select the plant condition that caused the auto closure of the MSIV's.

a. A loss of feedwater from 30% power caused a reactor scram to occur; RPV water level decreased to 96" TAF

b. The Main Generator was being synchronized to the grid when Turbine pressure regulation caused additional Bypass Valves to open; Reactor pressure decreased to 845 PSIG

c. A reactor startup was in progress; Reactor pressure was 875 PSIG when an IRM was selected to Range 10

d. The plant had scrammed from 100% power; The mode switch was placed in Shutdown, Reactor pressure then decreased to 850 PSIG

G2.3.11-01

94. Turbine Building Sump 1-5 RAD HI / LEVEL HI/ TROUBLE annunciator has just alarmed.

Which of the following best describes the required actions?

a. If the sump has been aligned overboard AND the Radiation Monitor indicates HIGH, confirm the sump pump(s) are tripped

b. If the sump has been aligned to the High conductivity tank AND the Radiation Monitor indicates HIGH, confirm the sump pump(s) are tripped

c. If the sump has a high water level, confirm the pump controls are in AUTO and at least one of the pumps is operating, then check the area for the source of leakage into the sump

d. If the sump has a high water level AND shows indication of an oily sheen, the sump can NOT be pumped

G2-4-18-01

95. Which of the following EOP curves allows actions *irrespective of adequate core cooling* to ensure it is not violated?

a. Primary Containment Pressure Limit (PCPL)

b. Containment Spray Initiation Limit (CSIL)

c. Maximum Primary Containment Water Level Limit (MPCWLL)

d. Pressure Suppression Pressure (PSP)

G2.4.18-02

96. Which of the following best describes the basis for 60 PSIG above Torus pressure as stated in EMG-3200.8a "RPV FLOODING – NO ATWS" ?

(*Assume all EMRV's are open*)

a. Adequate core cooling is NOT assured *and* injection rate must be increased if RPV pressure remains 60 PSIG above Torus pressure

b. Insufficient natural circulation through the core exists to provide adequate core cooling if RPV pressure remains 60 PSIG above Torus pressure,

c. Adequate core cooling is assured if RPV pressure is less than 60 PSIG above Torus pressure

d. Steam flow through the core provides adequate core cooling when RPV pressure is greater than 60 PSIG above Torus pressure

G2.4.18-03

97. Given the following conditions:

- A design basis LOCA has occurred in the Drywell
- RPV water level is UNKNOWN due to reference leg flashing
- The requirements of Table FLD-1 can NOT be met.

- Eight (8) hours later, Containment Water level is 366" and RPV water level is still UNKNOWN
- It is determined that RPV venting is required

Which of the following is the basis for venting the RPV under these conditions?

a. provides a vent path for the Drywell to allow air and non-condensible gases to escape, thus preventing overpressurization of the Containment during containment flooding

b. prevents steam and non-condensible gases from building up pressure in the RPV, thus preventing reflooding of the core

c. to prevent the possibility of the line break being submerged, thus causing RPV pressure to increase above shutoff head of the injection systems

d. to help maintain the RPV depressurized in order to allow injection from fire Water and Condensate Transfer if Core Spray is unavailable.

G2.4.25-01

98. A continuous Fire Watch is required IAW Procedure 120.2 FIRE SYSTEM IMPAIRMENT REPORTING AND FIRE WATCH INSTRUCTIONS.

Concerning Fire Watch requirements, which of the following is the responsibility of the Lead CRO?

a. The LCRO shall review and sign the Fire Watch Inspection Log once per shift

b. The LCRO shall tour the affected area at least once per shift

c. The LCRO shall contact the Fire Watch if the Continuous Fire Watch has not called the control room by 45 minutes after the hour

d. The LCRO shall designate when the continuous Fire Watch can be relieved.

G2.4.25-02

99. Which of the following conditions will require a continuous fire watch?

a. Battery Room A & B Halon 1301 System tank at 96% full charge weight and 91% full charge pressure

b. One thermal Fire Detection instrument for Emergency diesel Generator # 1 is inoperable; all other detectors are operable

c. Emergency Lighting Unit (ELU) # 40 has been declared inoperable.

d. The 4160 Volt Switchgear CO_2 roll down fire door has been accidentally damaged and may not be able to perform its designed function.

G2.4.41-01

100. An Unusual Event has been declared.

Prior to any required notification being performed, plant conditions changed and entry conditions for declaring an ALERT occurred, but immediately cleared, and conditions returned to the Unusual Event level.

Which of the following best describes the classification of this event?

a. An Unusual event will be reported.

b. An Unusual Event will be reported, with mention of the Alert Conditions being met but now cleared.

c. An Alert is to be declared and reported.

d. An Alert will be declared but an Unusual Event will be reported.

Name: KEY

Oyster Creek NRC SRO License Examination

August 27, 1999

1. A B C D
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
9. A B C D
10. A B C D
11. A B C D
12. A B C D A+D JEB
13. A B C D
14. A B C D
15. A B C D
16. A B C D
17. A B C D
18. A B C D
19. A B C D
20. A B C D A+C JEB
21. A B C D
22. A B C D
23. A B C D
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28. A B C D
29. A B C D
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34. A B C D
35. A B C D
36. A B C D
37. A B C D
38. A B C D
39. A B C D
40. A B C D
41. A B C D
42. A B C D
43. A B C D
44. A B C D
45. ~~A~~ B C D C ONLY JEB
46. A B C D
47. A B C D
48. A B C D
49. A B C D
50. A B C D

REVISIONS TO KEY BASED ON POST EXAM COMMENT RESOLUTION.

J Briggs, Chief Examiner

Name: KEY

Oyster Creek NRC SRO License Examination August 27, 1999

51.	A	B	C	D	
52.	A	B	C	D	
53.	A	B	C	D	
54.	A	B	C	D	
55.	A	B	C	D	
56.	A	B	C	D	
57.	A	B	~~C~~	D	A ONLY Y&B
58.	A	B	C	D	
59.	A	B	C	D	A+B Y&B
60.	A	B	C	D	
61.	A	B	C	D	
62.	A	B	C	D	
63.	A	B	C	D	
64.	A	B	C	D	
65.	A	B	C	D	
66.	A	B	C	D	
67.	A	B	C	D	
68.	A	B	C	D	
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75.	A	B	C	D	
76.	A	B	C	D	
77.	A	B	C	D	
78.	A	B	C	D	
79.	A	B	C	D	
80.	A	B	C	D	
81.	A	B	C	D	
82.	A	B	C	D	
83.	A	B	C	D	A+B Y&B
84.	A	B	C	D	
85.	A	B	C	D	
86.	A	B	C	D	A+D Y&B
87.	A	B	C	D	
88.	A	B	C	D	
89.	A	B	C	D	
90.	A	B	C	D	
91.	A	B	C	D	
92.	A	B	C	D	
93.	A	B	C	D	
~~94.~~	~~A~~	~~B~~	~~C~~	~~D~~	DELETE Y&B
95.	A	B	C	D	
96.	A	B	C	D	
97.	A	B	C	D	
98.	A	B	C	D	
99.	A	B	C	D	
100.	A	B	C	D	

Table of Contents

OC

Original Submitted

of Test

TAB 1

SCENARIO A-1 ELECTRICAL ATWS

SCENARIO OBJECTIVE

Evaluate the operators in using RPV CONTROL – with ATWS

SCENARIO SUMMARY

65% power; all equipment operable. Per General Operating Procedures, continue to increase power to 100%.

EVENTS

- 10% power increase using Recirc Flow
- Respond to Rx Building Vent Monitor Failure
- Loss of IP-4B
- Generator Field Ground
- Electrical ATWS

SCENARIO SEQUENCE

The crew will increase power using Recirc flow. After a 10% increase in power has been performed, an upscale failure of the Rx Building Vent Radiation Monitor will occur. This will, after a 2 minute Time Delay, isoalte Secondary containment and initiate SGTS. After the Rad Monitor is fixed, the crew will restore normal Reactor Building Ventilation. After ventialtion is restored, a loss of IP-4B occurs. 15 minutes later, AOG isolates. The crew will monitor condenser vacuum. As soon as AOG isolates, the cause of IP-4b loss is corrected, and the crew will re-energize IP-4B and restore Off-Gas flow through the Stack. After AOG is restored, a Main Generator filed ground alarm occurs. Investigation reveals arc s and sparks in the exciter housing. The crew will decide to scram the reactor and trip the turbine. However, the reactor does not scram (electrical ATWS). A turbine trip occurs. Bypass Valves are initially available for pressure control, but a slow loss of condenser vacuum will result in a transition of pressure control from the Bypass Valves/EMRV's to EMRV's/Isolation Condensers. Driving control rods will not work. After the crew initiates SLC, lowers water level to between 30' and - 30', venting the scram air header will allow rods to insert, terminating the ATWS event.

EVENT 1 – 10% change in Reactor power

Objective: Normal plant event in evaluating examinee's control of reactivity (N) (R) CRO-A;SRO

EVENT 2 – Failure of Rx Building Vent Radiation Monitor

Objective: Instrument failure resulting in isolation of Rx Building HVAC and initiation of SGTS (I) (N), then restoration of Rx Building HVAC

Malfunctions required: 1 Upscale failure of Rx Building Vent Rad Mon Ch2

EVENT 3 – Loss of IP-4B

Objective: Evaluate the examinee's response to plant instrument and component failures (I, C) CRO-A; CRO-B; SRO

Malfunctions Required: 1 Loss of IP-4B

Success Path: dispatch Electrical Maintenance and EO to Panel IP-4B; Electrical Maintenance fixes faulted breaker; EO restores power to IP-4B; AOG is restored.

EVENT 4: Generator Field Ground

Objective: Evaluate the examinee's actions and decision making process when it is determined that the Main Generator exciter (Component) is arcing and sparking. (C) CRO-B; SRO

Malfunctions Required: 1 Main generator Trip (prelude to this is an annunciator indicating Generator ground)

Success Path: The SRO determines that a reactor scram / turbine trip is required

EVENT 5: Electrical ATWS (this file contains 3 malfunctions; failure to Auto scram, failure to Manual scram, failure of ARI)

Objective: Evaluate examinee's implementation of the EOP's during ATWS event (M) CRO-A, CRO-B, SRO

Malfunctions required: file ATWS

Success Path: Establish RPV pressure control, water level control +30" to –30", inject SLC before exceeding BIIT, vent the scram air header

SCENARIO RECAPITULATION

Total Malfunctions:	4
Abnormal Events:	2
Major Transients:	1
EOP's entered:	3
EOP Contingencies:	0

X

Facility: Oyster Creek | Scenario No.: A-1 (New) | Op-Test No.:

Examiners: ______________________ Operators: ______________________

______________________ ______________________

______________________ ______________________

Objectives:

Evaluates applicants ability to increase reactor power IAW General Operating Procedures
Evaluates applicants response to a Radiation Monitor
Evaluate applicants ability to respond to a loss of Instrument Panel IP-4B
Evaluate applicants response to a field ground/loss of field Generator trip/turbine trip
Evaluate applicants ability to execute EOP's during an electrical ATWS event

- Recognize loss of condenser as a heat sink, then control RPV pressure with Isolation Condensers / EMRV's
- Lower RPV water level as directed by EOP
- Initiate SLC prior to exceeding BIIT Limit
- Place containment Spray in Torus cooling
- Attempt to manually insert control rods using RMCS
- Successfully vent the scram air header to terminate the ATWS event

Initial Conditions:
The plant is at 65% power; all equipment is operable.

Turnover:
Per 201.3, continue to increase power to 100%.

Event No.	Malf. No.	Event Type*	Event Description
1	-	R	10% increase in reactor power using Recirc flow
2	MAL RMS4J	I,N	Respond to RxBuilding Rad Monitor Failure (INSTRUMENT FAILURE EVENT)
3	MAL EDS8C	C	Loss of IP-4B (COMPONENT FAILURE) Recover AOG after system isolates
4	OVR GEN3 MAL GEN1	C	Respond to Field ground annunciator Respond to loss of field generator trip/turbine trip
5	FILE ATWS	M C	Electrical ATWS / turbine Trip with Bypass Valves available. However, a slow loss of vacuum occurs (blade thrown through condenser shell). Loss of condenser as a heat sink: when the low vacuum trip closes the bypass Valves, pressure control will now be with the Isolation condensers and EMRV's maintained open. Torus water temperature will increase, requiring injection of SLC

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

Op-Test No.:	Scenario No.: A-1	Event No.: 1	Page 2 of 11
Event Description: 10% Increase in reactor power using Recirculation Flow			

Time	Position	Applicant's Actions or Behavior
	SRO(N)	Directs CRO to increase reactor power to 75% in accordance with 201.3 Plant Startup from Hot Standby to Rated Power Step 5.20 (Core Engineering Instructions will be to increase recirc flow) Conducts Pre-evolution brief; included in this brief should be directions to check at least 6 cond Demins, 3 condensate and 3 Feedwater Pumps are in service at 70% power **Comments:**
	CRO-A (R)	Increases reactor power using Recirc flow in accordance with 301.2 Reactor Recirculation System Section 6.0 1. Reviews Precautions and Limitations • Do not withdraw control rods while making recirc flow changes • All flow changes consistent with the requirements of 202.1 POWER OPERATION • Maintain flow > 6.4×10^4 gpm while in RUN • Monitors NI's for indication of power oscillations • Operation in the Exclusion Region is not permitted 2. Verifies individual MG Set Speed Controllers on each recirc pump are in AUTO 3. Slowly increases total recirc flow using MASTER RECIRC SPEED CONTROLLER manual adjustment knob 4. Monitors pressure, flow and NI's and Generator output as recirc flow is increased 5. Notifies SRO at 70% power 6. Continues power increase to 75% power. 7. At 75%, notifies SRO **Comments:**
	CRO-B	Monitors plant response to increasing Recirculation flow
		This concludes Event 1

Op-Test No.:	Scenario No.: A-1	Event No.: 2	Page 3 of 11

Event Description: Upscale failure of Rx Building Vent Radiation Monitor
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B	Responds to annunciators on Panel 10F 10F-1-k and 10F-4-m Notifies SRO that in 2 minutes, the Reactor Building ventilation will isolate and SGTS will initiate **Comments:**
	CRO-A	Checks Rad Monitors on Panel 2R and reports R014B-9 is pegged upscale, and R014C-9 is normal
	SRO	Briefs crew of impending Secondary Containment Isolation
	CRO-B	When Rx Bldg/SGTS alarms annunciate on Panel L, verifies Rx building Isolation and auto Start of SGTS on Panel 11R IAW SGTS Procedure 330 Section 5.3.1 1. Verifies both SGTS Fans start and valves open 2. Verifies Fans trip (SF-1-12, SF-1-13, SF-1-14, EF-1-5) 3. Verifies Rx Building Main Header Supply valves close 4. Verifies V-28-21, V-28-22, V-28-42, V-28-43 and V-28-48 closes 5. After 2-3 minutes, verifies SGTS System 2 shutdowns **Comments:**
	CRO-A	Notifies I and C Department of failed Rad Monitor
	SRO	When it is reported that the Rad Monitor is repaired, directs SRO-B to restore Reactor Building Ventilation
	CRO-B	Restores Rx Building Ventilation to Normal IAW SGTS Procedure 330 and Rx Bldg Vent Procedure 329 1. Per Section 6.3.1.2 CRO-A resets Rx Building Vent Manifold CH1 2. Verifies SGTS system 1 is shutdown and Rx Building Isolation Reset has double indication, then depresses RESET pb 3. Per Procedure 329, confirm control switch for V-28-21 and 22 is in OPEN 4. Reset RB HVAC and confirm V-28-21 and 22 open 5. Confirm control switch for V-28-42 and 43 is in CLOSED 6. Start EF-1-5, then start two supply fans (SF-1-12, 13, 14) and verify supply valves open 7. Check building pressure is negative at .25" water **Comments:**
	SRO	**This concludes Event 2**

Op-Test No.:	Scenario No.: A-1	Event No.: 3	Page 4 of 11

Event Description: Loss of Instrument Panel IP-4B.
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B/A	Acknowledges multiple Control room annunciators; reports annunciator 9XF-7-b IP-4B PWR LOST is in alarm **Comments:**
	CRO-B	Responds to a loss of IP-4B in accordance with RAP 9XF-7-b **Comments:**
		Reports that OG will isolate in 15 minutes **Comments:**
		Performs confirmatory actions; checks RAP listed indications and alarms **Comments:**
		Informs SRO of Tech spec 3.7 requirements **Comments:**
		Refers to DWG 3C-733-11-008 for IP-4B Panel Schedule (if time permits) NOTE: load listing is also found in 2000-OPS-3024.10f Section 4.4 **Comments:**
		Refers to OPS-3024.10f for Power Restoration Actions **Comments:**
		Event 3 continued on next page

Op-Test No.:	Scenario No.: A-1	Event No.: 3	

Event Description: Loss of Instrument Panel IP-4B (continued)

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CRO to implement actions of RAP 9XF-7-b **Comments:**
		Refers to Tech Spec 3.7; determines that IP-4B is Tech spec related equipment and states that LCO 3.7 is in effect; cold shutdown within 30 hours. **Comments:**
		Directs CRO to dispatch EO to IP-4B to investigate Directs CRO to notify Electrical Maintenance to investigate loss of IP-4B **Comments:**
	CRO-B	Notifies SRO when AOG isolates; monitors condenser vacuum **Comments:**
	EO/CRO	Reports that Electrical Maintenance has determined that the supply breaker to IP-4B was faulted and a new breaker has been installed **Comments:**
	SRO	Directs power to be restored to IP-4B **Comments:**
		Event 3 continued on next page

