Facility: DRESDEN Date of Exam: 6/3/02 Exam Level: RO/SRO

Item Description					Initial a	Initial b*	Initial c#
1. Questions and answers technically accurate and applicable to facility					MO	[illegible]	[illegible]
2. a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available					MO	[illegible]	[illegible]
3. RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per Section D.2.d of ES-401					MO	[illegible]	[illegible]
4. Question selection and duplication from the last two NRC licensing exams appears consistent with a systematic sampling process							[illegible]
5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: ✓ the audit exam was systematically and randomly developed; or __ the audit exam was completed before the license exam was started; or __ the examinations were developed independently; or ✓ the licensee certifies that there is no duplication; or __ other (explain)					MO	[illegible]	[illegible]
6. Bank use meets limits (no more than 75 percent from the bank at least 10 percent new, and the rest modified); enter the actual question distribution at right	Bank	Modified	New		MO	[illegible]	[illegible]
	30	23	47				
7. Between 50 and 60 percent of the questions on the exam (including 10 new questions) are written at the comprehension/analysis level; enter the actual question distribution at right	Memory	C/A			MO	[illegible]	[illegible]
	42	58					
8. References/handouts provided do not give away answers					MO	[illegible]	[illegible]
9. Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the Tier to which they are assigned; deviations are justified					MO	[illegible]	[illegible]
10. Question psychometric quality and format meet ES, Appendix B, guidelines					MO	[illegible]	[illegible]
11. The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet					MO	[illegible]	[illegible]

	Printed Name / Signature	Date
a. Author	MARK OTTEN / [signature]	2/20/02
b. Facility Reviewer (*)	D. Gorek / [signature]	3/8/02
c. NRC Chief Examiner (#)	Dell McNeil / Dell R. McNeil	5/16/02
d. NRC Regional Supervisor	David E. Hills / David E. Hills	5/17/02

Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations.
Independent NRC reviewer initial items in Column "c;" chief examiner concurrence required.

Facility: DRESDEN Date of Exam: 6/3/02 Exam Level RO/SRO

	Item Description	Initial a	Initial b*	Initial c*
1.	Questions and answers technically accurate and applicable to facility	MO	Dh	Sm
2.	a. NRC K/As referenced for all questions b. Facility learning objectives referenced as available	MO	Dh	Sm
3.	RO/SRO overlap is no more than 75 percent, and SRO questions are appropriate per Section D.2.d of ES-401	MO	Dh	Sm
4.	Question selection and duplication from the last two NRC licensing exams appears consistent with a systematic sampling process			Sm
5.	Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: ✓ the audit exam was systematically and randomly developed; or __ the audit exam was completed before the license exam was started; or __ the examinations were developed independently; or ✓ the licensee certifies that there is no duplication; or __ other (explain)	MO	Dh	Sm
6.	Bank use meets limits (no more than 75 percent from the bank at least 10 percent new, and the rest modified); enter the actual question distribution at right — Bank: 37; Modified: 27; New: 32	MO	Dh	Sm
7.	Between 50 and 60 percent of the questions on the exam (including 10 new questions) are written at the comprehension/analysis level; enter the actual question distribution at right — Memory: 48; C/A: 52	MO	Dh	Sm
8.	References/handouts provided do not give away answers	MO	Dh	Sm
9.	Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the Tier to which they are assigned; deviations are justified	MO	Dh	Sm
10.	Question psychometric quality and format meet ES, Appendix B, guidelines	MO	Dh	Sm
11.	The exam contains 100, one-point, multiple choice items; the total is correct and agrees with value on cover sheet	MO	Dh	Sm

	Printed Name / Signature	Date
a. Author	MARK OTTEN / [signature]	3/20/02
b. Facility Reviewer (*)	D H Grovek / [signature]	3-28-02
c. NRC Chief Examiner (#)	Dell McNeil / Dell R. McNeil	5/16/02
d. NRC Regional Supervisor	David E. Hills / David E Hills	5/17/02

Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations.
\# Independent NRC reviewer initial items in Column "c;" chief examiner concurrence required.

Revised

BWR SRO Examination Outline

Printed: 02/07/2002

Facility: Dresden

Form ES-401-1

Exam Date: 05/27/2002

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

3. Generic Knowledge And Abilities	Cat 1	Cat 2	Cat 3	Cat 4	
	4	5	4	4	17

Note:

1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.
2. Actual point totals must match those specified in the table.
3. 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.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category tier.

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295003	Partial or Complete Loss of A.C. Power / 6				X			AA1.03 - Systems necessary to assure safe plant shutdown	4.4*	1
295003	Partial or Complete Loss of A.C. Power / 6		X					AK2.03 - A.C. electrical distribution system	3.9	1
295009	Low Reactor Water Level / 2					X		AA2.02 - Steam flow/feedflow mismatch	3.7	1
295010	High Drywell Pressure / 5					X		AA2.06 - Drywell temperature	3.6	1
295013	High Suppression Pool Temperature / 5					X		AA2.01 - Suppression pool temperature	4.0	1
295014	Inadvertent Reactivity Addition / 1		X					AK2.01 - RPS	4.1	1
295014	Inadvertent Reactivity Addition / 1			X				AK3.02 - Control rod blocks	3.7	1
295015	Incomplete SCRAM / 1						X	2.4.30 - Knowledge of which events related to system operations/status should be reported to outside agencies.	3.6	1
295015	Incomplete SCRAM / 1	X						AK1.04 - Reactor pressure: Plant-Specific	3.8	1
295016	Control Room Abandonment / 7						X	2.1.32 - Ability to explain and apply system limits and precautions.	3.8	1
295016	Control Room Abandonment / 7				X			AA1.04 - A.C. electrical distribution	3.2	1
295017	High Off-Site Release Rate / 9		X					AK2.04 - Plant ventilation systems	3.3	1

Exam Submittal

Facility: Dresden

BWR SRO Examination Outline

Printed: 02/07/2002

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295023	Refueling Accidents / 8						X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
295023	Refueling Accidents / 8				X			AA1.03 - Fuel handling equipment	3.6	1
295024	High Drywell Pressure / 5	X						EK1.01 - Drywell integrity: Plant-Specific	4.2*	1
295025	High Reactor Pressure / 3						X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1
295025	High Reactor Pressure / 3			X				EK3.04 - Isolation condenser initiation: Plant-Specific	4.7*	1
295030	Low Suppression Pool Water Level / 5					X		EA2.04 - Drywell/ suppression chamber differential pressure: Mark-I&II	3.7	1
295031	Reactor Low Water Level / 2					X		EA2.01 - Reactor water level	4.6*	1
295031	Reactor Low Water Level / 2		X					EK2.16 - Reactor water level control	4.1	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				X			EA1.04 - SBLC	4.5*	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	X						EK1.02 - Reactor water level effects on reactor power	4.3*	1
295038	High Off-Site Release Rate / 9				X			EA1.03 - Process liquid radiation monitoring system	3.9	1
295038	High Off-Site Release Rate / 9	X						EK1.03 - †Meteorological effects on off-site release	3.8	1

Exam Submittal

Facility: Dresden

BWR SRO Examination Outline

Printed: 02/07/2002

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
500000	High Containment Hydrogen Concentration / 5		X					EK2.09 - Drywell nitrogen purge system	3.3	1
500000	High Containment Hydrogen Concentration / 5			X				EK3.01 - Initiation of containment atmosphere control system	3.3	1

K/A Category Totals: 4 5 3 5 5 4

Group Point Total: 26

Exam Submittal

Facility: Dresden

BWR SRO Examination Outline

Printed: 02/07/2002

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295001	Partial or Complete Loss of Forced Core Flow Circulation / 1						X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
295002	Loss of Main Condenser Vacuum / 3						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
295002	Loss of Main Condenser Vacuum / 3		X					AK2.04 - Reactor/turbine pressure regulating system	3.3	1
295004	Partial or Complete Loss of D.C. Power / 6			X				AK3.02 - Ground isolation/fault determination	3.3	1
295005	Main Turbine Generator Trip / 3				X			AA1.04 - Main generator controls	2.8	1
295005	Main Turbine Generator Trip / 3	X						AK1.02 - †Core thermal limit considerations	3.6	1
295008	High Reactor Water Level / 2			X				AK3.04 - Reactor feed pump trip: Plant-Specific	3.5	1
295019	Partial or Complete Loss of Instrument Air / 8					X		AA2.02 - Status of safety-related instrument air system loads (see AK2.1-AK2.19)	3.7	1
295019	Partial or Complete Loss of Instrument Air / 8		X					AK2.17 - High pressure coolant injection: Plant-Specific	2.7	1
295022	Loss of CRD Pumps / 1					X		AA2.01 - Accumulator pressure	3.6	1
295028	High Drywell Temperature / 5	X						EK1.02 - Equipment environmental qualification	3.1	1
295029	High Suppression Pool Water Level / 5					X		EA2.03 - Drywell/containment water level	3.5	1

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Facility: Dresden

BWR SRO Examination Outline

Printed: 02/07/2002

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-1

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295032	High Secondary Containment Area Temperature / 5						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
295032	High Secondary Containment Area Temperature / 5				X			EA1.03 - Secondary containment ventilation	3.7	1
295033	High Secondary Containment Area Radiation Levels / 9				X			EA1.01 - Area radiation monitoring system	4.0	1
295034	Secondary Containment Ventilation High Radiation / 9	X						EK1.01 - Personnel protection	4.1	1
295035	Secondary Containment High Differential Pressure / 5			X				EK3.02 - Secondary containment ventilation response	3.5	1

K/A Category Totals:	3	2	3	3	3	3

Group Point Total: 17

BWR SRO Examination Outline

Printed: 02/07/2002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
202002	Recirculation Flow Control System / 1				X								K4.05 - Limiting recirculation pump speed mismatch: Plant-Specific	3.4	1
202002	Recirculation Flow Control System / 1					X							K5.01 - Fluid coupling: BWR-3, 4	2.8	1
206000	High Pressure Coolant Injection System / 2						X						K6.09 - Condensate storage and transfer system: BWR-2, 3, 4	3.5	1
206000	High Pressure Coolant Injection System / 2							X					A1.06 - System flow: BWR-2, 3, 4	3.7	1
209001	Low Pressure Core Spray System / 2	X											K1.10 - Emergency generator	3.8	1
209001	Low Pressure Core Spray System / 2			X									K3.03 - Emergency generators	3.0	1
211000	Standby Liquid Control System / 1											X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
215004	Source Range Monitor (SRM) System / 7										X		A4.04 - SRM drive control switches	3.2	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7									X			A3.07 - RPS status	3.8	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
216000	Nuclear Boiler Instrumentation / 7						X						K6.01 - A.C. electrical distribution	3.3	1

Exam Submittal

BWR SRO Examination Outline

Printed: 02/07/2002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
218000	Automatic Depressurization System / 3			X									K3.01 - Restoration of reactor water level after a break that does not depressurize the reactor when required	4.4*	1
218000	Automatic Depressurization System / 3				X								K4.01 - Prevent inadvertent initiatior of ADS logic	3.9	1
223001	Primary Containment System and Auxiliaries / 5									X			A3.02 - Vacuum breaker/relief valve operation	3.4	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5											X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5	X											K1.19 - Component cooling water systems	2.9	1
226001	RHR/LPCI: Containment Spray System Mode / 5		X										K2.02 - Pumps	2.9*	1
226001	RHR/LPCI: Containment Spray System Mode / 5					X							K5.02 - Water hammer	2.7	1
259002	Reactor Water Level Control System / 2								X				A2.01 - Loss of any number of main steam flo inputs	3.4	1
259002	Reactor Water Level Control System / 2										X		A4.06 - DP/Single/three element control selector switch: Plant-Specific	3.[illegible]	1