Op-Test No.:	Scenario No.: A-1	Event No.: 3
Event Description: Loss of Instrument Panel 4B (continued)		

Time	Position	Applicant's Actions or Behavior
	CRO-B	Re-energizes IP-4B in accordance with 2000-OPS-3024.10f 1. Directs EO to open all breakers on IP-4B 2. Directs EO to close feeder breaker to IP-4B 3. Directs EO to re-close all breakers on IP-4B **Comments:**
		Re-opens V-7-31 to restore OffGas flowpath 1. Places OG mode selector switch to ISOLATE and BYPASS (10XF) 2. Depresses MAIN STEAM ISOLATION RESET pb (4F) 3. Confirms V-7-31 opens **Comments:**
	SRO	Directs placing AOG back in service **Comments:**
	CRO-B/A	Re-establishes TIP Nitrogen Purge **Comments:**
		This concludes Event 3

Op-Test No.:	Scenario No.: A-1	Event No.: 4	

Event Description: Respond to field ground annunciator / Respond to loss of field generator trip/turbine trip
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B	Acknowledges and reports annunciator R-4-a FIELD GROUND is in alarm **Comments:**
	CRO-B	Responds to annunciator in accordance with RAP R-4-a. 1. Dispatches an operator and electrician to Main Generator and exciter area to observe any visual evidence of arcing or damage 2. Notifies the SRO that if the ground is severe enough, exciter output may be lost or generator may trip **Comments:**
	SRO	When the report comes in that there is arcing in the exciter housing, directs a reactor scram to be inserted, followed by tripping the turbine NOTE: the turbine will be tripped on field loss (R-3-a) AFTER the order is given to manually scram the reactor and it is reported that a failure to scram has occurred. **Comments:**
	CRO-A/B	Informs SRO of field report from EO that arcing is evident in the exciter housing **Comments:**
	CRO-A	When directed by SRO, inserts a manual scram. Reports failure to scram **Comments:**
	CRO-B	When directed by SRO, trips Turbine Generator. Reports automatic trip of Generator has occurred. **Comments:**
		This concludes Event 4

Op-Test No.:	Scenario No.: A-1	Event No.: 5	Page 8 of 11

Event Description: Electrical ATWS

Time	Position	Applicant's Actions or Behavior
	CRO-A	Performs expected operator action for scram 1. Depress RPS manual scram pb's 2. Place the mode switch to SHUTDOWN 3. Verify that all control rods are fully inserted; reports that the reactor did not scram 4. Confirms or manually initiates ARI; reports that ARI failed to insert rods **Comments:**
	SRO	Enters EMG-3200.01B RPV CONTROL –with ATWS 1. Directs pressure control using Bypass Valves and EMRV's 2. IF water level < 160", directs initiation of Isolation condensers (if not already in service due to high pressure auto initiation) 3. Directs ROPS bypassed 4. Directs Support Procedure #1 to be performed (Initiations and Isolations) 5. Directs bypassing ADS 6. Directs Support Procedure #16 to be performed(MSIV LO-LO Bypass) 7. Directs Support Procedure #18 to be performed(RBCCW to Drywell Bypass) 8. Directs all operating Recirc Pumps to be tripped **Comments:**
	CRO-A *** Critical task (bypassing ADS)**	Performs actions as directed by SRO 1. Monitors and controls pressure augmenting Bypass valves with sustained opening of EMRV's 2. Trips all operating Recirc Pumps 3. Controls RPV water level IAW Reactor Scram until directed to lower level 4. Initiates Isolation condensers, if directed 5. Bypasses ADS **Comments:**
		Event 5 continued on next page

Op-Test No.: | Scenario No.: A-1 | Event No.: 5

Event Description: Electrical ATWS (continued)

Time	Position	Applicant's Actions or Behavior
	CRO-B	1. Reports turbine Trip and decreasing condenser vacuum 2. Verifies proper operation of the Bypass Valves **Comments:**
	CRO-B	Performs actions as directed by SRO 1. If time permits, performs Support Procedure #1 2. Performs Support Procedures #16 and #18 **Comments:**
	SRO	1. Confirms Torus water temperature is below BIIT 2. After Support Procedure 16 is completed, directs water level to be lowered to below 30" **Comments:**
	CRO-A *Critical Task	1. Terminates and prevents injection into the vessel except for CRD and boron to lower RPV water level 2. Maintains RPV water level between +30" and –30" using Feedwater and CRD in accordance with Support Procedure 19 **Comments:**
		Event 5 continued on next page

Op-Test No.:	Scenario No.: A-1	Event No.: 5	

Event Description: electrical ATWS (continued)

Time	Position	Applicant's Actions or Behavior
	CRO-B	Reports Bypass Valves are closed due to low condenser vacuum; maintains pressure control within directed band using maintained open EMRV's and Isolation condensers **Comments:**
	SRO *Critical Task	1. Determines that Torus water temperature can not be maintained below BIIT, and directs initiation of SLC 2. Enters EMG-3200.2 Primary Containment Control for Torus water high temperature **Comments:**
	CRO-A	Initiates SLC; confirms RWCU is isolated. **Comments:**
	SRO	Directs insertion of control rods in accordance with Support Procedure 21 **Comments:**
	CRO-A	1. Places mode switch to REFUEL, starts both CRD pumps, and maximizes Drive Water dp. 2. Attempt to manually inserts Control rods; reports that rods will not insert **Comments:**
	CRO-B	1. Reports De-energizing Scram Solenoids and individual scramming did not insert rods 2. Directs EO to vent the Scram Air header **Comments:**
		Event 5 continued on next page

Op-Test No.:	Scenario No.: A-1	Event No.: 5	

Event Description: Electrical ATWS (continued)

Time	Position	Applicant's Actions or Behavior
	SRO	Directs Support Procedure 1 to be performed AFTER water level is lowered **Comments:**
	CRO-B	Performs Support Procedure #1 **Comments:**
	SRO	After the scram air header is vented and all rods in, directs SLC to be terminated and exits RPV Control – with ATWS and enters EMG-3200.1A RPV Control – No ATWS at Step A **Comments:**
	CRO-A	1. Reports all rods are full in 2. When directed, terminates boron injection **Comments:**
	SRO	1. Directs RPV water level to be slowly raised to 138" 2. Directs pressure control to be on 1 Isolation condenser (maintain RPV pressure > 450 PSIG) 3. Directs Torus Cooling (both loops) to be placed in service **Comments:**
		Terminating Cue: When actions are being taken to raise RPV water level and address elevated Torus water temperatures, the scenario is terminated.

Scenario A-2 Loss of Coolant Accident

Scenario Objective
Evaluate the operators in using RPV Control – No ATWS and Emergency Depressurization

SCENARIO SUMMARY

The plant is at 100% power; all equipment operable. Isolation Condenser Surveillance 609.4.001 Valve Operability and In-service Test is scheduled to be performed.

EVENTS

- Isolation Condenser Valve Operability
- A3 Feedwater high water level trip due to instrument failure
- Loss of DC-F
- Decreasing condenser Vacuum
- Increasing Drywell pressure
- Loss of 4160 VAC Bus 1D
- Large break LOCA in Drywell requiring ED

SCENARIO SEQUENCE

The plant is at 100% power. Isolation condenser A surveillance is to be performed. After the surveillance is completed, an isolation of Feedwater A3 on a failed high water level trip occurs. The next event is a loss of Dc-F. the crew responds to a loss of CRD and Cleanup. After maintenance fixes the breaker to DC-F, the crew will re-energize DC-F. After DC-F is re-energized, a loss of condenser vacuum occurs. The crew will reduce power using recirc flow and control rods, if needed, to maintain condenser vacuum > 22" (Note: maintaining the unit on line will be possible). After the plant is stabilized at a new lower power level and condenser vacuum is steady, a small leak will occur inside the Drywell. Attempts to vent the Drywell will not be able to keep pressure < 30. PSIG, therefore, the SRO will direct a manual scram to be inserted. At 12 PSIG Torus pressure, the crew will spray the Drywell. At this time, a loss of 4 KV Bus 1D occurs. This results in reduced Core Spray pumps. At this time, however, the LOCA becomes much larger. Attempts to maintain level with Feedwater are not successful. AS water level drops below 0" TAF, Emergency Depressurization will be required. At this time, the crew will be able to recover water level > TAF using Core Spray.

EVENT 1
Objective: Normal plant event to evaluate applicants performance of Isolation Condenser valve Operability surveillance (N) CRO-A; SRO

EVENT 2
Objective: Instrument failure to evaluate applicants response to an isolated Feedwater heater (I) CRO-B; SRO

Malfunction required: 1 Component Level Failure of heater level detector

EVENT 3
Objective: Component Failure to evaluate applicants ability to respond to a loss of 125 VDC power panel DC-F (C) CRO-A; CRO-B; SRO

Success Path: Dispatch electrical Maintenance to DC-F, then re-energize DC-F after the faulted breaker is repaired

Malfunction required: 1 Loss of DC-F

EVENT 4
Objective: To evaluate applicants response to a slow loss of condenser vacuum; the power reduction will serve as the Reactivity Manipulation (C) (R) CRO-A; CRO-B; SRO

Success Path: Reduce reactor power using Recirc flow and cram rods to 80% rod line; observe operational requirements of the Operational map

Malfunction required: 1 Loss of Circ Water Pump or slow air leak into condenser

EVENT 5
Objective: To evaluate applicants response to a slow increase in Drywell pressure (Recirc loop leak) (C) CRO-A; SRO

Malfunction required: 1 Small leak from Recirc Loop

EVENTS 5, 6 and 7
Objective: To evaluate applicants ability to execute EOP's during a LOCA inside the Drywell
(M) CRO-A; SRO

Success Path: Initiate Containment Spray

Malfunction required: None (continuation of Event 5 malfunction)

EVENT 8
Objective: To evaluate the crews' assessment of operable equipment due to a loss of 4160 VAC Bus 1D (C)
CRO-A; CRO-B; SRO

Malfunction required: 1 Loss of 4160 VAC Bus 1D

EVENTS 9 and 10
Objective: To evaluate the crews response and implementation of EOPs during a large break LOCA inside the Drywell with reduced ECCS capability (M) CRO-A, CRO-B; SRO

Success path: Emergency depressurize when RPV water level < TAF; Recognize only four (4) EMRV's are open
Recover RPV water level > TAF using reduced ECCS capacity (System 2 Core Spray)

Malfunctions required: 2 Increased severity of the leak inside the Drywell; loss of feedwater capability (MFRV's fail close)

SCENARIO RECAPITULATION

Total Malfunctions:	7
Abnormal Events:	3
Major Transients:	1
EOP's entered:	3
EOP Contingencies:	1

Facility: Oyster Creek | Scenario No.: A-2 (New) | Op-Test No.:

Examiners: ____________________ Operators: ____________________

____________________ ____________________

____________________ ____________________

Objectives:

Evaluate applicants performance of Isolation Condenser valve Operability surveillance
Evaluate applicants response to a false high water level in FWH 3A
Evaluate applicants ability to respond to a loss of 125 VDC power panel DC-F
Evaluate applicants response to a slow loss of condenser vacuum
    Reduce reactor power using Recirc flow and cram rods to 80% rod line; observe operational requirements of the Operational map
Evaluate applicants response to a slow increase in Drywell pressure (Recirc loop leak)
Evaluate applicants ability to execute EOP's during a LOCA inside the Drywell
    Initiate Containment Spray
    Respond to a loss of 4160 VAC Bus 1D; Respond to injection valve failures System 1 Core spray
    Emergency depressurize when RPV water level < TAF; Recognize only four (4) EMRV's are open
    Recover RPV water level > TAF using reduced ECCS capacity (System 2 Core Spray)

Initial Conditions:
The plant is at 100% power.

Turnover:
Maintain 100% power operations for the shift.
Isolation Condenser surveillance 609.4.001 Valve operability and In-service test is scheduled to be performed.

Event No.	Malf. No.	Event Type*	Event Description
1	-	N	Perform Isolation condenser Valve operability surveillance
2	CLF FWH1	I	Respond to false high level in Feedwater heater A3 (INSTRUMENT FAILURE)
3	MAL EDS9F	C	Respond to a loss of 125 VDC Power Panel DC-F (COMPONENT FAILURE)
4	MAL CFW17	C R	Respond to decreasing condenser vacuum. Reduce power using Recirc flow and insert rods to the 80% rod line to maintain > 25"
5	MAL NSS4	C	Respond to an increase in Drywell pressure (small leak)
6	-		If time permits, perform Scram Setup actions, then insert a manual scram.
7	-	M	At 12 PSIG Torus pressure, initiate Containment Sprays.
8	MAL EDS2B	C	Evaluate impact on EOP strategy when 4160 VAC Bus 1D is de-energized
9	MAL NSS4 (INCREASE SEVERITY)	M C	Respond to a large break LOCA inside the Drywell. After Containment Sprays have been initiated, the leak becomes a large break LOCA. RPV water level rapidly drops; Multiple failures combined with the Bus 1D lockout reduces injection flow to the vessel. RPV water level drops below TAF, requiring Emergency depressurization (only four (4) EMRV's open). Observe for Reference Leg flashing. (Reference leg flashing does not occur)
10	-	M	Recover RPV water level > TAF using System 2 Core Spray (Feedwater will not be available for injection)

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

Op-Test No.:	Scenario No.: A-2	Event No.: 1	Page 2 of 11

Event Description: Performance of Isolation condenser Valve Operability surveillance IC-A

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CRO-A to perform Isolation Condenser Valve Operability 609.4.01 Section 6.4
	CRO-A/SRO	1. Reviews Prerequisites Section 3.0 2. Reviews Precautions and Limitations Section 4.0 **Comments:**
	CRO-A	1. Obtains stopwatch and records its Control Number 2. Obtains SRO's permission to initiate surveillance **Comments:**
	CRO-A	Performs surveillance on IC-A in accordance with Section 6.4 1. Records closing and opening time of V-14-30 2. Records closing and opening time of V-14-31 3. Records closing time of V-14-36 4. Records opening and closing time of V-14-34 5. Re-opens V-14-5 and 20 (Panel 11F) 6. Records opening time of V-14-36 **Comments:**
	CRO-B	Performs independent verification of Control room handswitches per Step 6.7 **Comments:**
	CRO-A	Records valve stroke times on data sheet **Comments:**
	SRO	Verifies Acceptance Criteria of Data sheet 609.4.001-1 **Comments:**
		This concludes Event 1

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

Event Description: Isolation of Feedwater Heater A3
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B	Responds to annunciators N-1-d , N-2-d and N-3-d; determines from RAP's that the potential cause appears to be an high level. **Comments:**
	CRO-B	Dispatches an EO to the Feedwater Heater panels to verify V-1-50 open and verify feedwater heater level **Comments:**
	SRO	Directs actions IAW ABN-3200.16 Expected operator action is to reduce power as necessary to maintain pre-trip power (<100%) **Comments:**
	CRO-A	Monitors Reactor power, Off-Gas Activity and Main Steam line rad levels; when directed, Reduces Reactor Power using recirc flow to ensure gross Mwe < 603 Mwe **Comments:**
	CRO-B	Per Procedure 317.1, reports that whenever 1 HP heater is oos, the load limit on the turbine is < 603 Mwe gross output **Comments:**
	SRO	Directs power reduction **Comments:**
	SRO; CRO-B	When EO reports normal water level in heater, Notifies Maintenance of the trip of A3 heater on high water level
	SRO	When Maintenance reports LSH 24 for heater A3 has failed high, conducts brief with the crew **Comments:**
		This concludes Event 2

Op-Test No.:	Scenario No.: A-2	Event No.: 3	Page 4 of 11

Event Description: Respond to a loss of 125 VDC Power Panel DC-F
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B/A	Acknowledges multiple Control Room annunciators; reports annunciator 9XF-6-d DC-F PWR LOST is in alarm **Comments:**
	CRO-B	Responds to a loss of DC-F in accordance with RAP 9XF-6-d 1. Reports CRD "A" Pump has tripped 2. Reports Cleanup system Isolation **Comments:**
	SRO	Directs "B" CRD Pump to be started. **Comments:**
	CRO-A	Starts CRD Pump "B" **Comments:**
	CRO-B	Performs RAP Confirmatory actions; checks all Automatic actions have occurred, and performs Manual Corrective actions. Dispatches an EO to 125 VDC distribution Center C to check DC-F feeder breaker Informs SRO of Technical Specification requirements 3.5 and 3.7 **Comments:**
	SRO	Refers to Tech Spec sections 3.5 and 3.7; determines that DC-F is Tech spec related equipment, but determines that V-5-167 automatic isolation feature in inoperable, therefore, the reactor shall be placed in cold shutdown condition within 24 hours.(TS.3.5.3a(2)) **Comments:**
		EVENT 3 continued on next page

Op-Test No.:	Scenario No.: A-2	Event No.: 3	Page 5 of 12

Event Description: Respond to a loss of 125 VDC Power Panel DC-F (continued)

Time	Position	Applicant's Actions or Behavior
	CRO-B	Refers to SDRP 2000-OPS-3024.10C section 4.6 **Comments:**
	SRO	Directs Electrical Maintenance to investigate loss of DC-F **Comments:**
	EO/CRO	Reports that Electrical Maintenance has determined that the supply breaker from DC-C to DC-F was faulted and a new breaker has been installed.
	SRO	Directs power to be restored to DC-F **Comments:**
	CRO's	Re-energizes DC-F in accordance with 2000-OPS-3024.10C 1. Confirm mode switch Containment Spray System 1 in TORUS COOLING 2. Directs EO to close breaker 4 at DC-C 3. Check MSIV 4A and 4B position indication; Reset MSIV isolation signal (4F); momentarily take MSIV handswitch for 4A and 4B to open to re-energize DC solenoids 4. Reset ATWOS Channel B and D Logic 5. Reset Isolation condenser logic and reopen IC B valves V-14-1 and V-14-19 6. Reset Drywell Isolation Logic (4F) **Comments:**
		This concludes Event 3

Op-Test No.: **Scenario No.:** A-2 **Event No.:** 4

Event Description: Decreasing condenser Vacuum; Power Reduction
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-B	Reports decreasing condenser vacuum (could also be a Circ Water Pump trip) **Comments:**
	SRO	Directs actions to be performed in accordance with ABN-3200-14 **Comments:**
	CRO-A	Reduces Reactor power using Recirc Flow to maintain condenser vacuum > 22" Hg Vacuum; if necessary, inserts control rods if further power reduction is necessary. **Comments:**
	CRO-B	Monitors Condenser vacuum; Performs actions in accordance with SDRP 2000-OPS-3024.04 Section 3.5 Condensate System 1. Checks Circulating Water system operation 2. Checks SJAE operation 3. Checks Gland Seal/Exhauster System operation 4. Checks SJAE drain pump operation 5. Checks Off-Gas operation 6. Checks Vacuum breaker operation 7. Dispatches EO/outside GOS to look for air leaks 8. Checks Travelling Screen operation **Comments:**
		NOTE: Condenser vacuum decrease, combined with a power reduction, will not result in a turbine trip/reactor scram
		This concludes Event 4

Op-Test No.:	Scenario No.: A-2	Event No.: 5 and 6	Page 7 of 12

Event Description: Respond to an Increase in Drywell Pressure
This event is started by direction of NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-A/B	Report increasing Drywell pressure; increasing unidentified leakage rate in the Drywell **Comments:**
	CRO-A	Checks integrator in Panel 3F and reports unidentified leak rate Responds to annunciator C-3-f DW PRESS HI/LO **Comments:**
	SRO	May directs venting the Drywell via SGTS **Comments:**
	CRO-B	If directed, vents the Drywell via SGTS in accordance with procedures 330 Section 4.3. and 312.11 Section 4.3.4 1. Manually starts SGTS 1(2) by placing the select switch to SYS 1(2), starts Exhaust fan EF1-8(EF1-9),verifies SGTS valves open, then verifies orifice valve V-28-24(V-28-28) closes, then closes Crosstie valve V-28-48 (Panel 8R) 2. Vents the Drywell to SGTS by opening Drywell Vent valves V-23-21 and 22 (Panel 12XR) **Comments:**
	SRO	When it is determined that Drywell pressure is still increasing even after the venting lineup is established, or the SRO decides a reactor scram is appropriate, the SRO will conduct a brief and direct actions for inserting a manual scram. **Comments:**
	SRO-A	If time permits, Reduces Reactor Recirc flow to minimum (>6.4 E4 gpm) **Comments:**
		Event 4 and 5 continued on next page

Event Description: Respond to an Increase in Drywell Pressure (continued)

Time	Position	Applicant's Actions or Behavior
	CRO-B	If time permits, transfers 4160 VAC buses 1A and 1B to the Startup Transformers **Comments:**
	CRO-A/B	Notifies System Dispatch that Oyster Creek will be taken off line
	SRO	Directs inserting a manual scram **Comments:**
	CRO-A	When directed, inserts a scram in accordance with ABN-3200.01 Reactor Scram 1. Depresses the manual scram buttons 2. Places the mode switch in Shutdown 3. Verifies all rods are inserted 4. Inserts SRM and IRM detectors **Comments:**
	CRO-A/B	Controls RPV water level as follows: 1. Trips 2 Reactor Feedwater Pumps when RPV water level starts to increase after the initial shrink 2. At 140" TAF, closes the Block valve for the operating Feedwater Pump (A or C) 3. Controls water level 138" to 175" TAF **Comments:**
	CRO-B	Verifies Turbine trip and pressure control is being maintained on the Bypass Valves when RPV pressure > 920 PSIG **Comments:**
	SRO	Directs CRO's to stablize the plant in accordance with ABN-3200.01 Reactor Scram and EOP EMG-3200.01RPV CONTROL-NO ATWS **Comments:**
		This concludes Events 5 and 6

Op-Test No.:	Scenario No.: A-2	Event No.: 7	Page 9 of 12

Event Description: Perform RPV CONTROL-NO ATWS and PRIMARY CONTAINMENT CONTROL –Initiate Drywell Sprays

Time	Position	Applicant's Actions or Behavior
	SRO	At Drywell Pressure of 3 PSIG, Enter Primary containment control EOP EMG-3200.02 1. Directs Support Procedure 27 to be performed 2. Directs Support Procedure 1 to be performed 3. Directs lineup of Drywell Sprays per support Procedure 29 **Comments:**
	SRO	Directs plant operation in accordance with EOP EMG 3200.01 RPV Control-No ATWS 1. Directs water level control to be 138' to 175"TAF 2. Directs pressure band to be 800 – 1000 PSIG **Comments:**
	CRO-A	Line up Drywell Sprays per SP 29 Step 2.1, 2.2 and 3.1 1. See attached support Procedure 29 **Comments:**
	SRO *critical task	When Torus pressure > 12 PSIG, directs initiation of Drywell Sprays per SP 29 **Comments:**
	CRO-A	Initiates Drywell sprays per Support Procedure 29 Section 3.2 – 3.7 and maintains Drywell pressure per step 3.8 **Comments:**
		This concludes Event 7

Op-Test No.:	Scenario No.: A-2	Event No.: 8	Page 10 of 12
Event Description: Loss of 4160 VAC Emergency Bus 1D			

Time	Position	Applicant's Actions or Behavior
	CRO-B	Reports loss of Emergency bus 1D. Reports annunciator T-2-e BUS 1D MN BRKR 1D 86 LKOUT TRIP is in alarm. (Note: the bus can not be –re-energized with a lockout signal present) **Comments:**

	CRO-B/SRO	Evaluate impact of loss of 1D on plant operations.
		
		Loss of ESW Pumps C and D
		Loss of Core spray Pumps B and D
		Loss of 460 VAC bus 1B1 and associated Turbine building loads
		Loss of 460 VAC bus 1B2 and Vital MCC 1B2
		    Core Spray booster Pumps B and C
		    Containment Spray Pumps C and D
		    CRD Pump B and SLC Pump B
		Loss of 460 VAC Bus 1B3
		
		Comments:

		This concludes Event 8

Op-Test No.:	Scenario No.: A-2	Event No.: 9 and 10	Page 11 of 12

Event Description: Large Break LOCA inside Drywell; Recover RPV water level > TAF using Core Spray

Time	Position	Applicant's Actions or Behavior
	CRO	Reports RPV water level is rapidly decreasing
	SRO	Determines water level cannot be maintained above 61"TAF and performs LEVEL RESTORATION per EMG-3200.01 RPV control –No ATWS 1. Directs ADS timers to be bypassed 2. Confirms initiation of Isolation Condensers 3. Directs lineup of injection systems per support Procedure 8 and 9 **Comments:**
	CRO-A	Places the ADS timers in Bypass Reports status of Isolation condensers Reports A Core Spray Pump and A booster pump are running; Manually starts D Core spray Pump and D booster Pump **Comments:**
	CRO-B	Reports trip of operating Condensate Pumps and that they cannot be restarted **Comments:**
	SRO * critical task	At 0" TAF, directs Emergency Depressurization in accordance with EMG-3200.04A 1. Directs ROPS to be bypassed 2. Directs all EMRV's to be opened **Comments:**
	CRO's	Bypass ROPS Open all EMRV's; report only 4 EMRV's are open **Comments:**
		Events 9 and 10 continued on next page

Event Description: Large Break LOCA Inside Drywell; Recover RPV water level > TAF using Core Spray (continued)

Time	Position	Applicant's Actions or Behavior
	SRO	Directs injection with all Available systems: Core Spray, SLC and Fire Water, if SP 5 has been directed to be performed **Comments:**
	CRO-A	Reports that Core Spray system 1 parallel valves failed to automatically open and opens them manually Recovers RPV water level > TAF using Core Spray Sys 1 and 2 **Comments:**
	CRO-B	Initiates SLC, if directed Monitors RPV water level for signs of Reference leg flashing Monitors RPV water level recovery and helps CRO –A recover water > TAF **Comments:**
	SRO	When RPV water level > 61", directs water level to be restored and maintained between 175" and 61" TAF **Comments:**
	CRO's	Co-ordinate to maintain RPV water level between 61" and 175" TAF **Comments:**
		When RPV water level is restored, the scenario is terminated

SCENARIO A-3 STEAM LINE BREAK IN TURBINE BUILDING

SCENARIO OBJECTIVE

To evaluate the operators in using Radioactivity Release Control and Emergency Depressurization

SCENARIO SUMMARY

A power reduction is in progress to remove the Turbine Generator from service for maintenance repair.
The shift will maintain the reactor critical and steaming to the condenser via Bypass valves. Expected time for Generator repair is 12 hours.

EVENTS

- Continue power reduction to < 37% using control rods
- Remove the turbine Generator from service IAW Procedure 203.1 Section 5.20
- Respond to INSTRUMENT FAILURE Event (temperature element failure causes Cleanup system to Isolate; V-16-1 fails to isolate)
- Recognize increasing OffGas / MSL Radiation levels and take actions IAW 2000-ABN-3200.26
- At 800 mr/hr MSL rad levels, insert a manual scram and close MSIV's
- MSIV's in MSL fail to fully close
- Respond to reports of a large steam leak in the Turbine Building
- When Radiation release limits exceed General Emergency levels, Emergency depressurization is required

SCENARIO SEQUENCE

A power reduction is in progress to remove the Turbine Generator from service for maintenance repair. The shift will maintain the reactor critical and steaming to the condenser via Bypass valves. Expected time for Generator repair is 12 hours. The crew will continue the power reduction by inserting control rods until reactor power is about 30%. At this time, the crew will remove the Generator from the grid. After the TG is tripped, and the ring bus is closed back in, an instrument failure will cause Cleanup to isolate on high NRHX outlet temperature; however, V-16-1 fails to close. The SRO will declare V-16-1 inoperable and de-activate closed isolation valve V-16-14.

At this time, failed fuel causes increasing radiation levels to be seen on Off Gas and Main Steam Lines. The crew will respond IAW 2000-ABN-3200.26, and at 800 mr/hr MSL readings, the crew will scram the reactor and close the MSIV's. However, the "A" MSL MSIV's do not fully close. A report of a large steam leak in the Turbine Building and offsite release rates will prompt the operators to implement Radioactivity Release control EOP. When Radiation release limits exceed General Emergency levels, Emergency depressurization is required.

EVENT 1
Objective: To evaluate applicants ability to reduce reactor power using control rods (R) CRO-A; SRO

EVENT 2
Objective: To evaluate applicants ability to remove the Turbine Generator from service and maintain the reactor critical, steaming to the Condenser via Bypass Valves (N) CRO-B; SRO

EVENT 3
Objective: To evaluate applicants response to a failed temperature instrument causing Cleanup to isolate (V-16-1 fails to isolate) (I) CRO-A; SRO

Malfunctions required: 2 Component level failure for NRHX outlet temperature and V-16-1 fails to close

EVENTS 4 and 5
Objective: To evaluate applicants response to increasing OffGas/ MSL Radiation levels per the Abnormal Procedure (C) CRO-A; CRO-B; SRO

Malfunction required: 1 Failed Fuel

EVENTS 6 and 7
Objective: To evaluate applicants ability to execute EOP's during a Radioactive Release (C) (M) CRO-A; CRO-B; SRO

- Recognize failure of MSIV's' to close
- Performs actions to mitigate the consequences of a large steam leak in the Turbine Building

Success path: When General emergency levels for Rad Release are exceeded, initiates Emergency Depressurization

Malfunctions required: 2 Failure of "A" MSL MSIV's to close and steam line break in Turbine Building

SCENARIO RECAPITULATION

Total Malfunctions:	5
Abnormal Events:	2
Major Transients:	1
EOP's entered:	3
EOP Contingencies:	1

Facility: Oyster Creek **Scenario No.:** A-3 (New) **Op-Test No.:**

Examiners: ______________________ **Operators:** ______________________

______________________ ______________________

______________________ ______________________

Objectives:

Evaluate applicants ability to reduce reactor power using control rods

Evaluate applicants ability to remove the Turbine Generator from service and maintain the reactor critical, steaming to the Condenser via Bypass Valves

Evaluate applicants response to a failed temperature instrument causing Cleanup to isolate (V-16-1 fails to isolate)

Evaluate applicants response to increasing OffGas/ MSL Radiation levels per the Abnormal Procedure

Evaluate applicants ability to execute EOP's during a Radioactive Release

- Recognize failure of MSIV's' to close
- Performs actions to mitigate the consequences of a large steam leak in the Turbine Building
- When General emergency levels for Rad Release are exceeded, initiates Emergency Depressurization

Initial Conditions:

The plant is at 40% power.

Turnover:

A power reduction is in progress to remove the Turbine Generator from service for maintenance repair.

The shift will maintain the reactor critical and steaming to the condenser via Bypass valves. Expected time for Generator repair is 12 hours.

Event No.	Malf. No.	Event Type*	Event Description
1	-	R	Continue power reduction to < 37% using control rods.
2	-	N	Remove the turbine Generator from service IAW Procedure 203.1 Section 5.20
3	CLF RCU2 CLF RCU1	I,C	Respond to INSTRUMENT FAILURE Event (temperature element failure causes Cleanup system to isolate; V-16-1 fails to isolate)
4	MAL RXS2	C	Recognize increasing OffGas / MSL Radiation levels and take actions IAW 2000-ABN-3200.26
5	MAL NSS13A-D	C	At 800 mr/hr MSL rad levels, insert a manual scram and close MSIV's. MSIV's in MSL fail to fully close.
6	MAL NSS19	M	Respond to reports of a large steam leak in the Turbine Building
7	-	M	When Radiation Release limits exceed General Emergency levels, Emergency Depressurization is required.

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

Op-Test No.:	Scenario No.: A-3	Event No.: 1 and 2	Page 2 of 8

Event Description: Continue power reduction to < 37% using control rods

Time	Position	Applicant's Actions or Behavior
	SRO	Directs CRO-A to continue power reduction TO 30% in accordance with 203.1 PLANT SHUTDOWN TO HOT STANDBY
	CRO-A	Continues control rod insertion in accordance with instructions provided by Core Engineering **Comments:**
	CRO-B	Adjusts EPR setpoint to maintain reactor pressure 980-1020 PSIG Monitors Moisture Separator drain tank level for erratic behavior **Comments:**
	SRO	Directs CRO-A to stop inserting control rods at 30% reactor power Directs CRO-B to remove Turbine Generator from service in accordance with 203.1 Section 5.20 **Comments:**
	CRO-B	Cautions the crew of the potential for a reactor scram due to drift of PSH switches 1. Notifies System Dispatcher 2. Decreases Generator load slowly using the Speed Load changer, while maintaining reactive load > 25 MVARs 3. At 50 MWe, trips the turbine 4. Turns amplidyne control switch 43CS to OFF 5. Transfers pressure control to the MPR IAW Procedure 315.1 Section 8.3 • Lower MPR setpoint until MPR relay position indicator moves in the direction to reach the EPR setting 6. Raise EPR setpoint to its top stop (1010 PSIG) **Comments:**
	CRO-A/B	Verifies TSV's, CV's, I&RHV's close and Bypass valves open (4 ½ -5 Byp) Confirms 230 KV breakers GC1 and GD1 are open **Comments:**
		EVENTS 1 and 2 continued on next page

Op-Test No.:	Scenario No.: A-3	Event No.: 1 and 2	Page 3 of 8
Event Description: Continue power reduction to < 37% using control rods			

Time	Position	Applicant's Actions or Behavior
	CRO-B	Confirms Generator Field Breaker is open **Comments:**
	CRO-B	OPENS V-1-65, 66, 67, 68 on Panel 13R Resets Main Generator Protection reset button (Panel 11XR) and resets generator lockout relays 86G and 86GB **Comments:**
	CRO-B	Opens Bank 1A and 1B 230 KV MODS from 12F-1. Dispatches an EO to verify locally open **Comments:**
	CRO-B	Obtains permission from System dispatcher and synchs and re-closes GC1 and GD1 **Comments:**
	CRO-B	Directs EO to increase TBCCW flow to oil coolers as required to lower oil temperature to 80° - 90° F Monitors Turbine speed decreasing. At 900 RPM, starts Turbine Bearing lift pumps **Comments:**
		This concludes Events 1 and 2