Exam Submitta

BWR SRO Examination Outline

Printed: 02/07/2002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
261000	Standby Gas Treatment System / 9								X				A2.04 - High train moisture content	2.7	1
262001	A.C. Electrical Distribution / 6		X										K2.01 - Off-site sources of power	3.6	1
264000	Emergency Generators (Diesel/Jet) / 6							X					A1.09 - Maintaining minimum load on emergency generator (to prevent reverse power)	3.1	1
	K/A Category Totals:	2	2	2	2	2	2	2	2	2	2	3	Group Point Total:		23

Exam Submittal

BWR SRO Examination Outline

Printed: 02/07/2002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201001	Control Rod Drive Hydraulic System / 1		X										K2.05 - Alternate rod insertion valve solenoids: Plant-Specific	4.5*	1
201006	Rod Worth Minimizer System (RWM) (Plant Specific) / 7									X			A3.05 - Latched group indication: P-Spec(Not-BWR6)	3.1	1
202001	Recirculation System / 1						X						K6.02 - Component cooling water systems	3.2	1
204000	Reactor Water Cleanup System / 2											X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	3.3	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4				X								K4.03 - Low reactor water level: Plant-Specific	3.8	1
215002	Rod Block Monitor System / 7	X											K1.01 - APRM: BWR-3, 4, 5	3.0	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5							X					A1.02 - System flow	3.5	1
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode / 5						X						K6.05 - Suppression pool	3.4	1
234000	Fuel Handling Equipment / 8											X	2.1.2 - Knowledge of operator responsibilities during all modes of plant operation.	4.0	1
245000	Main Turbine Generator and Auxiliary Systems / 4			X									K3.02 - Reactor pressure	4.0	1

Exam Submittal

BWR SRO Examination Outline

Printed: 02/07/2002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
262002	Uninterruptable Power Supply (A.C./D.C.) / 6			X									K3.17 - Process monitoring: Plant-Specific	3.1	1
271000	Offgas System / 9					X							K5.07 - Radioactive decay	2.9	1
400000	Component Cooling Water System (CCWS) / 8											X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1

K/A Category Totals:	1	1	2	1	1	2	1	0	1	0	3

Group Point Total: 13

Exam Submittal

BWR SRO Examination Outline

Printed: 02/07/2002

Facility: Dresden

ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-1

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
239001	Main and Reheat Steam System / 3					X							K5.06 - Air operated MSIV's	2.9	1
288000	Plant Ventilation Systems / 9								X				A2.01 - High drywell pressure: Plant-Specific	3.4	1
288000	Plant Ventilation Systems / 9											X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
290002	Reactor Vessel Internals / 5											X	2.1.32 - Ability to explain and apply system limits and precautions.	3.8	1
	K/A Category Totals:	0	0	0	0	1	0	0	1	0	0	2	Group Point Total:		4

Printed: 02/07/2002

BWR SRO Examination Outline

Facility: Dresden

Form ES-401-5

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.13	Knowledge of facility requirements for controlling vital / controlled access.	2.9	1
	2.1.11	Knowledge of less than one hour technical specification action statements for systems.	3.8	1
	2.1.22	Ability to determine Mode of Operation.	3.3	1
	2.1.8	Ability to coordinate personnel activities outside the control room.	3.6	1
			Category Total:	4
Equipment Control	2.2.3	(multi-unit) Knowledge of the design, procedural, and operational differences between units.	3.3	1
	2.2.8	Knowledge of the process for determining if the proposed change, test, or experiment involves an unreviewed safety question.	3.3	1
	2.2.26	Knowledge of refueling administrative requirements.	3.7	1
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	3.5	1
	2.2.34	Knowledge of the process for determining the internal and external effects on core reactivity.	3.2*	1
			Category Total:	5
Radiation Control	2.3.9	Knowledge of the process for performing a containment purge.	3.4	1
	2.3.6	Knowledge of the requirements for reviewing and approving release permits.	3.1	1
	2.3.2	Knowledge of facility ALARA program.	2.9	1
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	3.1	1
			Category Total:	4

Exam Submittal

Generic Knowledge and Abilities Outline (Tier 3)

BWR SRO Examination Outline

Printed: 02/07/2002

Facility: Dresden

Form ES-401-5

Generic Category	KA	KA Topic	Imp.	Points
Emergency Plan	2.4.32	Knowledge of operator response to loss of all annunciators.	3.5	1
	2.4.7	Knowledge of event based EOP mitigation strategies.	3.8	1
	2.4.35	Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.	3.5	1
	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	3.6	1

Category Total: 4

Generic Total: 17

Exam Submittal

Revised

BWR RO Examination Outline

Printed: 02/07/2002

Facility: Dresden

Form ES-401-2

Exam Date: 05/27/2002

Exam Level: RO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	4	3	3				2	1			0	13
	2	4	4	3				4	3			1	19
	3	0	0	1				2	0			1	4
	Totals Tier	8	7	7				8	4			2	36
2. Plant Systems	1	2	3	3	3	2	2	2	3	3	3	2	28
	2	1	2	2	2	3	2	2	2	2	1	0	19
	3	0	0	0	0	0	0	0	1	1	0	2	4
	Tier Totals	3	5	5	5	5	4	4	6	6	4	4	51

3. Generic Knowledge And Abilities	Cat 1	Cat 2	Cat 3	Cat 4	
	3	3	4	3	13

Note:

1. Attempt to distribute topics among all K/A Categories; select at least one topic from every K/A category within each tier.
2. Actual point totals must match those specified in the table.
3. 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.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category tier.

Exam Submittal

Facility: sden

BWR R' amination Outline

Printed: 02/( )2

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295005	Main Turbine Generator Trip / 3				X			AA1.04 - Main generator controls	2.7	1
295005	Main Turbine Generator Trip / 3	X						AK1.02 - †Core thermal limit considerations	3.2	1
295014	Inadvertent Reactivity Addition / 1		X					AK2.01 - RPS	3.9	1
295014	Inadvertent Reactivity Addition / 1			X				AK3.02 - Control rod blocks	3.7	1
295015	Incomplete SCRAM / 1	X						AK1.04 - Reactor pressure: Plant-Specific	3.8	1
295024	High Drywell Pressure / 5	X						EK1.01 - Drywell integrity: Plant-Specific	4.1	1
295025	High Reactor Pressure / 3			X				EK3.04 - Isolation condenser initiation: Plant-Specific	4.5*	1
295031	Reactor Low Water Level / 2		X					EK2.16 - Reactor water level control	4.1*	1
295031	Reactor Low Water Level / 2					X		EA2.01 - Reactor water level	4.6*	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1	X						EK1.02 - Reactor water level effects on reactor power	4.1*	1
295037	SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown / 1				X			EA1.04 - SBLC	4.5*	1
500000	High Containment Hydrogen Concentration / 5		X					EK2.09 - Drywell nitrogen purge system	3.0	1
500000	High Containment Hydrogen Concentration / 5			X				EK3.01 - Initiation of containment atmosphere control system	2.9	1

K/A Category Totals: 4 3 3 2 1 0

Group Point Total: 13

Exam Submittal

Facility: ›den

BWR R(‹amination Outline

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ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-2

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295002	Loss of Main Condenser Vacuum / 3		X					AK2.04 - Reactor/turbine pressure regulating system	3.2	1
295003	Partial or Complete Loss of A.C. Power / 6		X					AK2.03 - A.C. electrical distribution system	3.7	1
295003	Partial or Complete Loss of A.C. Power / 6				X			AA1.03 - Systems necessary to assure safe plant shutdown	4.4*	1
295004	Partial or Complete Loss of D.C. Power / 6			X				AK3.02 - Ground isolation/fault determination	2.9	1
295008	High Reactor Water Level / 2			X				AK3.04 - Reactor feed pump trip: Plant-Specific	3.3	1
295013	High Suppression Pool Temperature / 5					X		AA2.01 - Suppression pool temperature	3.8	1
295016	Control Room Abandonment / 7				X			AA1.04 - A.C. electrical distribution	3.1	1
295017	High Off-Site Release Rate / 9		X					AK2.04 - Plant ventilation systems	3.1	1
295017	High Off-Site Release Rate / 9			X				AK3.03 - †Implementation of site emergency plan	3.3	1
295018	Partial or Complete Loss of Component Cooling Water / 8						X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	2.5	1
295019	Partial or Complete Loss of Instrument Air / 8		X					AK2.17 - High pressure coolant injection: Plant-Specific	2.7	1
295020	Inadvertent Containment Isolation / 5					X		AA2.01 - Drywell/containment pressure	3.6	1
295028	High Drywell Temperature / 5	X						EK1.02 - Equipment environmental qualification	2.9	1
295029	High Suppression Pool Water Level / 5					X		EA2.02 - Reactor pressure	3.5	1

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E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295033	High Secondary Containment Area Radiation Levels / 9				X			EA1.01 - Area radiation monitoring system	3.9	1
295034	Secondary Containment Ventilation High Radiation / 9	X						EK1.01 - Personnel protection	3.8	1
295038	High Off-Site Release Rate / 9	X						EK1.03 - †Meteorological effects on off-site release	2.8	1
295038	High Off-Site Release Rate / 9				X			EA1.03 - Process liquid radiation monitoring system	3.7	1
600000	Plant Fire On Site / 8	X						AK1.02 - Fire Fighting	2.9	1

K/A Category Totals:	4	4	3	4	3	1	**Group Point Total:**	19

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
295023	Refueling Accidents / 8				X			AA1.03 - Fuel handling equipment	3.3	1
295023	Refueling Accidents / 8						X	2.1.14 - Knowledge of system status criteria which require the notification of plant personnel.	2.5	1
295032	High Secondary Containment Area Temperature / 5				X			EA1.03 - Secondary containment ventilation	3.7	1
295035	Secondary Containment High Differential Pressure / 5			X				EK3.02 - Secondary containment ventilation response	3.3	1

K/A Category Totals: 0 0 1 2 0 1

Group Point Total: 4

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ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201001	Control Rod Drive Hydraulic System / 1		X										K2.05 - Alternate rod insertion valve solenoids: Plant-Specific	4.5*	1
202002	Recirculation Flow Control System / 1				X								K4.05 - Limiting recirculation pump speed mismatch: Plant-Specific	3.1	1
202002	Recirculation Flow Control System / 1					X							K5.01 - Fluid coupling: BWR-3, 4	2.8	1
206000	High Pressure Coolant Injection System / 2						X						K6.09 - Condensate storage and transfer system: BWR-2, 3, 4	3.5	1
206000	High Pressure Coolant Injection System / 2							X					A1.06 - System flow: BWR-2, 3, 4	3.8	1
207000	Isolation (Emergency) Condenser / 4			X									K3.02 - †Reactor water level (EPG's address the isolation condenser as a water source): BWR-2, 3	3.8*	1
209001	Low Pressure Core Spray System / 2	X											K1.10 - Emergency generator	3.7	1
209001	Low Pressure Core Spray System / 2			X									K3.03 - Emergency generators	2.9	1
211000	Standby Liquid Control System / 1		X										K2.02 - Explosive valves	3.1*	1
212000	Reactor Protection System / 7		X										K2.01 - RPS motor-generator sets	3.2	1
212000	Reactor Protection System / 7										X		A4.06 - Control rod position	4.2*	1

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ES - 401 **Plant Systems - Tier 2 / Group 1** Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
215004	Source Range Monitor (SRM) System / 7										X		A4.04 - SRM drive control switches	3.2	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7									X			A3.07 - RPS status	3.8	1
215005	Average Power Range Monitor/Local Power Range Monitor System / 7					X							K5.06 - Assignment of LPRM's to specific APRM channels	2.5*	1
216000	Nuclear Boiler Instrumentation / 7						X						K6.01 - A.C. electrical distribution	3.1	1
216000	Nuclear Boiler Instrumentation / 7				X								K4.01 - Reading of nuclear boiler parameters outside the control room	3.6	1
218000	Automatic Depressurization System / 3			X									K3.01 - Restoration of reactor water level after a break that does not depressurize the reactor when required	4.4*	1
218000	Automatic Depressurization System / 3				X								K4.01 - Prevent inadvertent initiation of ADS logic	3.7	1
223001	Primary Containment System and Auxiliaries / 5									X			A3.02 - Vacuum breaker/relief valve operation	3.4	1
223002	Primary Containment Isolation System/Nuclear Steam Supply Shut-Off / 5	X											K1.19 - Component cooling water systems	2.7	1

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ES - 401

Plant Systems - Tier 2 / Group 1

Form ES-401-2

Sys/Ev #	**System / Evolution Name**	**K1**	**K2**	**K3**	**K4**	**K5**	**K6**	**A1**	**A2**	**A3**	**A4**	**G**	**KA Topic**	**Imp.**	**Points**
241000	Reactor/Turbine Pressure Regulating System / 3											X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.0	1
259001	Reactor Feedwater System / 2											X	2.1.2 - Knowledge of operator responsibilities during all modes of plant operation.	3.0	1
259002	Reactor Water Level Control System / 2								X				A2.01 - Loss of any number of main steam flo inputs	3.3	1
259002	Reactor Water Level Control System / 2										X		A4.06 - DP/Single/three element control selector switch: Plant-Specific	3.1	1
261000	Standby Gas Treatment System / 9								X				A2.04 - High train moisture content	2.5	1
261000	Standby Gas Treatment System / 9								X				A2.13 - High secondary containment ventilation exhaust radiation	3.4	1
264000	Emergency Generators (Diesel/Jet) / 6							X					A1.09 - Maintaining minimum load on emergency generator (to prevent reverse power)	3.0	1
264000	Emergency Generators (Diesel/Jet) / 6									X			A3.06 - Cooling water system operation	3.1	1
	K/A Category Totals:	2	3	3	3	2	2	2	3	3	3	2	**Group Point Total:**		28

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ES - 401

Plant Systems - Tier 2 / Group 2

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
201006	Rod Worth Minimizer System (RWM) (Plant Specific) / 7									X			A3.05 - Latched group indication: P-Spec(Not-BWR6)	3.0	1
202001	Recirculation System / 1						X						K6.02 - Component cooling water systems	3.1	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4				X								K4.03 - Low reactor water level: Plant-Specific	3.8	1
205000	Shutdown Cooling System (RHR Shutdown Cooling Mode) / 4										X		A4.11 - Heat exchanger cooling flow	3.2	1
215002	Rod Block Monitor System / 7	X											K1.01 - APRM: BWR-3, 4, 5	2.9	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5							X					A1.02 - System flow	3.5	1
219000	RHR/LPCI: Torus/Suppression Pool Cooling Mode / 5								X				A2.05 - A.C. electrical failures	3.3	1
226001	RHR/LPCI: Containment Spray System Mode / 5		X										K2.02 - Pumps	2.9*	1
226001	RHR/LPCI: Containment Spray System Mode / 5					X							K5.02 - Water hammer	2.6	1
230000	RHR/LPCI: Torus/Suppression Pool Spray Mode / 5						X						K6.05 - Suppression pool	3.3	1
239001	Main and Reheat Steam System / 3					X							K5.06 - Air operated MSIV's	2.8	1

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ES - 401 **Plant Systems - Tier 2 / Group 2** **Form ES-401-2**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
245000	Main Turbine Generator and Auxiliary Systems / 4			X									K3.02 - Reactor pressure	3.9	1
256000	Reactor Condensate System / 2								X				A2.12 - Loss of equipment component cooling water systems	3.1	1
262001	A.C. Electrical Distribution / 6		X										K2.01 - Off-site sources of power	3.3	1
262001	A.C. Electrical Distribution / 6							X					A1.01 - Effect on instrumentation and controls of switching power supplies	3.1	1
262002	Uninterruptable Power Supply (A.C./D.C.) / 6			X									K3.17 - Process monitoring: Plant-Specific	2.9	1
271000	Offgas System / 9					X							K5.07 - Radioactive decay	2.7	1
290003	Control Room HVAC / 9									X			A3.01 - Initiation/reconfiguration	3.3	1
300000	Instrument Air System (IAS) / 8				X								K4.02 - Cross-over to other air systems	3.0	1
	K/A Category Totals:	1	2	2	2	3	2	2	2	2	1	0	Group Point Total:		19

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ES - 401

Plant Systems - Tier 2 / Group 3

Form ES-401-2

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
215001	Traversing In-Core Probe / 7									X			A3.03 - Valve operation: Not-BWR1	2.5*	1
234000	Fuel Handling Equipment / 8											X	2.1.2 - Knowledge of operator responsibilities during all modes of plant operation.	3.0	1
288000	Plant Ventilation Systems / 9								X				A2.01 - High drywell pressure: Plant-Specific	3.3	1
288000	Plant Ventilation Systems / 9											X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	3.4	1
K/A Category Totals:		0	0	0	0	0	0	0	1	1	0	2	Group Point Total:		4

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Generic Knowledge and Abilities Outline (Tier 3)

BWR RO Examination Outline

Printed: 02/07/200

Form ES-401-5

Facility: Dresden

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.22	Ability to determine Mode of Operation.	2.8	1
	2.1.8	Ability to coordinate personnel activities outside the control room.	3.8	1
	2.1.32	Ability to explain and apply system limits and precautions.	3.4	1
			Category Total:	3
Equipment Control	2.2.26	Knowledge of refueling administrative requirements.	2.5	1
	2.2.2	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.	4.0	1
	2.2.34	Knowledge of the process for determining the internal and external effects on core reactivity.	2.8	1
			Category Total:	3
Radiation Control	2.3.2	Knowledge of facility ALARA program.	2.5	1
	2.3.4	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.	2.5	1
	2.3.1	Knowledge of 10 CFR 20 and related facility radiation control requirements.	2.6	1
	2.3.10	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.	2.9	1
			Category Total:	4
Emergency Plan	2.4.7	Knowledge of event based EOP mitigation strategies.	3.1	1
	2.4.35	Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.	3.3	1
	2.4.45	Ability to prioritize and interpret the significance of each annunciator or alarm.	3.3	1
			Category Total:	3

Generic Total: 13

The first 30 questions were used for the sample. All 125 questions were reviewed for accuracy and K/A match.

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
1	H	2												S	
2	F	2												S	
3	H	2.5												E	Put stem in past tense. Move The from each distractor to the stem.
4	H	2												E	Put stem in past tense.
5	H	2												S	
6	F	2												E	Add ? symbol at the end of the question.
7	H	2												E	Change the stem to read, "The cooldown rate is controlled by throttling the..." and delete repeated material in each distractor.
8	F	2												E	Move "at" from the end of the stem to correct location within stem. *Facility changed distractors to eliminate multiple correct answers.*
9	H	2.5												S	
10	H	2.5												S	

Instructions

[Refer to Section D of ES-401 and Appendix B for additional information regarding each of the following concepts.]

1. Enter the level of knowledge (LOK) of each question as either (F)undamental or (H)igher cognitive level.
2. Enter the level of difficulty (LOD) of each question using a 1 - 5 (easy - difficult) rating scale (questions in the 2 - 4 range are acceptable).
3. Check the appropriate box if a psychometric flaw is identified:
   - The stem lacks sufficient focus to elicit the correct answer (e.g., unclear intent, more information is needed, or too much needless information).
   - The stem or distractors contain cues (i.e., clues, specific determiners, phrasing, length, etc).
   - The answer choices are a collection of unrelated true/false statements.
   - More than one distractor is not credible.
   - One or more distractors is (are) partially correct (e.g., if the applicant can make unstated assumptions that are not contradicted by stem).
4. Check the appropriate box if a job content error is identified:
   - The question is not linked to the job requirements (i.e., the question has a valid K/A but, as written, is not operational in content).
   - The question requires the recall of knowledge that is too specific for the closed reference test mode (i.e., it is not required to be known from memory).
   - The question contains data with an unrealistic level of accuracy or inconsistent units (e.g., panel meter in percent with question in gallons).
   - The question requires reverse logic or application compared to the job requirements.
5. <u>Check questions that are sampled</u> for conformance with the approved K/A and those that are <u>designated SRO-only</u> (K/A and license level mismatches are unacceptable).
6. Based on the reviewer's judgment, is the question as written (U)nacceptable (requiring repair or replacement), in need of (E)ditorial enhancement, or (S)atisfactory?
7. At a minimum, explain any "U" ratings (e.g., how the Appendix B psychometric attributes are not being met).

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
11	F	2.0												E	Change stem to past tense.
12	H	2.0												S	
13	H	2.5												S	
14	H	2.5												E	Put the stem in past tense.
15	F	2.0												S	
16	F	2.0												S	
17	F	2.0										x		~~U~~S	K/A asks power supply to RPS MGs, question gives power supply. Station says Higher, Q is memory. *Licensee demonstrated that question matches K/A, and is higher skill question.*
18	H	2.5												S	
19	H	2.5												S	
20	F	2.0												S	
21	H	2.5												S	
22	F	2.0												S	
23	H	2.0												S	
24	F	2.0												S	
25	H	3.0												S	*Station added 'MSIVs are closed" to current plant conditions.*
26	H	2.5												S	
27	F	2.0												S	
28	H	2.5										x		~~U~~S	Doesn't satisfy the "predict" portion of the K/A. Does satisfy procedure. *Predicts because of knowing what equipment is left.*
29	H	2.0												S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
30	H	2.0												S	
31	F	2.0												S	
32	H	2.0												S	
33	F	2.0												S	Can distractor a. be construed as a correct answer? *a. was changed*
34	H	3.0												S	
35	F	2.0												S	
36	H	2.0												E	Put the stem in past tense.
37	H	2.0												E	Put the stem in past tense.
38	H	2.0												S	
39	H	2.5												S	
40	F	2.0												E	put the symbol "+" in front of all the inches (column 2).
41	H	3.0												S	
42	H	2.5												S	
43	H	3.0												S	
44	H	2.5												S	
45	H	2.5												S	
46	H	2.0												S	
47	F	2.0												S	
48	H	2.5												S	
49	H	2.0												S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
50	H	2.0												S	
51	F	2.0												S	
52	H	2.5												S	
53	H	2.5												U	Not higher. Only requires identification of memorized items. *Agree*
54	F	2.5												S	
55	H	2.5												S	
56	F	2.5												S	
57	H	2.5										x		U	Q doesn't match K/A. K/A addresses ability, Q addresses knowledge. Travelling is spelled traveling. *Reworked answers to require ability.*
58	H	2.0												S	
59	H	2.5												S	
60	H	2.5												S	
61	H	2.0												S	
62	H	2.0												E	Rework the first line into two statements.
63	F	2.5												S	
64	H	2.0												S	
65	F	2.0												S	
66	H	2.0												S	
67	H	2.5												S	
68	H	3.0										~~x~~		~~U~~S	Question deals with acceptable values, K/A with high pool temps *Have to know acceptable values as well as non-acceptable. Good as is.*