Op-Test No.:	Scenario No.: A-3	Event No.: 3	

Event Description: Temperature Element Failure causes Cleanup System to Isolate
This event is started by direction of the NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-A	Responds to multiple Cleanup system annunciators; reports Cleanup system is tripped and isolating **Comments:**
	CRO-A	Responds to a loss of Cleanup in accordance with RAP D-8-b, D-2-b and D-3-b. Reports that Cleanup Isolation valve V-16-1 failed to isolate. Attempts to close V-16-1; reports valve has not closed. Dispatches EO to V-16-1 breaker **Comments:**
	SRO	Declares V-16-1 inoperable; and refers to Tech Spec 3.5 A.3.a (1)(b) and de-activates closed isolation valve V-16-14 **Comments:**
	CRO-A	Dispatches EO to check RBCCW flow to the NRHX. When EO reports everything is fine with RBCCW, notifies I and C Department **Comments:**
	CRO-A/SRO	May notify chemistry that Cleanup has isolated and loss of continuous monitoring of Reactor water conductivity has occurred. **Comments:**
		This concludes Event 3

Op-Test No.:	Scenario No.: A-3	Event No.: 4	Page 5 of 8

Event Description: Increasing Off Gas /Main Steam Line Radiation levels
This event is started by direction of the NRC Lead Evaluator

Time	Position	Applicant's Actions or Behavior
	CRO-A/B SRO	Recognizes increasing Off Gas radiation levels/MSL radiation levels **Comments:**
	CRO-B	Responds to annunciator OFF GAS HI IAW RAP 10F-2-c. **Comments:**
	SRO	Directs implementation of 2000-ABN-3200.26 **Comments:**
	CRO-A	May continue insertion of control rods in order to reduce reactor power **Comments:**
	CRO-B	Performs ABN INCREASE IN MSL/OG ACTIVITY 1. Notifies chemistry 2. If OG HI-HI (10F-1-c) alarms, informs SRO that AOG will isolate in 15 minutes 3. Responds to RAD HI (J-5-b); directs EO to reduce H2 Injection flow to 5-6 SCFM 4. Monitors MSL Rad Monitors on 1R/2R 5. Informs SRO of requirements to scram and close MSIV's at 800 mr/hr **Comments:**
	SRO	At 800 mr/hr MSL Rad Monitor readings, directs manual scram and closing of MSIV's **Comments:**
		This concludes Event 4

Op-Test No.:	Scenario No.: A-3	Event No.:	
Event Description: Insert manual scram and close MSIV's / MSIV's in MSL "A" Fail to close			

Time	Position	Applicant's Actions or Behavior
	CRO-A	When directed, inserts a scram in accordance with ABN-3200.01 Reactor Scram 1. Depresses the manual scram buttons 2. Places the Mode Switch in Shutdown 3. Verifies all rods are fully inserted 4. Inserts SRM and IRM detectors Comments:
	SRO	Directs MSIV's to be closed Comments:
	CRO-B	Places MSIV handswitches to CLOSE; reports loss of indication and both "A" MSL MSIV's Comments:
	CRO-A/B	Controls RPV water level 138" to 175" TAF Verifies MPR controlling reactor pressure using Bypass Valves; may initiate Isolation Condensers for pressure control based on the decision to close the MSIV's Comments:
	SRO	When RPV water level < 138", enters EOP RPV control-NO ATWS 1. Directs RPV water level control 138" – 175". 2. Directs RPV pressure control 800- 1000 PSIG Comments:
	SRO	If Isolation Condensers are initiated, Enters EOP Secondary Containment Control for high radiation conditions. 1. Directs CRO-B to obtain Secondary containment temperature and radiation readings 2. Determines No Primary System is leaking into Secondary Containment Comments:
		This concludes Event 5

Op-Test No.:	Scenario No.: A-3	Event No.: 6	

Event Description: Large Steam Leak in the Turbine Building

Time	Position	Applicant's Actions or Behavior
	CRO-A/B	Acknowledge report of steam leak in condenser area; Inform SRO
	SRO	Direct CRO-B to secure/isolate any steam valves that are open in an attempt to isolate leak (MSIV's in "A" steam line have failed to fully close) **Comments:**
	CRO-A/B	Make Site Announcement of steam leak in Turbine Building and for all personnel to evacuate the Turbine Building **Comments:**
	SRO	When the report comes in from Radiation Protection that steam is coming out of the turbine Building AND Off-Site radioactivity release rate is greater than ALERT limits, enter EOP Radioactivity Release Control EMG-3200.12 Directs implementation of Support Procedure 51 **Comments:**
	CRO-B	Performs Support Procedure 51 (Panel 11R) 1. Confirm EF 1-33 secured 2. Reset TB Ventilation RESET pushbutton 3. Restart EF 1-7 4. Start SF 1-1 or 1-2 5. Start SF 1-3 or 1-4 6. Start SF 1-5 or 1-6 7. Verify EF 1-4 auto starts 8. Confirm SF 1-7 and EF 1-1 are operating **Comments:**
	SRO	Determines that Core Damage conditions of Table 14 are met. Continues attempts to close MSIV's (notifies Maintenance for help) Waits for report from Radiation Protection concerning Off-Site Dose projections **Comments:**
		This concludes Event 6

Op-Test No.:	Scenario No.: A-3	Event No.: 7	Page 8 of 8

Event Description: Radiation Release Rates exceed General Emergency levels

Time	Position	Applicant's Actions or Behavior
	SRO *Critical Task	When it is reported that Radiation release rates will exceed General Emergency levels, determines that Emergency Depressurization is required. **Comments:**
	SRO	Enter EMG –3200-04A ED NO ATWS 1. Directs support Procedure 10 to be performed 2. Directs ROPS Bypass 3. Confirms Torus water level > 90" 4. Directs opening all EMRV's **Comments:**
	CRO-A	Performs Support Procedure 10 (Panel 1F/2F at Core Spray) 1. Depress OVERRIDE switches for all sensors that are lit 2. Depress ALL ACTUATED switches whether lit or unlit 3. Confirm Core Spray parallel valves closed 4. Place Core Spray booster pumps to STOP 5. Place Core Spray pumps to STOP 6. Verify KEEP FILL TROUBLE (B-3-d) not in alarm **Comments:**
	CRO-B	Bypasses ROPS (Panel 4F) **Comments:**
	CRO-A	Opens all 5 EMRV's **Comments:**
	SRO	After the blowdown is over, directs Torus Cooling to be placed in service. Enters EOP EMG 3200-02 Primary Containment control if Torus water temperature exceeds 95° F **Comments:**
	SRO	Directs RPV water level to be maintained 138" to 175" using Feedwater/condensate **Comments:**
		When RPV water level is restored, the scenario is terminated

TAB 2

Facility: Oyster Creek **Task No:** 2000501427

Task Title: Place the H2/O2 Analyzers in service

Job Performance Measure No: New (500-01)

K/A Reference: 500000 EA1.01 (3.4 / 3.3)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Primary containment Control EOP has been entered due to high Drywell pressure
Task Standard:	H2/O2 Analyzers in service on the Drywell
Required Materials:	None
General References:	Support Procedure 39
Initiating Cue:	As the GOS, I am directing you to place the H2/O2 Analyzers in service in accordance with Support Procedure 39
Time Critical Task:	No
Validation Time:	3 minutes

START TIME ______(* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure	Support Procedure 39 obtained	
2. Review Prerequisites	Reviews Prerequisites	
*3. Place Channel A in service	At Panel 16R, places Channel A in service as follows: • Places switch for V-38-37 to OPEN • Places switch for V-38-38 to OPEN • Places switch for V-38-39 to OPEN • Places switch for V-38-40 to OPEN	
Note: when switching to the Analyze mode, a system trouble alarm may occur due to analyzer cell low flow		
*4. Place mode switch to ANALYZE	Places Channel A mode switch to ANALYZE	
5. Acknowledges trouble alarm	If DW H2/O2 SYS A TROUBLE alarms (C-8-f), acknowledges the alarm and at Panel 16R, resets ALARM RESET	
*6. Place Channel B in service	At Panel 16R, places Channel A in service as follows: • Places switch for V-38-41 to OPEN • Places switch for V-38-42 to OPEN • Places switch for V-38-43 to OPEN • Places switch for V-38-44 to OPEN	
Note: when switching to the Analyze mode, a system trouble alarm may occur due to analyzer cell low flow		
*7. Place mode switch to ANALYZE	Places Channel B mode switch to ANALYZE	
8. Acknowledges trouble alarm	If DW H2/O2 SYS A TROUBLE alarms (C-8-f), acknowledges the alarm and at Panel 16R, resets ALARM RESET	
9. Records time and informs GOS that the H2/O2 analyzers are in service	Records time and informs GOS that the H2/O2 analyzers are in service	

COMPLETION TIME______

Appendix C | Form ES-C-1

VERIFICATION OF COMPLETION

Job Performance Measure No. New (500-01)

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:
1. 500000 EA2.03 combustible Limits for Drywell (3.2 /3.8)
Question:

What is the purpose of initiating Drywell Spray when H2 and 02 limits are above their combustible limits?

Response:

- If a burn were to occur, the water from sprays can minimize its effects
- Helps reduce localized buildup of H2 by mixing the Drywell Atmosphere
- It also helps with scrubbing the air to remove radioactive particles because the containment will need to be vented

Reference: EOP Basis document 3200.02

Result: SAT or UNSAT

Question:
2. 500000 EK1.01 Containment Integrity (3.3 / 3.9)

A LOCA has occurred inside the Drywell. The RPV has already been emergency depressurized. H2 level in the Drywell is 8%; O2 level is 6%. Water level in the containment < 348" and the TORUS cannot be vented. Drywell pressure is 20 PSIG. What actions are taken and why?

Response:
Vent the Drywell irrespective of off-site release rates IAW Support Procedure 47; the reason for this is to protect and maintain containment integrity; if a H2 explosion were to occur, containment failure is possible

Reference: H2 Leg of Primary containment Control EOP

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Every JPM should:

1. ✓ be supported by facility licensee's job task analysis.

2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. include the following, as applicable:

   a. ✓ initial conditions

   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

   d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ specific performance criteria that include:

      (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ statements describing important observations that should be made by the examinee

      (4) ✓ criteria for successful completion of the task

      (5) ✓ identification of those steps that are considered critical

      (6) ✓ restrictions on the sequence of steps

   f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 2000501439

Task Title: Restart Reactor Building HVAC after an Isolation

Job Performance Measure No: New (290-01)

K/A Reference: 295034 Ea1.03 (4.0 / 3.9)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Reactor building HVAC is isolated and on SGTS

Task Standard: Restore Normal RB HVAC

Required Materials: None

General References: Support Procedure 50

Initiating Cue: As the GOS, I am directing you to restore RB HVAC in accordance with Support Procedure 50

Time Critical Task: NO

Validation Time: 5 minutes

START TIME ______ (* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of the procedure	Support Procedure 50 obtained	
2. Review Prerequisites	Prerequisite is reviewed	
3. Verify Rx Building Vent Effluent Monitors < 9 mr/hr	At panel 2R, verifies that Vent Manifold Rad Ch 1 and 2 are reading < 9 mr/hr	
*4. Remove and insert bypass plugs	In rear of Panel 11R, in the EOP BYPASS PLUGS panel, performs the following: • Remove the bypass plug from Position BP4 • Insert the Bypass Plug into Position BP1	
*5. Reset Rx Building Vent system	At Panel 11R, resets the Reactor Building Ventilation System by depressing the RESET pb	
*6. OPEN RB Main Exhaust Dampers	Opens the Rx Building Main Exhaust Dampers V-28-21 and V-28-22 (Panel 11R)	
The next steps should be completed immediately after starting the exhaust fan in order to preclude damage to the Ventilation system		
*7. Start EF 1-5	At Panel 11R, starts Exhaust Fan EF-1-5	
8. Confirm control switch for V-28-42 and V-28-43 in CLOSE	Confirms control switch for V-28-42 and V-28-43 in CLOSE	
*9. Start two Rx Building Supply Fans	Selects and starts 2 of the three supply fans (SF 1-12, SF 1-13, SF 1-14)	
10. Inform GOS that Rx Building Ventilation has been restored IAW Support Procedure 50	Informs GOS that Rx Building Ventilation has been restored IAW Support Procedure 50	

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. New (290-01)

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:
1. 295034 EK2.01 Process Radiation Monitoring system (3.9 / 4.2)

The plant is in a refueling outage when it is discovered that Process Rad Monitor R014C-5 for the Reactor Building Operating Floor has failed down scale. What must be done?

Response:

The RB Operating Floor Rad Monitor is required to be operable during Refueling conditions> And since refueling is in progress, Secondary containment is also required. Therefore, per TS Table 3.1.1 sheet 5, a manual surveillance of the Operating Floor Radiation levels must be started. If after 24 hours and the monitor is still inop, isolate the Rx Building and initiate SGTS

Reference: Tech spec Table 3.1.1

Result: SAT or UNSAT

Question:
2. 290001 K6.01 Reactor building Ventilation (3.5 / 3.6)

The plant is at 100% power when it is determined that ne of the detectors for the RB Ventilation High Temperature detection system has failed. If plant operation is to continue, What must be done and why?

Response:

Per the RAP and Procedure 329, if any of the four detectors is inop, initiate SGTS and confirm shutdown of RB HVAC. The temperature detectors are part of the RB Fire Detection system. If a fire watch is posted on the 23', 51' and 75' elevations, then SGTS can be shutdown and normal HVAC restored.
Reference: RAP L-4-c, procedure 329

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. include the following, as applicable:

   a. ✓ initial conditions

   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

   d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ specific performance criteria that include:

      (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ statements describing important observations that should be made by the examinee

      (4) ✓ criteria for successful completion of the task

      (5) ✓ identification of those steps that are considered critical

      (6) ✓ restrictions on the sequence of steps

   f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 2000501414

Task Title: Terminate and Prevent injection during an ATWS

Job Performance Measure No: New (209-06)

K/A Reference: 295037 EA2.02 (4.1 / 4.2)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Hydraulic lock ATWS, with high Drywell pressure due to small break LOCA
Task Standard:	Feedwater and Core Spray terminated and prevented
Required Materials:	None
General References:	Support Procedure 17
Initiating Cue:	As the GOS, I am directing you to terminate and prevent injection into the RPV in accordance with Support Procedure 17
Time Critical Task:	No
Validation Time:	3 minutes

X

START TIME _____ (* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of the procedure	Support Procedure 17 obtained	
2. Review Prerequisites	Prerequisite is reviewed	
Note: a Core spray initiation signal is present (high Drywell pressure)		
3.* Override Core Spray initiation Logic	Overrides Core Spray as follows: • depressing the override switches for all the sensors that are lit and • depressing all ACTUATED switches, whether lit or not	
4.* Terminate and Prevent Condensate and Feedwater Injection	At Panel 5F/6F, performs the following: • Trips all operating Feedwater Pumps • Confirms 1 condensate Pump running • Places all individual FRV controllers in MAN • Closes all MFRV's • Closes the Low Flow Valves	
5. * Terminate and Prevent Core Spray Injection	At Panel 1F/2F, performs the following: • Confirms all cCore Spray Parallel Isolation Valves Closed • Trips all operating Core Spray booster Pumps tripped • Places all Core Spray Main Pump control switches to PULL –TO-LOCK	
6. Informs GOS that Termination and Prevention of Injection has been completed IAW Support Procedure 17	Informs GOS that Termination and Prevention of Injection has been completed IAW Support Procedure 17	

COMPLETION TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure No. New (209-06)

Examinee's Name:____________________________

Examiner's Name:____________________________

Date performed:_______________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 295037 EK3.03 Lowering Reactor Water level (4.1/4.5)

Explain why the EOP's direct lowering RPV water level during an ATWS when power is > 2%

Response:
Reducing or terminating injection affects subcooling. If subcooling is reduced, any power oscillations that have started will be halted. It has also been determined that lowering water level to uncover the feedwater spargers and injecting feedwater into the steam volume acts to reduce subcololing of the injected water.

Reference: EOP Basis 3200.02

Result: SAT or UNSAT

Question:

2. 209001 K4.08 Automatic system initiation (3.8/4.0)

The plant was at 100% power when a small break unisoable LOCA outside of the Primary Containment occurs. NO high pressure feed systems are available. RPV water level is 90" TAF and decreasing. RPV pressure is 875 PSIG and slowly decreasing. Explain the automatic start of Core Spray, including responses if pumps fail to start.

Response:

Upon an automatic initiation signal, CS Priority Main Pumps A and B start. If either pump fails to develop sufficient discharge pressure within 10 seconds, the priority pump trips and the backup pump starts. The priority booster pump starts after the Main Pump develops discharge pressure. If both priority booster pumps fail to develop discharge pressure within 5 seconds, the priority pumps trip and are interlocked off, and the backup pumps start.

If either priority pump starts and develops discharge pressure within 5 seconds, the other loops backup pump will not start (this prevents possible overloading of the diesel Generator) The Parallel valves open at 285 PSIG

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.
4. include the following, as applicable:
   - a. ✓ initial conditions
   - b. ✓ initiating cues
   - c. ✓ references and tools, including associated procedures
   - d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department
   - e. ✓ specific performance criteria that include:
     - (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step
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     - (3) ✓ statements describing important observations that should be made by the examinee
     - (4) ✓ criteria for successful completion of the task
     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 2640201003

Task Title: Perform EDG Load Test

Job Performance Measure No: 264-05

K/A Reference: 264000 A4.04 (3.7 / 3.7)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	The plant is at 100% power in a normal electric plant lineup
Task Standard:	EDG#2 operating and in parallel to Bus 1D
Required Materials:	None
General References:	Procedure 636.4.003 DG Load Test
Initiating Cue:	The GSS has directed you to perform Diesel Generator Load test on EDG #2 per Procedure 636.4.003
Time Critical Task:	No
Validation Time:	15 minutes (27 minutes if EDG shutdown is performed)

START TIME ____ (* indicates Critical Step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtains controlled copy of procedure	Procedure 636.4.003, Diesel Generator Load Test	
2. Verifies all prerequisites	Contacts the EO to verify prerequisites are met	
CUE: As EO report the following as requested: -Fuel Oil tank at normal level (NORMAL) -Water level in coolant system is the 'Low' and 'High' marks (halfway between) -Lube oil level between 0 ± 3" (0") -Fuel oil storage tank level > 14,500 gallons. (15,000 gallons) -Oil level midpoint of sight-glass for each air filter. (at midpoint) -No alarms at control panel in generator cubicle. (no alarms) -Compartment strip heaters and exhaust fan breaker is on. (on) -Power switches, in generator compartment, on for pumps: - DC Turbo Backup, AC Turbo Lube Oil, Lube Oil Circ, Fuel Oil Transfer (all on) -Lube Oil Circulating & AC Turbo Lube Oil running > 10 psig. (12 psig) -Keylock switches on LSP-DG2 are in normal (normal)		
3. System Dispatcher contacted	contacts System Dispatcher and determines grid is stable.	
CUE: As System Dispatcher, report grid is stable.		
3. Reviews all applicable precautions and limitations	Reviews all applicable precautions and limitations	
4. Confirms EDG2 lineup on 8F/9F	Confirms EDG2 lineup on 8F/9F - Unit AVAIL & GOV READY lights on - Alarms normal - Mode selector switch in PEAKING	
5. Dispatches EO	Sends an EO to the EDG to verify proper operation of the creepy crank when the diesel starts.	
CUE: As EO acknowledge directions.		

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*6 Starts EDG-1	Places the EDG-1 Normal start switch on 8F/9F momentarily to "Start" position then returns to "Normal" position	
7. Observes unit idling light	Observes yellow unit idling light is energized on 8F/9F	
NOTE: The EDG will idle for approx. 90 sec., then accelerate to 900 RPM; EDG will then automatically synchronize, breaker will close, and rated load (2750 KW) will be picked up.		
8. Verifies EDG loads automatically.	Verifies EDG automatically comes up to speed, synchronizes with the line, breaker closes as and EDG loads.	
*9 Places EDG-1 Mode Selector Switch in "Transfer" between 1000 to 2000 KW.	Places EDG-1 Mode Selector switch on 8F/9F in "Transfer" position when load is between 1000 to 2000 KW.	
10 Uses EDG-1 Governor Control Switch obtain a loading 2750 ± 50 KW	Places EDG-1 Governor Control switch on panel 8F/9F to "Raise" to obtain 2700 to 2800 KW and monitors and adjusts for the 10 minutes warmup period.	
11 Adjusts EDG-1 VAR loading to obtain 1000 Kvar lagging	Places EDG-1 Voltage/Kvar control switch on panel 8F/9F to "Raise" to obtain 200-2000 Kvar lagging	
NOTE: Using time compression, Inform the examinee that the 10 minutes interval has passed		
12 Records EDG parameters.	Records EDG parameters: - 4160V Bus voltage (8F/9F) - EDG KW load (8F/9F) - EDG KVARS (8F/9F) - EDG Amps (8F/9F) - Outside ambient temperature (33 ft Met)	
NOTE: Using time compression, Inform the examinee that the 1 hour has passed and local readings have been acquired.		
13 Records EDG-2 readings	Records EDG-2 readings - EDG KW load (8F/9F) - EDG KVARS (8F/9F) Directs EO to obtain local readings	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
CUE: As EO report the following as requested: -Turbo air box pressure (18 psig) -Fuel oil press (25 psig) -Lube oil press (80 psig) -Lube oil cooler outlet temp (160°F) -Lube oil cooler inlet temp (155°F) -Cooling Water Engine inlet temp (175°F) -Fuel oil storage tank level > 14,000 gallons. (14,750 gallons)		
14. Records time	Records time that 2750 Kw full load operation ends	
15. Unloads EDG-2	Manually unloads the diesel by moving the governor control switch to the lower position to ≈ 300 KW ± 100 KW	
*16 Stops EDG-2	Places the EDG-2 Normal start switch on 8F/9F momentarily to "Stop" position then returns to "Normal" position	
17 Places the MODE Selector switch in the peaking position	Places the MODE Selector switch in the peaking position after the diesel drops to idle speed.	
18 Records the diesel breaker counter number	Directs the EO to obtain the diesel breaker counter number locally.	
CUE: As EO report the diesel breaker counter number NOTE: The JPM may be terminated at this point.		
19. Confirms normal shutdown	Confirms normal shutdown: - EDG shuts down after ≈ 11.5 min. - all alarms are reset in control room - Directs EO to confirm all alarms are reset locally	
CUE: As EO report all alarms are reset locally		

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
20. Confirms that the VOLTAGE/FREQUENCY selector switch is in off	Directs EO to Confirm that the VOLTAGE/ FREQUENCY selector switch is in off position in the EDG cubicle	
CUE: As EO report that the VOLTAGE/ FREQUENCY selector switch is in off		
CUE: Terminate the JPM at this point		

COMPLETION TIME: ____________

Appendix C | VERIFICATION OF COMPLETION | Form ES-C-1

Job Performance Measure No. 264-05

Examinee's Name: ______________________________

Examiner's Name: ______________________________

Date performed: ________________

Number of attempts: _____

Time to complete: __________

Question Documentation:

Question:

1. 2.1.12 Ability to apply Technical specifications for a system SRO: 4.0

The plant is at 100% power. EDG #2 is out of service for maintenance when it is discovered that ESW Pump 52A is inoperable. What must be done and why?

Response:
The reactor shall be placed in cold shutdown. ESW Pump 52A is powered from EDG#1. During the period when one EDG is inoperable, the containment spray and ESW loop connected to the operable diesel shall have no inoperable equipment.

Reference: Tech spec 3.4

Result: SAT or UNSAT

Question:

2. 2.1.12 Ability to apply Technical specifications for a system SRO: 4.0

What is the minimum initiation time to commence a plant shutdown if a LCO ACTION statement requires the plant to be in cold shutdown?

Response:
The reactor shall be placed in cold shutdown means in 30 hours. The minimum time of initiation is derived by taking 30 hours and subtracting a minimum of 4 hours to maneuver the plant from power ops to shutdown, and then subtracting a minimum of 8 hours more to get the plant from shutdown condition to cold shutdown.

Reference: 106 Section 5.6.3

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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   - b. ✓ initiating cues
   - c. ✓ references and tools, including associated procedures
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   - e. ✓ specific performance criteria that include:
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John McMulligan

Facility: Oyster Creek **Task No:** 2860401403

Task Title: Line up Fire Protection to the Core Spray system

Job Performance Measure No: 286-04

K/A Reference: 209001 A4.03 (3.7 / 3.7)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance X Actual Performance

Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Reactor is scrammed Core spray Main Pumps have failed LOCA is in progress; RPV water level is 60" and dropping
Task Standard:	Core Spray system 2 injecting into the Core using fire water
Required Materials:	Radio
General References:	EMG 3200.01A Support Procedure 5
Initiating Cue:	The GOS has directed you to lineup fire water to Core spray System 2 in accordance with support procedure 5
Time Critical Task:	No
Validation Time:	8 minutes

START TIME ____(* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure.	Obtain controlled copy of Support Procedure 5.	
2. Confirms stopped the Core Spray Main and Booster Pumps in Core Spray System 2.	Communicates with Control Room to confirm all Core Spray System 2 pumps stopped.	
CUE: Control Room reports Core Spray System 2 pumps stopped.		
3. Place Core Spray System 2 Main Pump control switches in Pull-to-Lock position.	Communicates with Control Room to confirm Core Spray System 2 Main Pumps in Pull-to Lock.	
CUE: Control Room reports Core Spray System 2 Main Pumps in Pull-to- Lock.		
*4. Closes telltale drain valve V-20-90.	Closes handwheel for V-20-90 located on south side of reactor building 23'.	
CUE: V-20-90 closed.		
5. Confirm running all Diesel Fire Pumps by placing their control switches in MANUAL position (13R).	Communicates with Control Room to confirm all Diesel Fire Pumps are running.	
CUE: Control Room reports that both Diesel Fire Pumps running.		
*6. Open fire Water supply valve V-20-82	V-20-82 is open (RB 23 South or south side RB outside)	
CUE: V-20-82 is open		
7. Confirms closed test discharge valve V-20-26.	Confirms valve closed locally, Rx Bldg. 75' elev. OR communcates with Control Room to confirm test discharge valve V-20-26 is closed.	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
CUE: Upon request the evaluator will provide the following: V-20-26 closed.		
8. Closes Core Spray 2 suction valve V-20-33 and V-20-4.	Communicates with Control Room to close suction valves V-20-33 and V-20-4.	
CUE: Control Room reports Green "Closed" indicating lights for V-20-33 and V-20-4.		

COMPLETION TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure No. 286-04

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:
Question:

1. 209001 K6.08 Keep-fill (2.9/3.0)

A loss of the System 1 Core Spray keepfill pump occurred. The Pump has now been fixed and System fill and vent is in progress. During the fill and vent, Minimum Flow Regulating Valve V-20-255 had to be closed. What must now be done and why?

Response:
Per Procedure 308, if V-20-255 is closed, it must be re-adjusted IAW with Attachment 308-8 to ensure at least 110 gpm flow through the valve to ensure sufficient system flow and Core Spray Pumps A and C minimum flow requirement are met.

Reference: Procedure 308

Result: **SAT or UNSAT**

Question:
2. 209001 K3.01 Reactor Water level (3.8/3.9)

RPV level restoration is in progress IAW EOP EMG 3200.1A RPV CONTROL –NO ATWS. No injections systems a with a running pump are lined up to inject. RPPV water level is at 0" TAF and still slowly decreasing. At –25" TAF and 700 PSIG, System 1 Core Spray pumps are started.

Response:
Until RPV pressure is less than 285 PSIG, Core Spray will not be able to inject. Therefore, RPV water level will continue to drop. In Steam cooling, direction is given to Emergency Depressurize if RPV water level is below -30TAF and an injection system with a running pump is available.

Reference: Steam cooling EMG-3200.05

Result: **SAT or UNSAT**

Examiner's signature and date: ______________________________ __________

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   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

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      (3) ✓ statements describing important observations that should be made by the examinee

      (4) ✓ criteria for successful completion of the task

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      (6) ✓ restrictions on the sequence of steps

   f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

X

Facility: Oyster Creek | **Task No:** 3080401401

Task Title: Place the RSP in service, then control RPV cooldown using "B" Isolation condenser

Job Performance Measure No: 308-01

K/A Reference: 295016 (AA1.07 (4.2 / 4.3)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance | Actual Performance X

Classroom | Simulator X | Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Control room evacuation is ordered due to Toxic atmosphere; all expected operator actions per ABN 3200.30 have been performed

Task Standard: RSP is placed in service and RPV cooldown has been established

Required Materials: MB-1 key

General References: Procedure 346 Remote shutdown Panel

Initiating Cue: Toxic atmosphere has caused an evacuation of the control Room. The GOS has directed you to place the RSP into operation, then commence a cooldown using "B" Isolation condenser

Time Critical Task: No

Validation Time: 20 minutes

START TIME _______ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure.	Procedure 346, Section 7, obtained.	
2. Verifies prerequisites met.	Verifies prerequisites are met. Train "A" and "B" transfer lights are on Normal or Alternate 120 VAC light on V-11-34 120 VAC light on CRD Transfer light on	
3. Reviews all applicable precautions and limitations.	Reviews all applicable precautions and limitations.	
4. Obtains keys for remote shutdown panel.	Unlock key ring to right of Remote Shutdown Panel.	
*5. Places the "CRD control transfer" keylock to the alternate position.	Inserts key and places CRD control transfer switch in "Alternate" position.	
CUE: CRD Control transfer keylock is in alternate.		
6. Confirms 1B2M closed.	"Red" indicating light lit for breaker 1B2M at the RSP.	
CUE: 1B2M breaker indicates closed (B CRD pump operating, no action required.		
*7. Lines up IC "B" valve control.	On Remote S/D panel, places control switch for V-14-35 in open and control switch for V-11-34 remains closed.	
CUE: V-14-35 control switch is in open and V-11-34 control switch is in close. UPON REQUEST: V-14-35 is open V-11-34 is closed		
*8. Places bypass switch on the breaker at USS 1B2 for RBCCW pump 1-2 to the bypass position.	Place the Normal/Bypass switch for RBCCW pump 1-2 to bypass.	
CUE: RBCCW pump 1-2 normal/bypass switch is in bypass.		
*9. Places train "A" and train "B" to the alternate position.	Insert keys and rotate Train "A" and Train "B" transfer switches to "Alternate".	
CUE: Red "On" status lights lit for "B" 460V SWGR Room and "A/B" battery room fans after two seconds UPON REQUEST: V-14-35 indicates open (red) V-11-34 indicates closed (green)		
10. Confirms all recirc pumps tripped.	Performance met by prereq of "All actions of ABN 3200.30 met".	
CUE: If requested by operator, evaluator reports as EO all recirc pump breakers verified open in 4160V switchgear room.		

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*11. Activates RSP fuel zone level.	Place both fuel zone level On/Off switches to "On".	
CUE: All fuel zone meters at 155 TAF.		
12. Plot cooldown rate on Attachment 2000-ABN-3200.30-5 at 10 minute intervals	Plots points of RPV pressure versus time to determine cooldown rate	
13. If excessive cooldown is determined, closes V-14-35 to control cooldown rate	V-14-35 is cycled as necessary to maintain cooldown rate	

COMPLETION TIME _____

VERIFICATION OF COMPLETION

Job Performance Measure No. 308-01

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 295016 AK2.02 Local control stations (4.0/4.1)

The plant is at power when a control Room Evacuation is required. None of the operator actions have been performed. What must be done and how?

Response:
There are backup methods if the expected operator actions for abandoning the Control room are not performed.

- Trip the RPSMG Set output circuit breakers and turn off SW-773-169/170 in the lower cable spreading room
- Manually trip/open the Recirc Pump breakers at Bus 1A and 1B
- Manually trip/open the Feed Pump breakers on Bus 1A and 1B

Reference: Attachment 2000-ABN-3200.30-1

Result: SAT or UNSAT

Question:

2. 295016 AA1.06 Reactor Water Level (4.0/4.1)

Prior to actuation of RSP Fuel Zone Level indicators, what must be done and why?

Response:
It must be confirmed that the Recirc Pumps are not operating. The fuel zone indicators at the RSP are from C and D Fuel Zone level detectors. Recirc Pump operation will cause inaccurate readings

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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     - (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step
     - (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked
     - (3) ✓ statements describing important observations that should be made by the examinee
     - (4) ✓ criteria for successful completion of the task
     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 3080401402

Task Title: Operate EDG #2 control Transfer Switches from LSP-DG2

Job Performance Measure No: 308-02

K/A Reference: 264000 A4.04 (3.7 / 3.7)

Examinee: ________________ **NRC Examiner:** ________________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Control Room evacuated due to a fire
Expected operator actions for control Room Evacuation have been completed
"B" Isolation condenser is in service
Offsite power to bus 1D is not available

Task Standard: EDG #2 running and supplying power to Bus 1D

Required Materials: None

General References: Procedure 346

Initiating Cue: The GOS has directed you to place LSP-DG2 in service and start EDG #2 in accordance with Procedure 346

Time Critical Task: No

Validation Time: 7 minutes

START TIME ____(* indicates Critical step)

PERFORMANCE CHECKLIST		STANDARD	INITIAL SAT/UNSAT
1.	Obtain controlled copy of procedure.	Obtain controlled copy of procedure 346.	
2.	Verifies all prerequisites are met.	Verifies all prerequisites are met.	
CUE:	All prerequisites are met.		
3.	Reviews all applicable precautions and limitations.	Reviews all applicable precautions and limitations.	
4.	Obtains MB-1 key.	Key obtained from Control Room (Examiner may supply key).	
5.	Establishes communication with RSP.	Comm established with phone, page or radio.	
6.	Confirms tie breaker, ED, is open and racked out.	Calls EO.	
CUE:	EO informs that tie breaker ED is opened and racked out.		
7.	Confirms emergency bus breaker 1D is open.	Calls EO.	
CUE:	EO informs that emergency bus breaker 1D is open.		
	Note: Steps 8,9,10,11 must be performed in order.		
*8.	Places the "DG2 Alternate Mode Selection Switch" on LSP-DG2 to Deadline.	Places DG2 Alternate Mode Selector Switch in "Deadline" position on LSP-DG2.	
CUE:	DG2 Alternate Mode Selection Switch is in Deadline.		
*9.	Places the "Normal-Alternate" switch #1 on LSP-DG2 to the alternate position.	Inserts key obtained from lock beside LSP-DG2 and places "Normal-Alternate"	
CUE:	Switch #1 in "Alternate" position on LSP-DG2.		
*10.	Places the "Normal-Alternate" switch #2 on LSP-DG2 to alternate.	Inserts key obtained from lock beside LSP-DG2 and places "Normal-Alternate" switch #2 in "Alternate" position on LSP-DG2.	
CUE:	Switch #2 in "Alternate" position on LSP-DG2.		
*11.	Places the "Normal-Alternate" switch #3 on LSP-DG2 to alternate.	Inserts key obtained from lock beside LSP-DG2 and places "Normal-Alternate" switch #3 in "Alternate" position on LSP-DG2.	
CUE:	Switch #3 in "Alternate" position on LSP-DG2.		