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
69	H	2.0												S	This question has two correct answers. b. needs to be changed. *Agree that b. is not correct because of initial conditions.*
70	F	2.5												S	
71	H	2.5												S	
72	F	2.0												S	
73	H	2.5												U	Not higher. Question is memory level. *Agreed*
74	F	2.5												S	
75	F	2.5												~~?~~S	high off-site release rate - vs - ventilation systems? *After explanation, agree with question as written.*
76	F	2.0												S	
77	F	2.0												S	
78	H	3.0												~~U~~S	Not higher. Question is memory level. *Special case, fails opposite of expected.*
79	F	2.5												S	
80	H	2.5												S	
81	H	2.5												S	
82	H	2.0												S	
83	H	2.0												S	
84	H	2.5												U	Not higher. Question is memory level. *Agreed.*
85	H	2.0												S	
86	H	2.5												U	May be higher. *Facility agrees - question is higher*
87	H	2.0												S	

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
88	H	2.5												S	May be two correct answers. HPCI exhaust goes to the torus. *Explained. Answer c. is not correct.*
89	H	2.5												E	Put the stem in past tense.
90	H	2.5												S	shouldn't the alarm be 903-4? *Agreed*
91	H	2.5												S	
92	H	2.0											?	S	check to see if acceptable *OK*
93	F	2.0												S	
94	F	2.5												S	
95	F	2.5												S	
96	F	2.0												S	
97	H	2.0												E	Put the stem in past tense. Re-word where necessary.
98	F	2.0												U	why is a. wrong? *a. was correct. changed a.*
99	F	2.0												S	
100	F	2.0												S	
101	F	2.0												S	
102	H	2.5												S	
103	F	2.0												S	
104	F	2.0												S	
105	H	2.0												S	
106	H	2.0												~~U~~S	Not higher. Question is memory level. *Minimally higher. Comparison with a setpoint is required to get the correct answer.*

Q#	1. LOK (F/H)	2. LOD (1-5)	3. Psychometric Flaws					4. Job Content Flaws				5. Other		6. U/E/S	7. Explanation
			Stem Focus	Cues	T/F	Cred. Dist.	Partial	Job-Link	Minutia	#/ units	Back-ward	Q= K/A	SRO Only		
107	F	2.0											x	U	answer doesn't match distracts *Changed to SRO question. corrected answer to correct wording.*
108	H	2.5												S	
109	F	2.0												S	
110	F	2.0												S	c. and d. are arguably the same response. *Clarified "on shift operator" so c. is not correct.*
111	F	2.0												S	
112	F	2.0												S	
113	F	2.0												U	Question is a memory level question. *Agreed*
114	F	2.0												S	May be multiple correct answers (RO/SRO required by license?) *Q is ok as stands. QNE is required for the calculations, not RO/SRO.*
115	F	2.0												S	
116	H	2.5												S	
117	F	2.5												S	
118	F	2.5												S	
119	H	2.5												U	change "a administrative" to "an administrative" This is a memory q. *Agreed, not higher.*
120	F	2.5												S	
121	H	3.0												S	
122	H	2.5												S	typo for the answer. its not 'e.'
123	F	2.0												S	
124	F	2.0												S	
125	F	2.0												S	make sure the other answers are incorrect. *verified - others are wrong.*

Updated

Tier / Group	Randomly Selected K/A	Reason for Rejection
BOTH 1/1	295007 AK3.01	Similar to Question #86 K/A 295025 EK3.04 replaced with 295031 EA2.01
BOTH 2/3	290002 K3.06	Replaced due to inapplicability to Dresden replaced with 288000 2.1.33
SRO 2/1	261000 2.4.30	Similar to Question #71 K/A 295015 2.4.30 replaced with 215005 2.2.22
SRO 2/2 RO 2/3	234000 A2.03	Replaced based on applicability comments from exam validators and facility representative, replaced with 234000 2.1.2

Q#	Exam	System	K/A	RO	SRO
1	BOTH	201001	K2.05	4.5	4.5

Control Rod Drive Hydraulic System	Objective: 212L-S2-06
Knowledge of electrical power supplies to the following:	Alternate rod insertion valve solenoids: Plant-Specific

The following events occurred in sequence from rated conditions on Unit 2:

- 125 VDC control power to Bus 22 was lost.
- A full reactor scram signal was received.
- Control rods were inserted by actuation of ARI

Which ONE of the following describes the expected response to the ARI initiation?

The ARI valves in:

A. division 1 energized.

B. division 2 energized.

C. both divisions energized.

D. both divisions DE-energized.

ANSWER:
a. division 1 energized.

Explanation:

ARI is an "energize to actuate" feature. With a loss of control power from Bus 22, the Division 2 ARI valves cannot energize. Only the Division 1 ARI valves will energize on the manual initiation.

Reference: SDM 212002	Question Pedigree: BANK 21200S0541
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
2	BOTH	201006	A3.05	3.0	3.1

Rod Worth Minimizer System (RWM Plant Specific)	Objective: 201L-S6-03, 20106LP005
Ability to monitor automatic operations of the ROD WORTH MINIMIZER SYSTEM (RWM) including:	Latched group indication: P-Spec(Not-BWR6)

After taking the shift, it is noticed that the Rod Worth Minimizer for control rod F-6 is displaying a rod position of 28 in GREEN. This indicates that the rod...

A. has an insert error.

B. is in an unknown position.

C. is in the current latched step.

D. has an alternate limit assigned.

Explanation:
ANSWER
c. is in the current latched step.

Explanation:
Insert error is Magenta, Unknown position is Red ??, and Alternate limit is Yellow

Reference: SDM 201006	Question Pedigree: Modified 20106S0181
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
3	BOTH	202001	K6.02	3.1	3.2

Recirculation System	Objective: 202L-S1-12b
Knowledge of the effect that a loss or malfunction of the following will have on the RECIRCULATION SYSTEM:	Component cooling water systems

Unit 2 is operating at rated conditions when the following events occur:

- The disc inside 2-3713 B-500 (2A RECIRC PMP OUTER SEAL CLR RBCCW INLET VLV) separates from the stem.
- Alarm "2A RECIRC PP SEAL CLG WTR FLOW LO" comes in.
- All other RBCCW parameters are normal.

If no operator actions are taken the...

A. 2A Recirc pump seals and bearings could be damaged within one minute.

B. TCVs on the RBCCW system will open to lower the RBCCW temperature.

C. 2A Recirc pump seals will operate normally as long as CRD flow is maintained.

D. RWCU system could isolate since cooling is lost to the non-regenerative heat exchanger.

Explanation:
ANSWER
a. 2A Recirc pump seals and bearings could be damaged within one minute.

Explanation:
B is wrong since there are no indications that RBCCW temperature is rising. C is incorrect because with cooling flow lost damage could occur with or with out CRD flow. (Common misconception is that with CRD flow lost damage occurs in a short amount of time.) D is wrong since the RWCUs are on a different loop of the RBCCW system.

Reference: DOA 3700-01 and DAN 902(3)-4 G-3	Question Pedigree: NEW
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
4	BOTH	202002	K4.05	3.1	3.4

Recirculation Flow Control System	Objective: 202L-S2-05
Knowledge of RECIRCULATION FLOW CONTROL SYSTEM design feature(s) and/or interlocks which provide for the following:	Limiting recirculation pump speed mismatch: Plant-Specific

The recirculating pumps are operating in the Master Manual mode at 75% speed when the Speed Controller for the 3A pump saturates high. Because of this, the 3A...

A. pump increases to 85% speed and stops.

B. pump increases to the high speed electrical stop.

C. pump increases to the high speed mechanical stop.

D. scoop tube will lock out due to a failed control signal.

Explanation:
ANSWER:
a. pump increases to 85% speed and stops.

Explanation:
The pump mismatch circuitry will stop any further pump speed increases once the mismatch exceeds 10%.

Reference: SDM 202002	Question Pedigree: BANK 20202S0151
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
5	BOTH	202002	K5.01	2.8	2.8

Recirculation Flow Control System	Objective: 202L-S3-03
Knowledge of the operational implications of the following concepts as they apply to RECIRCULATION FLOW CONTROL SYSTEM:	Fluid coupling: BWR-3, 4

The amount of oil inside the impeller casing of the MG Set fluid coupler is at a __________ quantity when the reactor is at maximum thermal power.

A. Maximum

B. Minimum

C. slightly below average

D. slightly above average

Explanation:
ANSWER:
a. Maximum

Explanation:
Maximum thermal power implies that the Reactor Recirculation Pump is at maximum speed. Since the coupler uses liquid to transfer energy, the more fluid, the greater the transfer and the faster the pump runs.

Reference: SDM202001	Question Pedigree: BANK 2201S0541
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
6	SRO	204000	2.1.14	2.5	3.3

Reactor Water Cleanup System	Objective: 20400LK001
Conduct of Operations	Knowledge of system status criteria which require the notification of plant personnel.

For which of the following events or conditions must the Plant Manager be notified according to OP-AA-106-101 "Significant Event Reporting"

A. Failure of SPDS.

B. An automatic isolation of the RWCU system.

C. Condensate chemistry sample results indicate Action Level 1 parameters.

D. A contractor is found to be contaminated when going through the monitor at the gatehouse.

Explanation:
ANSWER
b. An automatic isolation of the RWCU system.

Explanation:
Per OP-AA-106-101 the failure of SPDS does not require notification, Action level 2 or above is required for notification, and the contractor found to be contaminated does not require notification.

Reference: OP-AA-106-101	Question Pedigree: New
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
7	RO	205000	A4.11	3.2	3.2

Shutdown Cooling System (RHR Shutdown Cooling Mode)	Objective: 20500LK008
Ability to manually operate and/or monitor in the control room:	Heat exchanger cooling flow

The following conditions exist on Unit 2:

- Unit 2 is shutdown.
- Reactor coolant temperature is 200°F.
- The Shutdown Cooling system is in service.
- Alternate Decay Heat Removal is NOT being used.

How is the cooldown rate maintained?

A. Throttling the RBCCW outlet from the heat exchanger with the SDC pump suction valve throttled.

B. Throttling the SDC pump suction valve with the RBCCW outlet valve from the heat exchange open to the max position.

C. Throttling the SDC pump discharge valve with the RBCCW outlet valve from the heat exchanger open to the max position.

D. Throttling the RBCCW outlet from the SDC heat exchanger with the SDC pump discharge valve open to the max position.

Explanation:
ANSWER:

d. Throttling the RBCCW outlet from the SDC heat exchanger with the SDC pump discharge valve open to the max position.

Explanation:
A is wrong because throttling is done with the SDC pump discharge valve. B and C are wrong because the RBCCW valve is full open above 212°F.The word max position are used in the distracters instead of open because the SDC pump discharge valves are only allowed to be open to approximately 60% due to limitations on the pumps.