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*12. Places "DG2 Alternate Emergency Start" switch momentarily to start.	Places the "DG2 Alternate Emergency Start" switch momentarily in start on LSP-DG2.	
CUE: Examiner tells student that the EDG fast starts and loads in 12 seconds.		

COMPLETION TIME_____

Appendix C | Form ES-C-1

VERIFICATION OF COMPLETION

Job Performance Measure No. 308-02

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 2.4.27 Knowledge of fire in the plant procedure (3.0/3.5)

What is the reason for (safety significance of) having a local shutdown panel?

Response:
LSP's have been installed in response to App R requirements that if a fire were to occur, at least one train of systems required for safe shutdown would be unaffected by the fire. In order to meet this, LSP's are used. LSP's give electrical separation of shutdown equipment to prevent a fire from disabling control of these systems

Reference: 346; 6231-PGD-2621 828.0064

Result: SAT or UNSAT

Question:
2. 264000 A2.09 Loss of AC Power (3.7/4.1)

What are the loading requirements for the EDG's during a loss of offsite power and why? (Assume both EDG's are operating and carrying their respective buses and NO LOCA is in progress?

Response:
The EDG's are limited to< 1500KW loading. This allows for approximately 1300 KW margin to handle starting of ECCS equipment should a LOCA occur.

Reference: Attachment 2000-ABN-3200.36-2

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. include the following, as applicable:

   a. ✓ initial conditions

   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

   d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ specific performance criteria that include:

      (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ statements describing important observations that should be made by the examinee

      (4) ✓ criteria for successful completion of the task

      (5) ✓ identification of those steps that are considered critical

      (6) ✓ restrictions on the sequence of steps

   f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 2170401005

Task Title: Perform Rod Coupling check (alternate path)

Job Performance Measure No: 201-01

K/A Reference: 201003 A2.02 (3.7 / 3.8)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Reactor Startup in Progress; reactor power on Range 9 Rod 26-03 has been withdrawn to notch 48 in accordance with step 19 of the pull sheet A Core Engineer is present in the control room
Task Standard:	Insert rod 26-03 to 00
Required Materials:	Key for 6XR
General References:	Procedure 302.2 ABN 3200.06 Abnormal Control Rod Motion
Initiating Cue:	Perform a rod coupling check on rod 26-03 in accordance with 302.2
Time Critical Task:	No
Validation Time:	15 minutes

START TIME ____ (* identifies Critical Task)

PERFORMANCE CHECKLIST	*STANDARD*	*INITIAL* SAT/UNSAT
1. Obtains current copy of procedure	Procedure 302.2 obtained	
*2. Performs coupling check	On panel 4F takes rod control switch to "Rod Out Notch" simultaneous with notch override switch to "Notch Override"	
3. Verifies black-black background on control rod 26-03	On Panel 4F, observes control rod 26-03 indicates black- black and annunciator H-5-a alarms	
4. Obtains controlled copy of procedure	Obtains Procedure ABN-3200.06, step 3.4	
5. Gives the rod an insert signal	Takes rod control switch to "Rod In" or the notch override switch to the "Emergency In" position on Panel 4F	
NOTE: Rod will not move, display remains black-black		
6. Obtains controlled copy of procedure	Obtains Procedure 302.2, section 9, reviews perquisites, and verifies the following: ➤ CRD Hydraulic System is in operation ➤ 101, 102, and 108 valves are open	
CUE: Inform operator that the CRD Hydraulic System is in operation IAW 302.1; 101, 102, and 108 valves have been verified open if requested.		
7. Reviews Precautions & Limitations IAW 9.2	Reviews Precautions and Limitations as listed in section 9.2	
CUE: Inform the operator that you will serve as the operator at 4F while actions are being carried out.		
8. Bypass Dilution pump trips	Places the Dilution pump AUTO/BYPASS switches to bypass.	
*9. Individually scrams the control rod from panel 6XR	Obtain key for 6XR from GSS office, identify toggle switch for Control Rod 26-03 on 6XR and places the toggle to the scram (open) position.	
10. Verifies scram indication and rod movement	Verifies scram display for rod 26-03 is illuminated at 4F, and rod movement.	
CUE: Scram light is on, there is rod movement, and display is now green-green		

PERFORMANCE CHECKLIST	*STANDARD*	*INITIAL* *SAT/UNSAT*
11. Returns toggle switch for control rod 26-03 on 6XR to normal	Returns toggle switch for control rod 26-03 on 6XR to normal (closed position).	
12. Verifies SCRAM light is "Out" on 4F core display	Verifies that the scram signal is removed	
CUE: Inform operator that the scram signal is removed.		
13. Returns Dilution pump Bypass switch to AUTO	Places the Dilution pump AUTO/BYPASS switches to AUTO.	
NOTE: Core Engineer is present in the control room		
14. Per ABN .06 Notifies Core Engineer, and POD	Notifies core engineer, and the Plant Operations Director of the uncoupled rod	

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. 201-01

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 201003 A2.02 Uncoupled Rod (3.7/3.8)

What is the safety significance if a rod coupling check is not performed?

Response:
The control rod may indicate it is at 48, but it may actually be at 00. If the coupling check is not performed, the rod could actually be uncoupled, and it could lead to a rod drop accident

Result: SAT or UNSAT

Question:

2. 201003 K3.01 Reactor Power (3.2/3.4)

The plant is at 30% power when an uncoupled rod is detected. How and why are the corrective actions different at this power level than when on IRM Range 9?

Response:
The actions are less severe for an uncoupled rod discovered at 30% due to voids in the core

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Every JPM should:

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2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).
3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.
4. include the following, as applicable:
   - a. ✓ initial conditions
   - b. ✓ initiating cues
   - c. ✓ references and tools, including associated procedures
   - d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department
   - e. ✓ specific performance criteria that include:
     - (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step
     - (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked
     - (3) ✓ statements describing important observations that should be made by the examinee
     - (4) ✓ criteria for successful completion of the task
     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Job Performance Measure Worksheet

Facility: Oyster Creek **Task No:** 2020401009

Task Title: Place "C" Recirculation Pump in Local-Manual Control

Job Performance Measure No: 202-09

K/A Reference: 202002 A4.07 (3.3 / 3.2)

Examinee: ________________ **NRC Examiner:** ________________

Date: ________

Method of testing:

Simulated Performance X Actual Performance

Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Reactor power is 90% Total Recirc Flow is 15E4 gpm "C" Recirc Pump is experiencing oscillations of +/- 1.5% power; the individual controller is in MANUAL
Task Standard:	"C" Recirc Pump locked in local manual
Required Materials:	MB-1 key Radio
General References:	2000-ABN-3200.03 Recirc Flow Abnormality 301.2 Reactor Recirc system
Initiating Cue:	The GOS is directing you to take local-manual control of "C" Recirc Pump and lock it in accordance with procedure 301.2 Section 9
Time Critical Task:	No
Validation Time:	5 minutes

START TIME ___ (* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure	Procedure 301.2, section 9, obtained	
2. Reviews all applicable precautions and limitations	Reviews precautions and limitations	
3. Establishes communications with the Control Room	From the Recirc MG set room, uses radio to establish communication with Control Room (This may be simulated)	
CUE: Communication established, Examiner acts as control room operator		
*4. Place positioner supply valve to "Hand-Closed"	In the Recirc MG set room, presses in on safety latch located on the side of the bailey positioner, and places positioner supply valve in "Hand-Closed" for "C" Recirc pump	
CUE: Positioner supply valve is in "Hand-Closed"		
*5. Place positioner bypass valve to "Open-Hand"	In the Recirc MG set room, presses in on safety latch and places positioner bypass valve in "Open-Hand" for "C" Recirc Pump	
CUE: Positioner bypass valve is in "Open-Hand."		
6. Place brake operating lever in "Lock"	At the pneumatic control drive, places brake operating lever in "Lock" for the "C" Recirc Pump	
CUE: Brake operating lever is in "Lock".		
7. Informs Control Room	Communicates with Control Room and reports "C" Recirc Pump is in Local-Manual	
CUE: Control Room acknowledges NOTE: If the next step is performed, NO speed adjustment is required.		

COMPLETION TIME_____

Appendix C

VERIFICATION OF COMPLETION

Job Performance Measure No. 202-09

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 202001 A2.09 Scoop tube lockup (3.2/3.4)

What are the possible causes for a Recirc MG Set scoop tube lockup?

Response:
Loss of speed signal: trip unit monitors output of digital control system.
Loss of operating air pressure < 25 Psig

Reference:3024.22 and 301.2

Result: SAT or UNSAT

Question:
2. 202002 A3.03 Scoop Tube Operation (3.1/3.0)

Explain how the Bailey Scoop tube positioner operates.

Response:
It positions the scoop tube in response to the pneumatic speed demand signal output of the I/P converter. Consists of a bellows positioning piston, scoop tube and air failure brake. Feedback arm provides scoop tube position feedback to the positioner. A mechanical stop prevents operation below 20% MG set speed. A positionswitch on positioner provides required input to the MG set field breaker closure circuit.

Refernece: 6231-PGD-2621 828.0040

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Appendix C	Job Performance Measure Quality Checklist	Form ES-C-2

Every JPM should:

1. ✓ be supported by facility licensee's job task analysis.
2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).
3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.
4. include the following, as applicable:
   - a. ✓ initial conditions
   - b. ✓ initiating cues
   - c. ✓ references and tools, including associated procedures
   - d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department
   - e. ✓ specific performance criteria that include:
     - (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step
     - (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked
     - (3) ✓ statements describing important observations that should be made by the examinee
     - (4) ✓ criteria for successful completion of the task
     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 2150401401

Task Title: Respond to IRM Hi-Hi trip of IRM Channel 11 during Startup

Job Performance Measure No: 215-03

K/A Reference: 215003 A2.04 (3.7 / 3.8)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:

Rx Startup in Progress.
Rx Power in Source Range, All IRMs downscale.
Currently at Step 4, Pull 1 of Control Rod Withdrawal Sequence.
All systems operating properly

Task Standard: IRM Channel 11 bypassed and half-scram reset

Required Materials: None

General References:

201.1, Approach to Criticality
2000-RAP-3024.01, Window G-1-e, IRM HI-HI/INOP
2000-OPS-3024.20, Nuclear Instrumentation
402.4, IRM Bypass Operation

Initiating Cue: As the GOS, I am directing you to continue the Rx startup in accordance with step 5.22.2 of Procedure 201.1.

Time Critical Task: NO

Validation Time: 10 minutes

START TIME _______ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure	Procedure 201.1, Section 5.22.2 obtained.	
2. Continue Control Rod Withdrawal	Selects appropriate rod from the Master Withdrawal sheet and withdraws it by taking the Rod Control switch to the "Rod Out" position.	
NOTE: Operator may choose to use continuous rod withdrawal if count rate allows. CI: When directed by the Floor Instructor, activate CLF: NSS, PSW, NI851, opt. 2		
3. Obtain controlled copy of procedure	Rap G-1-e obtained.	
4. Determine IRM Channel 11 tripped Hi-Hi	Observes IRM recorders at Panel 4F for Hi-Hi alarm and IRM cabinets at Panel 3R for indication of inoperative unit.	
5. Obtain controlled copy of procedures and determine IRM may be bypassed with GSS approval	OPS-3024.20 and Procedure 402.4 obtained and requests permission to bypass IRM Channel 11. Determines no action required per OPS-3024.20.	
CUE: As GSS, give permission to bypass IRM Channel 11.		
*6. Bypass IRM Channel 11	Places IRM Channel 1 Joystick to the "11" position and verifies IRM Hi-Hi/INOP and RPS Channel I alarms clear, Bypass light on SRM-IRM Auxiliaries module at Panel 3R is illuminated, and the DNSCL or INOP/High/HI-HI lights on Panel 4F are illuminated.	
*7. Reset Half-Scram	Depresses Scram Reset pushbutton on Panel 4F and verifies channel 1 scram solenoid lights illuminate and Scram Contactor alarm clears.	

COMPLETION TIME___________

VERIFICATION OF COMPLETION

Job Performance Measure No. 215-03

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 215003 K3.05 APRM (3.7/3.8)

A reactor startup is in progress. The mode switch is in RUN. All APRM's and IRM's are operable. APRM 1 is reading 1%. All other APRM's indicate >5%. Explain the response if IRM 11 HI-HI Trip were to occur.

Response:
With the mode switch in Run and APRM 1 downscale and NOT bypassed, IRM 11 or 12 hi-hi trip will initiate a half scram.

Reference: RPS Elementary Drawing GE 237E566

Result: SAT or UNSAT

Question:

2. 215003 K5.03 Changing Detector Position (3.0/3.1)

A reactor startup is in progress. The mode switch is in STARTUP. IRM detector 11 full in limit switch fails. Explain the affect on plant operations.

Response:
A rod block will be initiated until the IRM is bypassed

Reference: RAP H-7-a

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. include the following, as applicable:

   a. ✓ initial conditions

   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

   d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ specific performance criteria that include:

      (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

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      (6) ✓ restrictions on the sequence of steps

   f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Job Performance Measure Worksheet

Facility: Oyster Creek **Task No:** 2120501402

Task Title: Bypass RPS System Scram Logic Trips

Job Performance Measure No: 212-04

K/A Reference: 295037 EA1.01 (4.6 / 4.6)

Examinee: ______________ **NRC Examiner:** ______________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

> **READ TO THE EXAMINEE**
>
> I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Hydraulic lock ATWS, with high Drywell Pressure due to small break LOCA
Task Standard:	RPS trips bypassed
Required Materials:	EOP Bypass Plugs
General References:	EMG 3200.01B Support Procedure 21
Initiating Cue:	The GOS directs you to bypass RPS trips in accordance with Support Procedure 21
Time Critical Task:	No
Validation Time:	10 minutes

START TIME _______ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/ UNSAT
1 Obtain controlled copy of procedure	Support Procedure 21 section 3.4 obtained.	
*2 Bypass ARI	Places the ARI Normal/Bypass Switch in BYPASS position in the rear of 8R.	
*3 Resets ARI	Depresses the ARI Manual reset pushbutton on 4F.	
*4 Obtain bypass plugs	Obtains four(4) bypass plugs from the EOP Station	
*5 Inserts bypass plugs in panel 6R	Opens EOP bypass panel in the rear of Panel 6R. - Inserts a bypass plug in position BP5. - Inserts a bypass plug in position BP6.	
*6 Inserts bypass plugs in panel 7R	Opens EOP bypass panel in the rear of Panel 7R. - Inserts a bypass plug in position BP5. - Inserts a bypass plug in position BP6.	
7 Confirms CRD pump operation	At Panel 4F, confirms all available CRD Pumps are operating	
*8 Resets Scram	Resets the Scram by depressing the Scram Reset Button on 4F	
9. Confirms open the SDV vent and drain valves	At Panel 4F, confirms the SDV vent and drain valves indicate open	
*10 Manually scrams the reactor	When the SDV LEVEL HI-HI alarms clear (H-1-b/H-2-b): - at Panel 4F, depresses both manual scram buttons	

COMPLETION TIME______

Appendix C

Form ES-C-1

VERIFICATION OF COMPLETION

Job Performance Measure No. 212-04

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 212000 K4.08 Complete control rod insertion following Scram signal generation (4.2/4.2)

What is the reason for a RPS scram signal based on SDV high water level?

Response:
This ensures there is enough volume in the SDV to handle the water from a full scram,thus preventing a hydraulic lock from occurring

Reference: Tech Spec Basis for LSS

Result: SAT or UNSAT

Question:

2. 295015 AA1.01 CRD Hydraulics (3.8/3.9)

While performing Support Procedure 21 Section 3.4 Manual Scram, it is found that both CRD pumps are off and can not be restored. Can the support procedure be performed? Explain your answer.

Response:

Section 3.4 is inserting a manual scram after draining the SDV during a hydraulic ATWS. If the CRD pumps cannot be restart, BUT reactor pressure > 600 PSIG, the SP should still be performed. When the SDV is drained, inserting a manual scram signal will now rely on reactor pressure to insert the control rod. (Ball check valve concept in CRDM)

Reference: Support Procedure 21

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 2090201003

Task Title: Perform Core Spray Pump Operability surveillance

Job Performance Measure No: 209-04

K/A Reference: 209020 A4.01 (3.8 / 3.6)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Reactor @ 100% power; MAPLHGR is at 89.6% NZ01A has just been returned to service following breaker PM's Core Spray System II operability has been completed
Task Standard:	Core Spray Pump operability surveillance completed on system 1
Required Materials:	None
General References:	Core Spray Pump Operability Test 610.4.002
Initiating Cue:	As the GOS, I am directing you to perform Core Spray Pump Operability Test per procedure 610.4.002 on core spray Pumps NZ01A and NZ03A
Time Critical Task:	No
Validation Time:	15 minutes

START TIME ____ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
Cue: Provide Surveillance Test Package to Trainee		
1 Obtain controlled copy of procedure	Procedure 610.4.002 obtained.	N/A
2. Verifies all prerequisites	Verifies prerequisites met	
CUE: Prerequisites are met. System II operability verified.		
3 Reviews all applicable precautions and limitations	Reviews all applicable precautions and limitations	
*4 Confirms Core Spray System I is filled and vented	Confirms Core Spray System I is filled and vented by verifying: - Core Spray fill pump NZ04A is running (red light at MCC is on) - Pump discharge pressure PIT RV03A >35 psig	
CUE: As EO, report red light is ON at MCC for System A Keep Fill Pump		
*5 Enables V-20-27	Directs an Equipment Operator to enable V-20-27 by: - unlocking and turning on, V-20-27 supply breaker at MCC1A21B - verifying breaker in V-20-27 starter is on.	
CUE: (CI)As EO report V-20-27 unlocked and turned on and breaker in V-20-27 starter is on.(Use LOA CSS17 set to "false")		
6 Notifies plant personnel	Notifies plant personnel using the plant paging system that Core Spray System I will be tested.	
*7 Starts Core Spray pump NZ01A	Starts Core Spray pump NZ01A using control switch on 1F/2F and verifies/records: - Records Core Spray pump discharge pressure - Mains from PIT-RV03A - Confirms discharge pressure > 150 psig.	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
CUE: Report no leakage observable from V-20-25 when asked.		
*8 Starts Core Spray Booster Pump	Starts Core Spray Booster pump NZ01A using control switch on 1F/2F and verifies/records: - directs EO to check for leakage from relief valve V-20-25	
*9. Directs EO to open V-20-27	Directs EO to open V-20-27 using the keylock switch on 51'NW	
CUE:(CI) As EO open V-20-27. (Use LOA CSS31 set to "open" return LOA CSS31 to normal after the valve is fully open; the valve MONV is full open at 0.28)		
CUE: Use time compression and inform the operator that 10 minutes have elapsed for the following step.		
*10 Records Data	Records the following Data and verifies values meet acceptance criteria: - Records Core Spray pump discharge pressure - Mains from PIT-RV03A ≥ 150 psig - Records Core Spray pump discharge pressure - Boosters from PT-RV41A ≥ 230 psig - System Flow from FIT-RV26A ≥ 3400 gpm	
*11 Closes V-20-27	Directs EO to close V-20-27 using the keylock switch on 51'NW	
CUE:(CI) As EO report V-20-27 closed (Use LOA CSS30 set to "close" return LOA CSS30 to normal after the valve is open.)		
*12 Stops the Core Spray Booster pump, NZ03A	Stops the Core Spray Booster pump using the control switch on 1F/2F	
*13 Verify fill pump running	Directs EO to verify Core Spray Fill Pump running (red light at MCC 1B21B)	
CUE:(CI) As EO report Core Spray Fill Pump has red lit indication.		
*14 Stops the Core Spray Main pump	Stops the Core Spray Main pump using the control switch on 1F/2F	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*15 Verifies Indications	Verifies system indications as follows: - System Flow Permissive (B-3-e) clear	
*16 Relieves test line vacuum	Has EO open V-20-262 until core spray pump discharge pressure, Mains, PIT-RV03A > 35 psig.	
CUE:(CI) As EO report V-20-262 was opened and reclosed when no more vacuum detected.		
*17 Disables V-20-27	Directs an Equipment Operator to turn off and lock V-20-27	
*18 Transfers data	Transfers data onto applicable attachments.	
19 Informs GSS	Notifies the GSS that the surveillance Testing of Core Spray System I is complete	

COMPLETION TIME______

Appendix C | Form ES-C-1

VERIFICATION OF COMPLETION

Job Performance Measure No. 209-04

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 209001 K4.04 Line Break detection (3.0/3.2)

The plant is at 100% power. Annunciator B-5-f SPARGER 2 DP HI is in alarm. What is the safety signifiance of this alarm, and what must be done?.

Response:
This alarm is the Core Spray Line break detection. It means that if the alarm is valid, the core spray line penetration the shroud is broken and if needed, CS will not be able to deliver water to prevent core melting. Per the RAP, if the reading is valid, consider CS System 2 inoperable. Core Alphgr must be brought within 90% of limit within 2 hours

Reference: RAP B-5-f

Result: SAT or UNSAT

Question:

2. 209001 K3.02 ADS Logic (3.8/3.9)

A LOCA inside the Drywell concurrent with a LOOP and a failure of EDG #2 to re-energize Bus 1D has occurred. "A" Core Spray Pump has failed to autostart and cannot be manually started. What is the impact of these conditions on ADS? Assume that the ADS timers have not been bypassed

Response:
In this scenario, the "D Booster Pump will be operating. When the Div 2 ADS timer times out, relay 16K201B energizes, and all 5 EMRV's open

Reference: GE 729E182 (ADS) and NU 5060E6003 (Core Spray)

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Every JPM should:

1. ✓ be supported by facility licensee's job task analysis.

2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. include the following, as applicable:

   a. ✓ initial conditions

   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

   d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ specific performance criteria that include:

      (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ statements describing important observations that should be made by the examinee

      (4) ✓ criteria for successful completion of the task

      (5) ✓ identification of those steps that are considered critical

      (6) ✓ restrictions on the sequence of steps

   f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Job Performance Measure Worksheet

Facility: Oyster Creek **Task No:** 2590101009

Task Title: Take local/manual control of "A" Feed Regulating valve

Job Performance Measure No: 259-02

K/A Reference: 259001 A4.08 (3.3 / 3.3)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance X Actual Performance

Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Reactor Power at 80%; RPV water level at 163" Master FWC in Auto; "B" and "C" MFRV's are in Auto "A" MFRV controller has failed; "A" MFRV is locked up
Task Standard:	"A" MFRV is being controlled by local handwheel
Required Materials:	Pin, located at valve
General References:	Procedure 317 Feedwater, Section 5.4
Initiating Cue:	The GOS is directing you to take local manual control of "A" MFRV
Time Critical Task:	No
Validation Time:	5 minutes

START TIME ___(* indicates Critical step)

PERFORMANCE CHECKLIST		STANDARD	INITIAL SAT/UNSAT
1.	Obtain controlled copy of procedure	Obtain controlled copy of procedure 317.	
*2.	Line up holes in outer sleeve with hole in piston rod.	In the feed pump room rotates handwheel on valve to line up either hole in outer sleeve with hole in piston.	
CUE:	Hole in outer sleeve lined up with hole in piston rod.		
*3.	Isolate air to Feedwater Reg. valve ID11A by closing V-6-2417 and V-6-2418.	Locates V-6-2417 and V-6-2418 for ID11A and close both valves.	
CUE:	V-6-2417 and V-6-2418 closed.		
*4.	Insert Morse tapered self-locking pin through these holes.	Inserts pin through holes.	
CUE:	Pin inserted		

COMPLETION TIME_____

Appendix C | Form ES-C-1

VERIFICATION OF COMPLETION

Job Performance Measure No. 259-02

Examinee's Name: ______________________________

Examiner's Name: ______________________________

Date performed: ________________

Number of attempts: _____

Time to complete: __________

Question Documentation:

Question:

1. 259001 A3.07 FWRV position (3.2/3.2)

Describe how Feedwater Pump runout protection is designed to operate.

Response:
If an individual feedwater string total flow > 2.67 X 10^6 lb/hr, annunciator J-8-c FCS/RFCS TROUBLE alarms, the affected feedwater string amber light indicating MFRV FLOW LIMIT is lit (Panel 5F/6F) and a constant output signal is sent to the affected string Feedwaster Reg valve to prevent the valve from opening any further. IT will auto reset once flow < 2.67 X 10^6 lb/hr.

Reference: ABN 3200.17; 3024. 14, RAP J-8-c

Result: SAT or UNSAT

Question:

2. 259001 K6.07 Reactor Water Level control System (3.8/3.8)

What action is required to be taken if a reactor scram were to occur with the MFRV pinned for local manual control and why?

Response:
Per ABN 3200.17, the associated Feedwater pump is to be tripped if a reactor scram occurs while the MFRV is in local manual control. This is done to preclude inadvertently overfilling the vessel, for local manual control is slow and under rapidly changing RPV water level conditions, the communication to the local operator from the control room may not be in time to prevent overfilling the RPV and potentially tripping the ROPS and then losing all operating Feedwater Pumps, and the adverse affects of cold water on pressure control and cooldown rates.

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).
3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.
4. include the following, as applicable:
   - a. ✓ initial conditions
   - b. ✓ initiating cues
   - c. ✓ references and tools, including associated procedures
   - d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department
   - e. ✓ specific performance criteria that include:
     - (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step
     - (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked
     - (3) ✓ statements describing important observations that should be made by the examinee
     - (4) ✓ criteria for successful completion of the task
     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 2620501

Task Title: Station blackout in-plant evolutions (Line-up TBCCW)

Job Performance Measure No: 262-08

K/A Reference: 295003 AK1.06 (3.8 / 4.0)

Examinee: ______________ **NRC Examiner:** ______________

Date: ________

Method of testing:

Simulated Performance X Actual Performance

Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	Station Blackout; Breakers US1T and US2T are reacked in
Task Standard:	TBCCW valves aligned IAW ABN 3200.37 Att4
Required Materials:	MB1 key Radio and flashlight
General References:	2000-ABN-3200.37
Initiating Cue:	A station blackout has occurred. The GOS has directed you to lineup TBCCW valves for TBCCW heat exchanger 1-1 per ABN 3200.37 Attachment 4
Time Critical Task:	No
Validation Time:	7 minutes

START TIME ___ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure.	Obtain controlled copy of ABN-3200.37.	
*2. Close V-3-58.	Closes V-3-58 in the Turbine Bldg. basement.	
CUE: V-3-58 closed.		
*3. Open V-3-59.	Opens V-3-59 in the Turbine Bldg. basement.	
CUE: V-3-59 open.		
*4. Close V-3-76 and V-3-77.	Closes V-3-76 and V-3-77 in the Turbine Bldg. basement.	
CUE: V-3-76 and V-3-77 are closed.		
*5. Open V-3-76 one turn open.	Throttles V-3-76 to a position not fully closed in the Turbine Bldg. basement.	
CUE: V-3-76 one turn open.		
6. Confirm V-3-74 is fully open.	Opens V-3-74 in the Turbine Bldg. basement.	
CUE: V-3-74 is full open.		

COMPLETION TIME_____

Appendix C **VERIFICATION OF COMPLETION** Form ES-C-1

Job Performance Measure No. 262-08

Examinee's Name:____________________

Examiner's Name:____________________

Date performed:____________

Number of attempts:____

Time to complete:________

Question Documentation:
Question:

1. 295003 AA2.04 System Lineups (3.5/3.7)

In preparation for bringing a CT onto Bus 1B, direction is given to rack in TIE BREAKER US2T at USS 1A2 and TIE BREAKER US1T at USS 1A1. What is to be accomplished by performing these two breaker operations?

Response:
When 1B is re-energized from the CT, then 1D can be re-energized. USS 1B1 and 1B2 are now re-energized. At this time, the direction is given to close tie breakers US1T and US2T. This will re-energize USS 1A1 and 1A2. This will allow support system restoration to equipment to assure core cooling, Containment cooling, Cooling Water systems, Battery chargers, and Ventilation systems. (CRD Pump "A", CS Booster Pumps "A" and "D", "A" SDC PUMP, Fuel Pool cooling Pump "A", three Drywell Cooling Fans, RBCCW PUMP 1-1, and TBCCW Pumps 1-1 and 1-2)
Reference: ABN-3200.37

Result: SAT or UNSAT

Question:
2. 295003 AK1.06 Station Blackout (3.8/4.0)

What is the allowed cooldown rate during a Station blackout and why? Include in your answer when this limit allowed to be changed?
Response:
The allowed cooldown rate is < 10° F / hr. The reason for this limit is to conserve inventory in the RPV and to limit the makeup required to the shell side of the Isolation condensers. Once a high pressure injection system is available and adequate makeup for the IC's is available, the cooldown limits can be increased IAW EOP direction
Refernece: ABN 3200-37

Result: SAT or UNSAT

Examiner's signature and date: ____________________ ________

Every JPM should:

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2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).
3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.
4. include the following, as applicable:
   - a. ✓ initial conditions
   - b. ✓ initiating cues
   - c. ✓ references and tools, including associated procedures
   - d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department
   - e. ✓ specific performance criteria that include:
     - (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step
     - (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked
     - (3) ✓ statements describing important observations that should be made by the examinee
     - (4) ✓ criteria for successful completion of the task
     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Job Performance Measure Worksheet

Facility: Oyster Creek **Task No:**

Task Title: Perform Alternate Rod Injection Logic Test

Job Performance Measure No: New (201-08)

K/A Reference: 295037 EA1.03 (4.1 / 4.1)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance X

Classroom Simulator X Plant

READ TO THE EXAMINEE
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	The plant is at 100% power
Task Standard:	Successfully perform ARI Rod Injection Logic Test
Required Materials:	stopwatch
General References:	617.4.014
Initiating Cue:	As the GSS, I am directing you to perform surveillance 617.4.014 ARI Rod Injection Logic Test
Time Critical Task:	No
Validation Time:	10 minutes

START TIME ______(* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
Provide surveillance test package to candidate		
1. Obtains current copy of procedure	Verifies Procedure 617.4.014 is correct test procedure	
2. Obtains GSS permission to perform test	GSS signs, dates and time Section 3.1	
CUE: As GSS, sign date and time for surveillance to begin		
3. Reviews all applicable precautions and limitations	Reviews all applicable precautions and limitations	
4. Obtains controlled stopwatch and records its control number	Obtains controlled stopwatch and records its control number	
*5. Verifies initial conditions	Verifies initial conditions: • H-2-a (ARI INITIATED) and H-3-a (ARI OFF NORMAL) are clear • ARI NORMAL BYPASS switch behind Panel 8R is in NORMAL • ARI LOGIC INITIATED indicating light behind Panel 8R is extinguished	
*6. Place ARI NORMAL BYPASS switch behind 8R in BYPASS	Place ARI NORMAL BYPASS switch behind 8R in BYPASS and verifies the following: • ARI LOGIC INITIATED light (8R) remains extinguished • H-2-a ARI INITIATED remains clear • H-3-a ARI OFF NORMAL actuates	
*7. Depress ARI RV Lo-Lo Water Level test pushbutton	Depress ARI RV Lo-Lo Water Level test pushbutton (8R), then release and verify the following: • ARI LIGIC INITIATED light (8R) illuminates • H-2-a ARI INITIATED actuates • H-3-a ARI OFF NORMAL remains actuated • ARI solenoids did not actuate, as verified by scram valves remaining closed and SDV valves open on Panel 4F	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
*8. Press ALT rod Injection Reset	After waiting at least 60 seconds, presses the ALT rod Injection Reset pb on Panel 4F, then verifies the following: • H-2-a ARI INITIATED clears • H-3-a ARI OFF NORMAL remains actuated • ARI LOGIC INITIATED light (8R) extinguishes)	
*9. Depress ARI RV High Pressure pushbutton	Depresses the ARI RV High Pressure test pb (8R) and verifies the following: • ARI LIGIC INITIATED light (8R) illuminates • H-2-a ARI INITIATED actuates • H-3-a ARI OFF NORMAL remains actuated • ARI solenoids did not actuate, as verified by scram valves remaining closed and SDV valves open on Panel 4F	
*10. Press ALT rod Injection Reset	After waiting at least 60 seconds, presses the ALT rod Injection Reset pb on Panel 4F, then verifies the following: • H-2-a ARI INITIATED clears • H-3-a ARI OFF NORMAL remains actuated • ARI LOGIC INITIATED light (8R) extinguishes)	
*11. Depress ALT Rod injection INITIATION pushbutton	Depresses the ARI RV Initiation pb (Panel 4F) and verifies the following: • H-2-a ARI INITIATED actuates • H-3-a ARI OFF NORMAL remains actuated • ARI solenoids did not actuate, as verified by scram valves remaining closed and SDV valves open on Panel 4F • ARI LIGIC INITIATED light (8R) illuminates	
*12. Press the ALT Rod Injection reset pushbutton	After waiting at least 60 seconds, presses the ALT rod Injection Reset pb on Panel 4F, then verifies the following: • H-2-a ARI INITIATED clears • H-3-a ARI OFF NORMAL remains actuated • ARI LOGIC INITIATED light (8R) extinguishes)	

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
The following steps 6.10 Verify the setting of the ARI Reset time delay relay will not be performed CUE: Inform the candidate that Section 6.10 has been completed; the elasped time was 50 seconds		
*13. Return the ARI Normal Bypass switch to NORMAL	Returns the ARI Normal Bypass switch (8R) to NORMAL and verifies the following: • H-2-a ARI INITIATED clears • H-3-a ARI OFF NORMAL clears • ARI LOGIC INITIATED light (8R) extinguishes	
14. Review results of surveillance against Acceptance Criteria	Reviews results of surveillance against Acceptance Criteria and informs GOS/GSS that the surveillance is completed and acceptable	

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. New (201-08)

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

1. 202001 K1.27 ATWS Circuitry (4.1/4.3)

What is the safety significance of the Recirc Pump trip logic system?

Response:
The Recirc Pump trip logic uses high RPV pressure and low RPV level signals to trip the pumps in the event of an ATWS. Tripping the pumps provides for a rapid voiding of the core, causing a rapid power reduction

Reference: EOP Basis document 3200.02

Result: SAT or UNSAT

Question:

2. 295001 AK1.04 Limiting Cycle oscillation(2.5/3.3)

BWR's are susceptible to power oscillations. What are the operating conditions that can cause power oscillations to occur and explain why the oscillations occur?