Reference: SDM 205000	Question Pedigree: Modified 20500S0011	
Cog level: High		Rev 1

Q#	Exam	System	K/A	RO	SRO
8	BOTH	205000	K4.03	3.8	3.8

Shutdown Cooling System (RHR Shutdown Cooling Mode)	Objective: 205L-S1-05
Knowledge of SHUTDOWN COOLING SYSTEM/MODE design feature(s) and/or interlocks which provide for the following:	Low reactor water level: Plant-Specific

Which of the following is the LOWEST reactor water level that the Shutdown Cooling system will normally operate at on Unit 3

A. +13 inches

B. +5 inches

C. -0 inches

D. -8 inches

Explanation:
ANSWER:

a. +13 inches.

Explanation:
The isolation for SDC occurs at +8 inches.

Reference: SDM 205000	Question Pedigree: New
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
9	BOTH	206000	A1.06	3.8	3.7

High Pressure Coolant Injection System	Objective: 206L-S1-08; 20600LK002; 20600LK004
Ability to predict and/or monitor changes in parameters associated with operating the HIGH PRESSURE COOLANT INJECTION SYSTEM (HPCI) controls including:	System flow: BWR-2, 3, 4

A scram occurred on Unit 2 and the following conditions exist:

- Feedwater is NOT available.
- Reactor level: -10" and dropping slowly.
- HPCI running in the pressure control mode.
- HPCI discharge pressure: 1100 psig constant.
- Reactor pressure: 850 psig and rising slowly.
- The Isolation Condenser is isolated due to a tube leak.

Shortly after the Unit Supervisor directs the NSO to raise level with HPCI, the following occurs:

- HPCI flow increased rapidly.
- Reactor level quickly rose to +55".
- Annunciator 902-3 A9, HPCI TURB TRIPPED, alarmed.

Which of the following describes the cause of these conditions?

A. The NSO throttled open the 2-2301-10 (test return valve) prior to injecting with HPCI.

B. The HPCI Flow Controller output failed low (zero output) while HPCI was injecting into the vessel.

C. The MSC failed to the HSS. Turbine speed increased rapidly resulting in increased flow to the reactor.

D. The NSO failed to reduce HPCI discharge pressure to below reactor pressure prior to opening the 2-2301-8 (HPCI injection) valve.

Explanation:
ANSWER:
d. The NSO failed to reduce HPCI discharge pressure to below reactor pressure prior to opening the 2-2301-8 (HPCI injection) valve.

EXPLANATION:
The MSC is normally on the HSS when the machine is running and speed is being controlled by the MGU. The MSC failing to the HSS will have NO effect. The NSO is suppose to open the 2-2301-10 valve to reduce HPCI pressure prior to injecting with HPCI. If the HPCI flow controller fails low, the turbine will drive to it's slowest speed and pump discharge pressure will stabilize between 375 and 600 psig.
Of the alternatives listed, only the operator error of failing to reduce HPCI discharge pressure before opening the "8" valve would cause the indications provided.

Reference: DOP 2300-03	Question Pedigree: BANK 20600S0341
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
10	BOTH	206000	K6.09	3.5	3.5

High Pressure Coolant Injection System	Objective: 206L-S1-12
Knowledge of the effect that a loss or malfunction of the following will have on the HIGH PRESSURE COOLANT INJECTION SYSTEM (HPCI):	Condensate storage and transfer system: BWR-2, 3, 4

Given the following conditions;

- The plant is on line at 80% power
- A HPCI operability surveillance was in progress.
- HPCI was pumping 5200 gpm to the CST through the test line.
- The NSO shut the 2301-6 valve, HPCI CST suction valve
- Annunciator 902-3 A-11, "HPCI BOOST PP SUCT PRESS LO" has just alarmed.

Which of the following describes the response of the HPCI system?

A. The HPCI turbine will trip on low booster pump suction pressure.

B. The Flow Controller will decrease turbine speed until flow is zero.

C. HPCI will continue to operate but pump flow will eventually drop to zero.

D. The Flow Controller will increase turbine speed until it trips on overspeed.

Explanation:
ANSWER:

a. The HPCI turbine will trip on low booster pump suction pressure.

EXPLANATION:
The Booster Pump low suction pressure trip is bypassed with an initiation signal present. Because an initiation signal is NOT present, HPCI will trip; 'a' is correct and 'c' is incorrect. There is no automatic scale back of speed based on suction pressure; 'b' is incorrect. The turbine speed control system CANNOT raise turbine speed to the overspeed setpoint. The turbine governor prevents this from occurring; 'd' is incorrect.

Reference: SDM 206000, DAN 902(3)-A11	Question Pedigree: BANK 20600S0292
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
11	RO	207000	K3.02	3.8	4.0

Isolation (Emergency) Condenser	Objective: 207L-S-12
Knowledge of the effect that a loss or malfunction of the ISOLATION (EMERGENCY) CONDENSER will have on following:	Reactor water level (EPG's address the isolation condenser as a water source): BWR-2, 3

Unit 3 is at rated conditions when the following occurs:

- Loss of all high pressure feed.
- Isolation Condenser is being used for pressure control.
- Reactor water level is -65 inches and steady.

A tube leak then develops in the Isolation condenser.

This would result in....

A. Reactor water level lowering.

B. A potential Group 4 isolation.

C. Isolation Condenser shell side level lowering.

D. Increased makeup flow to the Isolation Condenser.

Explanation:
ANSWER:
a. Reactor water level lowering.

The Iso condenser is at lower pressure than the reactor and water inventory would flow from the vessel to the iso condenser causing RPV level to lower.

Reference: DOA 1300-1 and DAN 902(3)-3 H-2	Question Pedigree: New
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
12	BOTH	209001	K1.10	3.7	3.8

Low Pressure Core Spray System	Objective: 209L-S1-03
Knowledge of the physical connections and/or cause- effect relationships between LOW PRESSURE CORE SPRAY SYSTEM and the following:	Emergency generator

The following conditions exist:

- A complete loss of offsite power to BOTH units
- A DBA LOCA on Unit 3

With NO operator action, what is the power supply to the 3A Core Spray pump?

A. U2 EDG

B. U3 EDG

C. U2/3 EDG

D. U2 SBO DG

Explanation:
ANSWER:
c. U2/3 EDG

Reference: SDM 209001, SDM 264001	Question Pedigree: Modified [illegible]901S0031
Cog level: High	Rev 1

Q#	Level	System	K/A	RO	SRO
13	BOTH	209001	K3.03	2.9	3.0

Low Pressure Core Spray System	Objective: 209L-S1-12
Knowledge of the effect that a loss or malfunction of the LOW PRESSURE CORE SPRAY SYSTEM will have on following:	Emergency generators

While at rated conditions the following events occur:

- 01:28, 2A-2 lost due to a switching error.
- 01:30, 2B-1 lost due to an electrical fire.
- 01:44, DBA LOCA occurs on Unit 2.

Which of the following will occur?

A. U-2 EDG starts

B. U-2/3 EDG starts

C. CAM System B starts

D. SBO Feed at Bus 24 trips

Explanation:
ANSWER:
b. U-2/3 EDG starts

Explanation
Core Spray initiation logic is what sends a start signal to the EDGs on a DBA LOCA. 2B-1 is the power supply to Division 2 of the **Core Spray logic**. The Core Spray logic is what sends signals to other components in the plant to perform different functions during a DBA LOCA. All of the components listed could be started by other means, however the loss of **Core Spray logic** prevents the Unit 2 EDG from starting, the CAM system B from starting, and prevents the SBO Main Feed to Bus 24 from receiving the trip signal on a DBA LOCA on Unit 2

Reference: SDM 209001	Question Pedigree: BANK 20901S0262
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
14	SRO	211000	2.4.6	3.1	4.0

Standby Liquid Control System	Objective: 29502LK040
Emergency Procedures and Plan	Knowledge symptom based EOP mitigation strategies.

During an Anticipated Transient Without a Scram on Unit 3, operators have lowered level to -140 inches. When the SBLC tank level has decreased to 39%, operators commence raising reactor water level per DEOP 400-5, Failure to Scram. While increasing reactor water level plant conditions are as follows:

- -operators are increasing reactor water level with Reactor Feed Pumps
- -reactor pressure is 920 psig and constant
- -reactor power is steadily increasing on IRMs

Select the reason that reactor power increased when reactor water level was raised and what action needs to be taken.

REASON	ACTION
A. Insufficient boron has been injected into the core to maintain shutdown conditions in reactor.	Terminate and prevent all injection with the exception of boron and CRD.
B. Insufficient boron has been injected into the core to maintain shutdown conditions in reactor.	Continue to raise level to 8 inches and hold level between 8 and 48 inches.
C. The water injected into the vessel flushed some of the boron from the core area.	Terminate and prevent all injection with the exception of boron and CRD.
D. The water injected into the vessel flushed some of the boron from the core area.	Continue to raise level to 8 inches and hold level between 8 and 48 inches.

Explanation:
ANSWER:

a. Insufficient boron has been injected into the core to maintain shutdown conditions in reactor. and Terminate and prevent all injection with the exception of boron and CRD.

This condition is discussed in the BWROG EPG/SAG. Normally as level is increased the boron that was in the lower plenum now enters the core area causing power to decrease after a few seconds of increased flow. If power continues to increase it is because not enough boron has been injected for the condition the reactor is in currently.
If these conditions exist DEOP 400-5 directs that all injections be terminated and prevented with the exception of boron and CRD.

Reference: 295L-S8	Question Pedigree: Bank 29502S1051
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
15	RO	211000	K2.02	3.1	3.2

Standby Liquid Control System	Objective: 211L-S1-3f
Knowledge of electrical power supplies to the following:	Explosive valves

Which of the following power supplies provide power to the 2A Standby Liquid Control System sq... valve?

A. Instrument Bus

B. ESS Bus

C. MCC 28-1

D. MCC 29-1

Explanation:
ANSWER
c. MCC 28-1

Reference: SDM 211001	Question Pedigree: MODIFIED 21100S0221
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
16	RO	21200(	A4.06	4.2	4.1

Reactor Protection System	Objective: 201L-S2-03
Ability to manually operate and/or monitor in the control room:	Control rod position

A control rod is being fully withdrawn.

Which of the following is indication of an UN : UPLED control rod on the full core display?

A. Red position 48 lights illuminated

B. Rod position indication goes blank

C. Green position 48 lights turn amber

D. Amber position 48 lights turn green

Explanation:
ANSWER:

b. Rod position indication goes blank

Reference: SDM 201002	Question Pedigree: BANK 20102S0521
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
17	RO	212000	K2.01	3.2	3.3

Reactor Protection System	Objective: 212L-S1-02
Knowledge of electrical power supplies to the following:	RPS motor-generator sets

With the plant operating at 50% power, the supply breaker from MCC 28-2 to its associated RPS MG set inadvertently trips.

Which ONE of the following describes the response of the RPS system?

A. The RPS channel will automatically transfer to the alternate supply.

B. A half scram will occur on RPS B logic channel as a result of the breaker trip.

C. A half scram will occur on RPS A logic channel as a result of the breaker trip.

D. The RPS MG flywheel will keep the bus voltage up until the power supply is manually transferred to the reserve power.

Explanation:
ANSWER:

b. A half scram will occur on RPS B logic channel as a result of the breaker trip.