Response:
Conditions of high power and low coolant flow setup the conditions for power oscillations. They occur as high power regions of the core void, forcing coolant to other regions of the core. As those regions up power and the other regions voiding downpower, the reverse occurs. The voided regions now re-flood and drive up power. This oscillation continues until core flow is increased or cram rods are inserted to lower overall reactor power
Reference:Tech Spec Basis 2.1

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Appendix C	Job Performance Measure Quality Checklist	Form ES-C-2

Every JPM should:

1. ✓ be supported by facility licensee's job task analysis.

2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).

3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.

4. include the following, as applicable:

   a. ✓ initial conditions

   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

   d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ specific performance criteria that include:

      (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ statements describing important observations that should be made by the examinee

      (4) ✓ criteria for successful completion of the task

      (5) ✓ identification of those steps that are considered critical

      (6) ✓ restrictions on the sequence of steps

   f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:** 2790502401

Task Title: Manually scram the reactor by venting the scram air header

Job Performance Measure No: 201-07

K/A Reference: 212000 A4.11 (3.7 / 3.7)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance X Actual Performance

Classroom Simulator Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	The plant has experienced a failure to scram and de-energizing the scram solenoids was not successful
Task Standard:	Rods are all inserted and air header is restored
Required Materials:	none
General References:	EMG-3200.01B RPV CONTROL - ATWS Support Procedure 21
Initiating Cue:	The GOS directs you to vent the scram air header using Support Procedure 21
Time Critical Task:	No
Validation Time:	3 minutes

START TIME ___ (* indicates Critical Task)

PERFORMANCE CHECKLIST		STANDARD	INITIAL SAT/ UNSAT
1.	Obtain controlled copy of procedure	Obtains support procedure 21, Step 3.3	
*2.	Closes V-6-175, Scram Air Header Isolation.	Closes V-6-175, Scram Air Isolation, Rx Bldg 23' east side of drywell.	
CUE: V-6-175 is closed			
*3.	Opens V-6-409, Scram Air Header Vent Valve.	Opens V-6-409, Scram Air Header Vent, Rx Bldg 23' east side of drywell.	
CUE: V-6-409 is open			
4.	Communicates with the Control Room.	Establishes communication with the Control Room via paging system, radio or telephone and reports scram air header vented.	
CUE:	Upon request, the evaluator will provide the following information: Control Room informs operator that all rods are inserted.		
*5.	Close V-6-409, Scram Air Header Vent Valve	Closes V-6-409, (Scram Air Header Vent)	
CE: V-6-409 closed			
*6.	Opens V-6-175, Scram Air Header Isolation Valve	Opens V-6-175, (Scram Air Isolation)	
CUE: V-6-175 open			

COMPLETION TIME_____

VERIFICATION OF COMPLETION

Job Performance Measure No. 201-07

Examinee's Name: ______________________________

Examiner's Name: ______________________________

Date performed: ________________

Number of attempts: _____

Time to complete: __________

Question Documentation:

Question:

1. AK2.11 Instrument Air (3.5/3.7)

Explain the response of the CRD Hydraulic system when the Scram air vent header valve is opened.

Response:
By closing valve 175 and opening 409, the following is accomplished:

- The scram air header is isolated from Instrument Air (closing 175)
- The air header is now depressurized by opening 409
- The scram inlet and outlet valves fail open
- HCU pressure /rector pressure insert/scram the rod
- The SDV vent and drain valve fail closed

Reference: BR 2013 and GE197E871

Result: SAT or UNSAT

Question:

2. 2. 295015 AA1.02 RPS (4.0/4.2)

An ATWS is in progress. The MSIV's are open. Explain how the CRD Hydraulic system responds when RPS subchannels are placed to TRIP.

Response:
The sub channels de-energize the scram pilot valves and do not after the rest of RPS

Reference: GE 237E566

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.
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   - a. ✓ initial conditions
   - b. ✓ initiating cues
   - c. ✓ references and tools, including associated procedures
   - d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department
   - e. ✓ specific performance criteria that include:
     - (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step
     - (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked
     - (3) ✓ statements describing important observations that should be made by the examinee
     - (4) ✓ criteria for successful completion of the task
     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

TAB 3

Job Performance Measure Worksheet

Facility: Oyster Creek **Task No:** 2000502401

Task Title: PAR during a General Emergency

Job Performance Measure No: New (345-04)

K/A Reference: 2.4.41 (2.3 / 4.1)

Examinee: ____________ **NRC Examiner:** ____________

Date: ________

Method of testing:

Simulated Performance Actual Performance X

Classroom X Simulator X Plant X

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	The reactor is scrammed; an unisoable Isolation condenser tube break combined with major fuel damage has resulted in an uncontrolled release to the environment
Task Standard:	Classify the event and Make a PAR
Required Materials:	None
General References:	EPIP-OC-01 EPIP-oC-02
Initiating Cue:	Projected dose rates at the Site Boundary are 1225 mRem total Whole Body dose. Classify the event based on current status of plant and assume duties as the Emergency Director
Time Critical Task:	No
Validation Time:	9 minutes

START TIME ___

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain controlled copy of procedure	Obtains copy of EPIP-OC-01 CLASSIFICATION OF EMERGENCY CONDITIONS	
2. Evaluate Appendix 1	From the conditions given, evaluates Appendix 1 and determines the following: • Per Category J Radiological Releases, with a valid integrated dose at the site boundary equal to or greater than 1000 mRem TEDE, a General Emergency is to be declared	
Cue: Once the GE has been declared, that as the GSS, he now needs to assume the duties of the Emergency Director and he should implement EPIP-OC-02		
3. Obtain controlled copy of procedure	Obtains controlled copy of EPIP-OC-02	
4. Assume ED responsibilities	Reviews Exhibit 2	
5. Completes Exhibit 1 for General Emergency	Performs the following: • Announces himself as ED • Directs that offsite agencies be notified • Directs page announcements • Directs Security Shift Supervisor to implement EPIC-OC-40	
CUE: Give the following conditions to the candidate: 1. It is 6 AM on a summer morning 2. The weather is fair, no rain is forecasted, the wind is off the ocean at 5 mph		
6. Makes PAR	Refers to Exhibit 1b, PAR LOGIC, and makes the following recommendation: Evacuate a 2 mile radius and 5 miles downwind and shelter any areas of the 10 mile EPZ not evacuated	
7. Continues assessment of PAR based on all available plant and field monitoring information		

COMPLETION TIME_____

Appendix C | Form ES-C-1

VERIFICATION OF COMPLETION

Job Performance Measure No. New (345-04)

Examinee's Name: ______________________________

Examiner's Name: ______________________________

Date performed: ________________

Number of attempts: _____

Time to complete: __________

Question Documentation:

Question: N/A

Response:

Result: SAT or UNSAT

Question: N/A

Response:

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Every JPM should:

1. ✓ be supported by facility licensee's job task analysis.
2. ✓ be operationally important (meets NRC K/A Catalog threshold criterion of 2 (3 for requalification exams) or as determined by the facility and agreed to by the NRC).
3. ✓ be designed as either SRO only, RO/SRO or AO/RO/SRO.
4. include the following, as applicable:
   - a. ✓ initial conditions
   - b. ✓ initiating cues
   - c. ✓ references and tools, including associated procedures
   - d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department
   - e. ✓ specific performance criteria that include:
     - (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step
     - (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked
     - (3) ✓ statements describing important observations that should be made by the examinee
     - (4) ✓ criteria for successful completion of the task
     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. N/A prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Job Performance Measure Worksheet

Facility: Oyster Creek **Task No:** 2150101001

Task Title: Perform Pre-Critical Checkoff Attachment 201.1-2 Section 12

Job Performance Measure No: New

K/A Reference: 2.1.31 (4.2 / 3.9)

Examinee: ________________ **NRC Examiner:** ________________

Date: ________

Method of testing:

Simulated Performance Actual Performance x

Classroom Simulator x Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: Preparations for a reactor startup are in progress IAW 201.1Approach to Criticality

Task Standard: Complete Pre-Critical Checkoff sheet Attachment 201.1-2 Section 12 Nuclear Instrumentation

Required Materials: Attachment 201.1-2

General References: Approach to Criticality Procedure 201.1

Initiating Cue: As the GOS, I am directing you to perform Section 12 of Attachment 201.1-2

Time Critical Task: No

Validation Time: 5 minutes

START TIME ____ (* indicates Critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain current copy of procedure	Obtains copy of Attachment 201.1-2	
Note: Give candidate a copy of Attachment 201.2-4 with Steps 12.1, 12.2, and 12.3 initialed and dated		
*2. Two or more SRM's > 3 cps	Determines that all 4 SRM's are > 3 cps, then initials and dates Attachment	
*3. Record SRM count rates	Records SRM count rates, then initials and dates Attachment	
*4. SRM detectors at ALL IN	Checks all SRM detectors full in, then initials and dates Attachment	
*5. Check all SRM Channels operable	Checks all channels operable, then initials and dates Attachment	
*6. Selects SRM recorders to highest indicating channels	Selects SRM recorders to highest indicating channels, then initials and dates Attachment	
*7. IRM detectors at ALL IN	Checks all IRM detectors full in, then initials and dates Attachment	
*8. IRM range switches in Position 1	Checks all IRM range switches in Position 1, then initials and dates Attachment	
*9. IRM channels selected for recording	Checks all recorder switches are selected to IRM, then initials and dates Attachment	
*10. Check all IRM's operable	Checks all IRM's operable, then initials and dates Attachment	
*11. Check APRM channels operable	Checks APRM channels operable, then initials and dates Attachment	
12. Informs GOS that Pre-Critical Checkoff sheet Section 12 for Nuclear Instrumentation is completed		
CUE: SRM Test and Calibration, IRM Test and Calibration, and APRM Surveillance Test have been completed and are expected to remain current during the startup period		

COMPLETION TIME______

Appendix C | VERIFICATION OF COMPLETION | Form ES-C-1

Job Performance Measure No. New

Examinee's Name:________________________________

Examiner's Name:________________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question: N/A

Response:

Result: SAT or UNSAT

Question: N/A

Response:

Result: SAT or UNSAT

Examiner's signature and date: ________________________________ __________

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4. include the following, as applicable:

   a. ✓ initial conditions

   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

   d. ✓ validated time limits (average time allowed for completion) and specific designation of those JPMs that are deemed to be time-critical by the facility operations department

   e. ✓ specific performance criteria that include:

      (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

      (2) ✓ system response and other cues that are complete and correct so that the examiner can properly cue the examinee, if asked

      (3) ✓ statements describing important observations that should be made by the examinee

      (4) ✓ criteria for successful completion of the task

      (5) ✓ identification of those steps that are considered critical

      (6) ✓ restrictions on the sequence of steps

   f. N/A prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

John McNeil

Facility: Oyster Creek **Task No:** 2150101402

Task Title: Perform IRM Accuracy check IAW Attachment 201.2-4

Job Performance Measure No: New

K/A Reference: 2.1.23 (3.9 / 4.0)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance x

Classroom Simulator x Plant

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions:	A plant Startup is in progress per 201.2
Task Standard:	Determine if IRM's are accurate based on number of open Bypass Valves
Required Materials:	Attachment 201.2-4
General References:	Plant Heatup to Hot Standby 201.2
Initiating Cue:	Step 5.31 of Procedure 201.2
Time Critical Task:	No
Validation Time:	5 minutes

START TIME ____ (* indicates critical step)

PERFORMANCE CHECKLIST	STANDARD	INITIAL SAT/UNSAT
1. Obtain current copy of 201.2	Obtains 201.2 and opens to step 5.31	
Note: Give candidate a copy of Attachment 201.2-4 for him to record data.		
*2. Calculates Reactor Power	Calculates reactor power using the following correlation: Bypass Valve Position X .5 = Reactor Power (Bypass Valve Position is indicated on the recorder on Panel 14R is in % of rated BYP Flow)	
3. Record data	Records data on Attachment 201.204	
*4. Record current IRM reading and range	On Attachment 201.2-4, records each IRM reading and range in the column under 2 Bypass Valves open	
5. Convert IRM reading to Reactor Power-percent of rated	From IRM recorder readings, divides each reading by 10	
*6. Determine Percent error between Calculated reactor power and IRM indicated percent power	If the difference is < 2%, then IRM accuracy is acceptable. Determines that all IRM's are acceptable	
7. Informs GOS that the IRM accuracy check for 2 Bypass Valves open is acceptable		

COMPLETION TIME______

VERIFICATION OF COMPLETION

Job Performance Measure No. New

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question: N/A

Response:

Result: SAT or UNSAT

Question: N/A

Response:

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

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   b. ✓ initiating cues

   c. ✓ references and tools, including associated procedures

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   e. ✓ specific performance criteria that include:

      (1) ✓ expected actions with exact control and indication nomenclature and criteria (switch position, meter reading), even if these criteria are not specified in the procedural step

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      (3) ✓ statements describing important observations that should be made by the examinee

      (4) ✓ criteria for successful completion of the task

      (5) ✓ identification of those steps that are considered critical

      (6) ✓ restrictions on the sequence of steps

   f. N/A prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)

Facility: Oyster Creek **Task No:**

Task Title: Turbine Building Ventilation

Job Performance Measure No: New

K/A Reference: 2.3.11 (2.7 / 3.2)

Examinee: ______________ **NRC Examiner:** ______________

Date: ________

Method of testing:

Simulated Performance Actual Performance

Classroom x Simulator Plant x

READ TO THE EXAMINEE

I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: N/A

Task Standard: Answer questions concerning Turb Bldg Ventilation

Required Materials: None

General References: TB HVAC Procedure 328; HVAC Flow P&ID BR 2009

Initiating Cue: This JPM should be performed while in the Turb Building during Category B2 JPM's

Time Critical Task: No

Validation Time: N/A

VERIFICATION OF COMPLETION

Job Performance Measure No. New

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

Recently, signs were posted on turbine building doors requiring them to be closed at all times. Why is this posting needed?

Response:

Keeping Turbine building doors closed ensures the ventilation system can perform its designed function of maintaining the building at a slightly negative pressure, ensuring no unmonitored releases can occur.

If doors are left open , the correct flow paths and pressures cannot be maintained.

Result: SAT or UNSAT

Question:

Explain all Turbine Building Ventilation flowpaths through the building up to and including normal release paths.

Response:

Using P& ID BR 2009 Sheets 1 and 2, the candidate can give a detailed description of all turbine Building Flowpaths.

Turb Building HVAC consists of Turb Bldg South, North, Operating Floor and Feed and Condensate Pump Room subsystems

South: SF-1-and 2 draw outside air and supply it to Cond Demin area, Basement south end, 4160 VAC switchgear room and MVP and SJAE rooms.

Operating Floor: SF 1-3 or 4 and SF1-5 or 6 supply outside air to the Floor. The floor is exhausted by fan EF1-33

North: SF1-5 and SF1-6 draw outside air and supply it to the north end of the TB. EF1-4 draws air of the north side and discharges it through the TB Stack

Feed and Condensate Pump Room: Sf1-7 supplies outside air to this room. Ef1-1 removes air from this room

Result: SAT or UNSAT

Examiner's signature and date: ______________________ __________

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Facility: Oyster Creek **Task No:**

Task Title: Shutdown Crew Staffing Requirements

Job Performance Measure No: NEW

K/A Reference: 2.1.4 (2.3 / 3.4)

Examinee: ____________________ **NRC Examiner:** ____________________

Date: __________

Method of testing:

Simulated Performance Actual Performance

Classroom x Simulator x Plant x

READ TO THE EXAMINEE
I will explain the initial conditions, which steps to simulate or discuss, and provide initiating cues. When you complete the task successfully, the objective for this job performance measure will be satisfied.

Initial Conditions: N/A

Task Standard: Answer questions concerning Shutdown crew

Required Materials: None

General References: Conduct of Operations 106 Section 5.7.1.8

Initiating Cue: This JPM should be performed at RSP or LSP during Category B2 JPM's

Time Critical Task: NO

Validation Time: N/A

VERIFICATION OF COMPLETION

Job Performance Measure No. New

Examinee's Name:______________________________

Examiner's Name:______________________________

Date performed:________________

Number of attempts:_____

Time to complete:__________

Question Documentation:

Question:

What is the purpose of the shutdown crew and how many members are assigned to it?

Response:

The purpose of the Shutdown crew is to be able to ensure a safe shutdown of the plant if the Control Room needed to be evacuated in accordance with ABN-3200.30, Control Room Evacuation

It consists of at least five (5) members who are qualified in accordance with the Control room Evacuation Procedure

Result: SAT or UNSAT

Question:

What member or members of the Station compliment is /are NOT allowed to be assigned to the Shutdown Crew?

Response:

Personnel filling other positions on the Shift Coverage Log may also be on the Shutdown Crew, WITH THE EXCEPTION OF MEMBERS ASSIGNED TO THE FIRE BRIGADE

Result: SAT or UNSAT

Examiner's signature and date: ______________________________ __________

Appendix C	Job Performance Measure Quality Checklist	Form ES-C-2

Every JPM should:

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     - (5) ✓ identification of those steps that are considered critical
     - (6) ✓ restrictions on the sequence of steps
   - f. ✓ prescripted follow-up questions and answers to evaluate two K/A statements related to the system or task (initial examination only)