Explanation:
MCC 28-2 provides power to RPS MG set A, which powers RPS Bus B, which powers RPS trip system B. RPS, being a deenergize to actuate system, then trips placing the unit in a half scram condition.

Reference: DOP 500-3 and SDM 262011	Question Pedigree: Bank 21200S0331
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
18	RO	215001	A3.03	2.5	2.6

Traversing In-Core Probe	Objective: 215L-S1-5.a
Ability to monitor automatic operations of the TRAVERSING IN-CORE PROBE including:	Valve operation: Not-BWR1

Automatic TIP traces are in progress on Unit 2 when a transient occurs resulting in the following conditions:

- RPV water level is +5 inches and rising.
- Drywell pressure is 1.5 psig and steady.

Concerning the TIP system you would verify…

A. the shear valve fires, isolating the TIP tube.

B. TIP withdrawal to In-Shield position and Ball valve closure.

C. the Group II Isolation status light on the TIP drawer is illuminated.

D. the Shear AND Squib Valve Monitor lights are illuminated after 5 minutes.

Explanation:
ANSWER
b. TIP withdrawal to In-Shield position and Ball valve closure.

The Group II isolation signal (RPV level < +8 inches) would cause any TIP detector NOT in its shield to shift to manual reverse and withdraw into its shield chamber. Then the Ball valve would automatically close. Verifying these actions is a requirement of DAN 902(3)-5, E-5.

Reference: SDM 215001 and DAN 902-5, E-5	Question Pedigree: MODIFIED 21501S0171
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
19	BOTH	215002	K1.01	2.9	3.0

Rod Block Monitor System	Objective: 215L-?-05 and 06
Knowledge of the physical connections and/or cause- effect relationships between ROD BLOCK MONITOR SYSTEM and the following:	APRM: BWR-3, 4, 5

Given the following conditions:

- Rod H-8 is selected.
- Reactor power is 40%.
- APRM Channel 3 fails "Downscale".
- APRM Channel 3 has NOT been bypassed.

Due to this, the Rod Block Monitor (RBM) Channel 7...

A. is NOT affected.

B. is automatically bypassed.

C. generates a rod withdrawal block.

D. shifts to the alternate reference APRM.

Explanation:
ANSWER:

b. is automatically bypassed.

EXPLANATION:
APRM 3 is the reference APRM for RBM Channel 7. There is no auto swap to the alternate APRM. When it fails downscale, RBM 7 thinks power is <30%. Power < 30% causes automatic bypass of RBM Channel 7.

Reference:	Question Pedigree:
SDM 215002	BANK 21502S0053

Cog level: High

Rev 1

Q#	Exam	System	K/A	RO	SRO
20	BOTH	215004	A4.04	3.2	3.2

Source Range Monitor (SRM) System	Objective: 215L-S4-3
Ability to manually operate and/or monitor in the control room:	SRM drive control switches

The SRM "DRIVE IN" push button needs to be ___(1)___ in order to drive the SRM detectors in to the core.
The SRM "DRIVE OUT" push button needs to be ___(2)___ in order to drive the SRM detectors out of the core.

	1	2
A.	continually held	continually held
B.	continually held	momentarily depressed
C.	momentarily depressed	continually held
D.	momentarily depressed	momentarily depressed

Explanation:
ANSWER:
c. momentarily depressed continually held

The "drive in" push button is a maintaining contact and the "drive out" is a contact that must be continually held

Reference: SDM215004	Question Pedigree: Modified question # 23 of last years NRC exam
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
21	BOTH	215005	A3.07	3.8	3.8

Average Power Range Monitor/Local Power Range Monitor System	Objective: 215L-S5-05.c
Ability to monitor automatic operations of the APRM/LPRM including:	RPS status

During a normal unit shutdown, while preparing to shift the Rx mode switch out of RUN, the following conditions exist:

- APRM 1 = 2%
- APRM 2 = 4%
- APRM 3 = 2%
- APRM 4 = 4%
- APRM 5 = 4%
- APRM 6 = 2%
- Rx Pressure = 922 psig
- A "whisker" on IRM channel 17 detector causes indication to go to full UPSCALE.

This will cause a...

A. reactor scram.

B. rod block only.

C. rod block and 1/2 scram on RPS channel A only.

D. rod block and 1/2 scram on RPS channel B only.

Explanation:
ANSWER:

d. rod block and 1/2 scram on RPS channel B only.

Reference:SDM215005	Question Pedigree: BANK 21505S0371
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
22	RO	215005	K5.06	2.5	2.6

Average Power Range Monitor/Local Power Range Monitor System	Objective: 215L-S5-03.b., 5.b. and 5.c.
Knowledge of the operational implications of the following concepts as they apply to APRM/LPRM:	Assignment of LPRM's to specific APRM channels

At least ____(1)______ LPRM's on channels 1, 2, 3 and ____(2)_____ on channels 4, 5, 6 of the LPRM's assigned to one APRM must be operable or an INOP trip occurs.

1	2
A. 20	21
B. 21	20
C. 10	11
D. 11	10

Explanation:
ANSWER:

d. 11, 10

Reference: SDM 215005	Question Pedigree: BANK 21505S0081
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
23	RO	216000	K4.11	3.6	3.6

Nuclear Boiler Instrumentation	Objective: 29501LP083
Knowledge of NUCLEAR BOILER INSTRUMENTATION design feature(s) and/or interlocks which provide for the following:	Reading of nuclear boiler parameters outside the control room

Given the following conditions:

- Unit 2 is at 80% reactor power when smoke begins flowing from the control room ventilation ducts.
- The Unit Supervisor directs a control room evacuation.
- Both Unit NSO's take all preparatory actions per DSSP 100-CR "Control Room Evacuation".
- As the Unit 2 NSO is leaving the control room, he notices RPV water level on the wide range indicator reading -68 inches.

In order to continue monitoring RPV water level based on his last observation, the Unit 2 NSO should report to the:

A. 5 or 6 racks in the Reactor Building.

B. 7 or 8 racks in the Reactor Building.

C. ATWS cabinets 2202-70A/B in the AEER.

D. Analog Trip System racks 2202-73A/B in turbine building.

Explanation:
ANSWER:

b. 7 or 8 racks in Reactor Building.

EXPLANATION:
The 7/8 racks provide local indication when level is below –60 inches. Above that level the NSO could go to the 5 or 6 rack.

Reference: SDM 216000 and DSSP 100-CR	Question Pedigree: BANK 21600S0071
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
24	BOTH	216000	K6.01	3.1	3.3

Nuclear Boiler Instrumentation	Objective: 216L-S1-06
Knowledge of the effect that a loss or malfunction of the following will have on the NUCLEAR BOILER INSTRUMENTATION:	A.C. electrical distribution

Unit 2 is at rated conditions when the following occurs:

- Indications on Wide Range level indicator (263-113) on the 902-4 panel are lost.
- Indications on Wide Range digital level indicator (263-112) on the 902-5 panel are lost.

These symptoms indicate a loss of…

A. Instrument Bus.

B. Essential Service Bus.

C. 125 VDC panel 2B-1.

D. 125 VDC RBM Distribution panel.

Explanation:
ANSWER:

a. Instrument Bus.

Explanation:
These level instruments on the 5 panel are powered from the Instrument Bus.

Reference: SDM 216000	Question Pedigree: BANK 21600S0111
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
25	BOTH	218000	K3.01	4.4	4.4

Automatic Depressurization System	Objective:218L-S1-12
Knowledge of the effect that a loss or malfunction of the AUTOMATIC DEPRESSURIZATION SYSTEM will have on following:	Restoration of reactor water level after a break that does not depressurize the reactor when required

At 10:44 the following conditions exist on Unit 2:

- A steam line break occurred in the drywell
- The MSIVs are closed.
- HPCI is operating and injecting into the vessel.
- Reactor water level is -45" and trending down at two inches per minute.
- Reactor pressure is 900 psig and steady.
- Drywell pressure is 1.5 psig and trending up at 0.2 psig per minute.

At 10:47 the following 902-3 panel annunciators alarm:

- "ADS PERMISSIVE DW PRESS HI" (E-15)
- "ADS TIMER START" (B-13)
- "LPCI/CS PP AT PRESS" (H-13)
- "ADS INHIBIT" (G-11)

What is the state the reactor at 10:54?

A. Reactor water level is still trending down.

B. HPCI is now maintaining level in the vessel.

C. All five relief valves are open as required by ADS actuation.

D. LPCI AND Core Spray pumps are running and injecting water into the vessel.

Explanation:
ANSWER
a. Reactor water level is still trending down.

Explanation:
No conditions have changed that would allow HPCI to maintain level. The "ADS INHIBIT" is preventing the ADS valves from opening and with pressure steady the Low pressure ECCS pumps can not inject water to the vessel.

Reference: DAN 902(3) B13, E-15, G-11, and H-13, 218L-S1	Question Pedigree: NEW
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
26	BOTH	218000	K4.01	3.7	3.9

Automatic Depressurization System	Objective: 218L-S1-05
Knowledge of AUTOMATIC DEPRESSURIZATION SYSTEM design feature(s) and/or interlocks which provide for the following:	Prevent inadvertent initiatior of ADS logic

The Reactor is operating at 70% power when a LOCA condition develops in the Drywell. The following is a timeline of ADS associated events:

- 17:15:00, Division I, High Drywell Pressure
- 17:15:30, Division I, Low Low Reactor Water Level
- 17:15:35, Division II, ECCS Discharge Permissive
- 17:15:55, Division II, Low Low Reactor Water Level
- 17:16:01, Division I, ECCS Discharge Permissive

At what time will the FIRST 120 second Automatic Depressurization time delay time-out?

A. 17:17:30

B. 17:17:35

C. 17:17:55

D. 17:18:01

Explanation:
ANSWER:
a. 17:17:30

EXPLANATION:
Because it only takes a simultaneous Divisional signal of High Drywell Pressure and Low Low Reactor Water Level to start the logic.
There are two 120 second timers. Each requires that its respective Division I and Division II contacts for High Drywell Pressure and Low Low Reactor Water Level close in order to make-up the circuit to the 120 second timer. >100 psig ECCS discharge pressure is not required in the circuit to initiate the 120 second timer.

Reference: SDM 218000	Question Pedigree: Modified 21800S0211
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
27	BOTH	219000	A1.02	3.5	3.5

RHR/LPCI: Torus/Suppression Pool Cooling Mode	Objective: 203L-S1-3
Ability to predict and/or monitor changes in parameters associated with operating the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE controls including:	System flow

During torus cooling, after LPCI pump flow has stabilized, the LPCI / CCSW Heat Exchanger should have...

A. 3500 gpm of LPCI flow for each LPCI pump.

B. 5000 gpm of CCSW flow for each CCSW pump.

C. a differential pressure of 20 psid with LPCI system pressure greater than CCSW pressure.

D. a differential pressure of 20 psid with CCSW pressure greater than LPCI system pressure.

Explanation:
ANSWER:

d. at a differential pressure of 20 psid with CCSW pressure greater than LPCI system pressure.

When the LPCI pump is started CCSW pressure is much greater than LPCI pressure. After LPCI flow stabilizes CCSW pressure should be 20 psig greater than LPCI pressure.

Reference: DOP 1500-2	Question Pedigree: BANK 21900S0021
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
28	RO	219000	A2.05	3.3	3.5

RHR/LPCI: Torus/Suppression Pool Cooling Mode	Objective: 203L-S1-6
Ability to (a) predict the impacts of the following on the RHR/LPCI: TORUS/SUPPRESSION POOL COOLING MODE; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:	A.C. electrical failures

Unit 2 was at power with the Unit 2 Isolation Condenser OOS, when a transient occurred. The following conditions exist:

- Bus 24 was damaged by a fire and has been taken out of service.
- All rods are inserted.
- MSIVs are closed to conserve inventory.
- RPV level has remained at +10 inches.
- HPCI is being used for reactor pressure control.

The ______(1)_____ CCSW pumps can be started and Torus cooling can be performed by _____(2)_______.

1	2
A. 2A and 2B	each CCSW pump supplying a different LPCI/CCSW HX
B. 2A and 2B	both CCSW pumps supplying one LPCI/CCSW HX and utilizing the cross-tie line
C. 2C and 2D	each CCSW pump supplying a different LPCI/CCSW HX
D. 2C and 2D	both CCSW pumps supplying one LPCI/CCSW HX and utilizing the cross-tie line

Explanation:
ANSWER:

b. 2A and 2B and both CCSW pumps supplying one LPCI/CCSW HX and utilizing the cross tie line.

EXPLANATION:
The CCSW pumps that have power available, are on one bus, in one division, and therefore cannot be lined up one to each HX.

Reference: SDM 277000, SDM 203000 and DOP 1500-02	Question Pedigree: Modified 27700S0321
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
29	BOTH	223001	A3.02	3.4	3.4

Primary Containment System and Auxiliaries	Objective: 223L-S1-6
Ability to monitor automatic operations of the PRIMARY CONTAINMENT SYSTEM AND AUXILIARIES including:	Vacuum breaker/relief valve operation

Unit 3 is at rated conditions with the following:

- Drywell pressure is 1.0 psig.
- Torus pressure is 1.5 psig.
- Reactor Building pressure is -0.25 inches of water (0 psig).

Which of the following would the operator observe?

A. NO Vacuum Breakers open.

B. Torus to Drywell Vacuum Breakers open.

C. Torus to Reactor Building Vacuum Breakers open.

D. Drywell to Reactor Building Vacuum Breakers open.

Explanation:
ANSWER:

b. Torus to Drywell Vacuum Breakers open.

EXPLANATION:
Anytime Torus pressure is 0.15 greater than Drywell pressure the Torus to Drywell Vacuum Breakers start to open.

Reference: SDM 223001	Question Pedigree: Modified 22301S0211
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
30	SRO	223002	2.4.4	4.0	4.3

Primary Containment Isolation System/Nuclear Steam Supply Shut-Off	Ob[illegible]e:
Emergency Procedures and Plan	Ability to reco[illegible]e abnormal indications for system operating para[illegible]ers which are entry-level conditions for emergency and [illegible]ormal operating procedures.

Given the following conditions:

- HPCI test is in progress in accordance with DOS 230[illegible] and is operating at full flow through the test line with suction from the CST.
- A small steam leak develops in the HPCI room.
- Temperature in the room is 210°F and increasing at 5[illegible] [illegible]er minute.
- The HPCI system flow remains constant.

As a result of this the...

A. reactor must be shutdown.

B. steam supply to the HPCI system must be isolated.

C. HPCI system will isolate when room temperature reaches 300°F

D. HPCI room cooler will trip and Standby Gas Treatment will au[illegible] [illegible]tart.

Explanation:
ANSWER:
b, steam supply to the HPCI system must be isolated.

Explanation:
SRO only criteria 5
The isolation of HPCI should have occurred at 200°F. DEOP 300-1 [illegible]ds to be entered and the correct actions that need to be taken are "isolate all discharges into affected areas". [illegible] [illegible]cram is not needed until another temperature reaches max safe. Standby gas will be running prior to s[illegible] the surveillance and these conditions will not trip the room cooler.

Reference: SDM 223005, SDM 206000, and DEOP 300-1	Question [illegible]edigree: NEW
Cog level: High.	Rev 1

Q#	Exam	System	K/A	RO	SRO
31	BOTH	223002	K1.19	2.7	2.9

Primary Containment Isolation System/Nuclear Steam Supply Shut-Off	Objective: 208L-S1-6
Knowledge of the physical connections and/or cause- effect relationships between PCIS/NSSSS and the following:	Component cooling water systems

Given the following information:

- A Loss of Coolant Accident (LOCA) has occurred inside the drywell.
- The break has also caused a rupture in the RBCCW supply line resulting in a loss of RBCCW flow and pressure.

The drywell atmosphere is prevented from entering the Reactor Building through the RBCCW system by....

A. the RBCCW expansion tank.

B. check valves in the RBCCW piping.

C. manually isolating the RBCCW system at the 923-1 panel.

D. an automatic isolation by the Primary Containment Isolation System.

Explanation:
ANSWER

c. manually isolating the RBCCW system at the 923-1 panel.

Reference: SDM208000	Question Pedigree: Modified 20800S0081
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
32	BOTH	226001	K2.02	2.9	2.9

RHR/LPCI: Containment Spray System Mode	Objective: 203L-S1-03
Knowledge of electrical power supplies to the following:	Pumps

A station blackout has occurred with the following events on Unit 2:

- The 2/3 Diesel Generator auto started and loaded.
- The U2 Diesel Generator could NOT be started.
- The SBO Diesel Generators have NOT been started yet.

At this time, the LPCI pumps available for containment spray are....

A. LPCI Pumps 2A and 2B.

B. LPCI Pumps 2A and 2C.

C. LPCI Pumps 2B and 2D.

D. LPCI Pumps 2C and 2D.

Explanation:
ANSWER
a. LPCI Pumps 2A and 2B.

MisInfo:
2/3 DG supplies Division One equipment. Division One LPCI Pumps are the 2A and 2B pumps.

Reference: SDM 203000 and SDM 264001	Question Pedigree: Last years NRC Exam #34
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
33	BOTH	226001	K5.02	2.6	2.-

RHR/LPCI: Containment Spray System Mode	Objective: 209L-S1-12
Knowledge of the operational implications of the following concepts as they apply to RHR/LPCI: CONTAINMENT SPRAY SYSTEM MODE:	Water hammer

The reason the LPCI pump discharge piping has a keep fill system is to…

A. provide an indication of the LPCI pump integrity.

B. minimize corrosion in the Torus and Drywell spray lines.

C. prevent the LPCI/CCSW heat exchanger from becoming air bound.

D. minimize the effects of water hammer on the system and pipe hangers.

Explanation:

c. minimize the effects of water hammer on the system and pipe hangers.

The ITS bases states the reason for a ECCS keepfill system is to ensure rapid delivery of water to the RPV and to minimize the effect of water hammer.

Reference: SDM 203000 and ITS Bases 3.5.1	Question Pedigree: Modified 29900S0241
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
34	BOTH	230000	K6.05	3.3	3.4

RHR/LPCI: Torus/Suppression Pool Spray Mode	Objective: 203L-S1-12
Knowledge of the effect that a loss or malfunction of the following will have on the RHR/LPCI: TORUS/SUPPRESSION POOL SPRAY MODE:	Suppression pool

One hour ago a small LOCA developed on Unit 2 and the following conditions exists:

- RPV level is 30 inches and stable.
- Drywell pressure is 2.5 psig and steady.
- Drywell temperature is 210°F and trending down slowly.
- LPCI is being used for Torus cooling and spray.
- Torus level is 14 feet and rising slowly

Subsequently:

- Discharge pressure and flow on the LPCI pumps started fluctuating
- The following annunciators alarm:
  - "2A LPCI HDR FLOW LOW"
  - "2B LPCI HDR FLOW LOW"

This indicates that……

A. The ECCS keepfill pump has tripped.

B. The LPCI pump suctions have auto swapped over to the CST.

C. The ECCS ring header suction strainers have become clogged.

D. The EDG have started and are now supplying power to the LPCI pumps.

Explanation:
ANSWER
c. The ECCS ring header suction strainers have become clogged.

Explanation:
With the LPCI pump running a loss of keepfill pump will not give these indications. The LPCI suctions do not swap over to the CST without operator action and the LPCI pumps are not being powered from the EDGs.

Reference: SDM203000, 209001 and NRC bulletin 93-02	Question Pedigree: NEW
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
35	BOTH	234000	2.1.2	3.0	4.0

Fuel Handling Equipment	Objective: 234L003
Conduct of Operations	Knowledge of operator responsibilities during all modes of plant operation.

Fuel movements are being performed in the Unit 2 core. The Unit 2 NSO and Fuel Handlers cannot agree as to which move is to be performed next.

According to Unit 2 Master Refueling Procedure, DFP 800-1, which ONE of the following personnel is to be contacted?

A. Unit 3 NSO

A. Unit 3 NSO

B. Fuel Handling Foreman

C. Nuclear Materials Custodian

D. Control Room Nuclear Observer

Explanation:

ANSWER
d. Control Room Nuclear Observer

Reference DFP 0800-1	Question Pedigree: Bank 23400S011
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
36	BOTH	239001	K5.06	2.8	2.9

Main and Reheat Steam System	Objective: 239L-S1-12
Knowledge of the operational implications of the following concepts as they apply to MAIN AND REHEAT STEAM SYSTEM:	Air operated MSIV's

Unit 3 is at rated conditions when the following occur:

Instrument Air header pressure rapidly goes to 0 psig.

This would result in..

A. the FRVs failing closed.

B. the inboard MSIVs starting to close.

C. the outboard MSIVs starting to close.

D. the FRVs immediately locking up in their current position.

Explanation:
ANSWER:

c. The outboard MSIVs starting to close.

Explanation:
The outboard MSIVs are held opened by Instrument Air. The inboard MSIVs are held open by drywell pneumatics. The FRV have a backup air supply that lasts for 75 minutes then they "lockup"

Reference:	Question Pedigree:
DOA 4700-1	Modified 03000S0541

Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
37	RO	241000	2.4.4	4.0	4.3

Reactor/Turbine Pressure Regulating System	Objective: 241L-S1-6
Emergency Procedures and Plan	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

Unit 2 is at rated condition when a failure of the EHC system causes a transient to occur.

As a result of the transient:

- RPV level dropped to 27 inches and is now rising.
- RPV pressure stabilized at 1070 psig.

With these indications the operating team should enter….

A. DEOP 100-1, RPV Control, due to RPV level.

B. DEOP 100-1, RPV Control, due to RPV pressure.

C. DOA 600-1, Transient Level Control, due to RPV level.

D. DOA 5650-03, Turbine Control Valve or Bypass Valve Failed Open, due to reactor pressure.

Explanation:
ANSWER
b. DEOP 100-1, RPV Control, due to RPV pressure.

Explanation:
Entry for DEOP 100-1 is 1060 psig and 8 inches. Entry for DOA 600-1 is 25 inches.

Reference: DEOP 100-1, DOA 600-1, and DOA 5650-03	Question Pedigree: NEW
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
38	BOTH	245000	K3.02	3.9	4.0

Main Turbine Generator and Auxiliary Systems	Objective: 245L-S1-6
Knowledge of the effect that a loss or malfunction of the MAIN TURBINE GENERATOR AND AUXILIARY SYSTEMS will have on following:	Reactor pressure

Given the following conditions on Unit 3

- Reactor Power is 35%
- The Main Turbine Main Generator is on line.

A fault occurs that causes the Main Generator field breaker to open.

Which of the following occur?

A. A load reject scram occurs.

B. Reactor pressure goes down.

C. Reactor scrams on high pressure.

D. The bypass valves control reactor pressure.

Explanation:
ANSWER:

d. The bypass valves control reactor pressure.

EXPLANATION:
With reactor power less than 45% power the load reject scram is bypassed. Reactor pressure is controlled by the bypass valves and pressure will not go down or cause a reactor scram.

Reference: SDM212001 and DOA 5600-1	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
39	RO	256000	A2.12	3.1	3.1

Reactor Condensate System	Objective: 274L-S1-12
Ability to (a) predict the impacts of the following on the REACTOR CONDENSATE SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:	Loss of equipment component cooling water systems

Both Units are operating at rated conditions with the following pumps running:

- 2A TBCCW
- 3A TBCCW

The following then occurs:

- Annunciator "U2 or U3 TBCCW PRESS LOW" alarms.
- U2 TBCCW DISCH HDR PRESS indicates 0 psig.

What is the impact and how is the situation controlled?

IMPACT	HOW CONTROLLED
A. Cooling is lost the Condensate Pump seal coolers.	Start the 2B TBCCW pump only.
B. Cooling is lost the Condensate Pump seal coolers.	Start the 2B OR the 3B TBCCW pump.
C. Cooling is lost to the MG Set oil coolers.	Start the 2B TBCCW pump only.
D. Cooling is lost to the MG Set oil coolers.	Start the 2B OR the 3B TBCCW pump.

Explanation:
ANSWER
a. Cooling is lost the Condensate seal coolers. and Start the 2B TBCCW pump.

Give the students a copy of the DANs for loss of pump and low expansion tank with Section B.3.e removed or blanked out. (This is the section that lists the loads in the loss of pump DAN)

Reference:	Question Pedigree:
DAN 923-1 C-2 and D-2	NEW

Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
40	RO	259001	2.1.2	3.0	4.0

Reactor Feedwater System	Objective: 25901LK006
Conduct of Operations	Knowledge of operator responsibilities during all modes of plant operation.

Unit 2 is operating at rated power when multiple Feed Regulating Station high vibration alarms are received and feedwater flow oscillations are observed.

The operator is to maintain feedwater flow for ____(1)____ seconds, OR until reactor level is restored to above ____(2)____ inches.

1	2
1	2
A. 15	15
B. 15	20
C. 60	15
D. 60	20

Explanation:
ANSWER:

c. 60, 15

Reference: DOA 3200-01	Question Pedigree: Bank 25901S0091
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
41	BOTH	259002	A2.01	3.3	3.4

Reactor Water Level Control System	Objective: 259L-S-6
Ability to (a) predict the impacts of the following on the REACTOR WATER LEVEL CONTROL SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:	..ss of any number of main steam flow inputs

While operating at rated conditions, which of the fo...ing signals will cause the Unit 2 FWLC system to transfer from 3-Element to 1- Element control, AND ..hat action should the operator take?

SIGNAL	ACTION
A. 2A Feed Flow instrument fails "BAD QUALITY"	Take manual control of the FRVs
B. 2A Steam Flow instrument fails "BAD QUALITY"	Depress the "1-ELEM" pushbutton
C. "A" NR level instrument fails to "BAD QUALITY".	Take manual control of the FRVs
D. "A" NR level instrument fails to "BAD QUALITY".	Depress the "1-ELEM" pushbutton

Explanation:
ANSWER:
b. 2A Steam Flow instrument fails "BAD QUALITY". Depress the "1-ELEM" pushbutton.

MicsInfo:
The 2A Feed Flow instrument will cause the switch to occur, but going to manual control of the FRV is not the correct action. The level input will switch to another input device. The operator needs to depress the "1-ELEM" push button to have indication match actual conditions. Taking manual control of the FRV actually would complicate the situation.

Reference: SDM 259002 and DAN 902-5 G-8	Question Pedigree: Modified 25902S0391
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
42	BOTH	259002	A4.06	3.1	3.2

Reactor Water Level Control System	Objective: 259L-S2-8
Ability to manually operate and or monitor in the control room:	DP/Single/three element control selector switch: Plant-Specific

The following indications are present for the FWLC system.

- "1-ELEM" is white
- "AUTO" is amber
- "3-ELEM" is flashing amber

These are an indication that the operator selected....

A. 3 Element control and the system is still operating in 3 Element control.

B. 3 Element control and the system automatically switched to 1 Element control.

C. 1 Element control and the system is still operating in 1 Element control.

D. 1 Element control and the system automatically switched to 3 Element control.

Explanation:
ANSWER:
b. 3 Element control and the system automatically switched to 1 Element control.

Explanation:
White indicates FWLC is currently in this mode. Amber indicates was in this mode and has switched. Flashing amber indicates no longer available for use.

Reference: SDM259002	Question Pedigree: NEW
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
43	SRO	215005	2.2.22	3.4	4.1

Average Power Range Monitor/Local Power Range Monitor System	Objective: 215L-S5-7
Equipment Control	Knowledge of limiting conditions for operations and safety limits.

Unit 3 is in coastdown in preparation for a refueling outage with the following conditions:

- Reactor power is 50%
- Total core flow is 85%
- Flow Converter #1 is downscale due to Instrument Maintenance performing calibration.
- No LCO actions are in effect.

Flow Converter #2 fails to 102%.

Which, if any, of the APRMs are now considered INOPERABLE?

A. APRMs 1, 2, and 3

B. APRMs 4, 5, and 6

C. All APRMs

D. None of the APRMs

Explanation:
ANSWER
b. APRMs 4, 5, and 6

ITS Bases 3.3.1.1.2.b states that an APRM flow converter is considered inoperable whenever it cannot deliver a flow signal less than or equal to actual recirculation flow conditions for all steady state and transient conditions while in MODE 1. Reduced flow or downscale flow converter conditions due to planned maintenance or testing activities during derated plant conditions will result in conservative setpoints for the APRM flow bias functions, thus maintaining the function operable.

Flow converter #2 provides input to APRMs 4,5, and 6. These are now considered inoperable due to them having a higher flow signal than actually exist. Flow converter #1 provides input to APRMs 1, 2, and3. These are still OPERABLE since they are downscale resulting in a more conservative setpoint.

Reference: ITS Bases 3.3.1.1.2.b and SDM 215005	Question Pedigree: New
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
44	BOTH	261000	A2.04	2.5	2.7

Standby Gas Treatment System	Objective: 261L-S1-(
Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:	High train moisture content

The following condition exist on Unit 2:

- 2/3A SBGT is running due to an auto initiation.
- 2/3B SBGT is in STBY

Then the following occurs:

- "STBY GAS TRT SYS A TROUBLE" annunciator alarms.
- The 2/3A AIR HEATERS indicate OFF.

What is the potential problem and what action should the operator take to correct the problem?

Problem	Action
A. Moisture could enter the charcoal, which decreases the charcoal filtration efficiency.	Verify the 2/3B SBGT starts
B. The charcoal is NOT warm enough to adsorb the radioactive iodine.	Verify the 2/3B SBGT starts
C. Moisture could enter the charcoal, which decreases the charcoal filtration efficiency.	Reenergize the heaters on the 2/3A SBGT
D. The charcoal is NOT warm enough to adsorb the radioactive iodine.	Reenergize the heaters on the 2/3A SBGT

Explanation:
ANSWER:

a. Moisture could enter the charcoal, which decreases the charcoal efficiency and verify the 2/3B SBGT starts.

Explanation:
If the heaters are not energized moisture is not removed and the efficiency of the charcoal decreases. The actions that are required by the DAN under these conditions are verify the 2/3 B SBGT starts.

Reference: SDM 261000 and DAN 923-5 A-6	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
45	RO	261000	A2.13	3.4	3.7

Standby Gas Treatment System	Objective: 261L-S1-07; 26100LK002
Ability to (a) predict the impacts of the following on the STANDBY GAS TREATMENT SYSTEM; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:	High secondary containment ventilation exhaust radiation

The following plant conditions exist:

- Unit 2 is at 820 MWe.
- Unit 3 is off-loading fuel after 550 days of operation.
- 2/3A SBGT selector switch is in PRI
- 2/3B SBGT selector switch is in STBY

The following then occurs:

- Reactor Building Ventilation Exhaust Duct trends up to 7 mrem/hr.

Which of the following describes the system response and the actions required if this does NOT occur?

SYSTEM RESPONSE	ACTION REQUIRED
A. 2/3A SBGT starts and 2/3B SBGT starts if the 2/3A SBGT fails to start.	Immediately suspend all irradiated fuel moves.
B. 2/3A SBGT starts and 2/3B SBGT starts if the 2/3A SBGT fails to start.	Restart Reactor Building ventilation.
C. 2/3B SBGT starts and 2/3A SBGT starts if the 2/3B SBGT fails to start.	Immediately suspend all irradiated fuel moves.
D. 2/3B SBGT starts and 2/3A SBGT starts if the 2/3B SBGT fails to start.	Restart Reactor Building ventilation.

Explanation:
ANSWER:
a 2/3A SBGT starts and 2/3B SBGT starts if the 2/3A SBGT fails to start. Immediately suspend all irradiated fuel moves.

EXPLANATION:
c and d are wrong because the SBGT train in PRI starts and the SBGT train in STBY starts if the PRI fails to start b is wrong because on a valid Reactor building ventilation radiation isolation signal reactor building ventilation is not restarted.

Reference: DOA 7500-01 and DAN 923-5 A-6	Question Pedigree: Modified 26100S0191
Cog level: High.	Rev 1

Q#	Exam	System	K/A	RO	SRO
46	RO	262001	A1.01	3.1	3.4

A.C. Electrical Distribution	Objective:262L-S1-06
Ability to predict and/or monitor changes in parameters associated with operating the A.C. ELECTRICAL DISTRIBUTION controls including:	Effect on instrumentation and controls of switching power supplies

Given the following conditions:

- "BUS 24 OVERCURRENT" annunciator alarms and the plant responds as expected.
- The Unit 2 Diesel Generator fails to start.

What is the affect, if any, on the LPCI injection valves (1501-21A/B and 22A/B) during this event?

A. remain unaffected.

B. lose valve power for 20 seconds.

C. the valves will open until power is restored.

D. lose valve power indefinitely until restored manually.

Explanation:
ANSWER:

b. lose valve power for 20 seconds.

Explanation:
In the condition described above the valve lose power when Bus 24 is lost and the DG fails to start. MCC 28-7/29-7 has and auto swapping feature that activates once MCC 29-7 loses power. 17 seconds after power is lost MCC 28-7/29-7 will be powered from Bus 28.

Reference: 203L-S1, SDM262001	Question Pedigree: BANK 26201S0116
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
47	BOTH	262001	K2.01	3.3	3.6

A.C. Electrical Distribution	Objective: 262L-S1-2
Knowledge of electrical power supplies to the following:	Off-site sources of power

The Unit 2 Reserve Aux Transformer NORMALLY receives power from...

A. TR-81 through the 138kV switchyard.

B. TR-83 through the 138kV switchyard.

C. TR-81 through the 345kV switchyard.

D. TR-83 through the 345kV switchyard.

Explanation:
ANSWER;
b. TR-83 through the 138kV switchyard.

Reference: SDM 262003 and 262001	Question Pedigree: Modified 26203S0141
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
48	BOTH	262002	K3.17	2.9	3.1

Uninterruptable Power Supply (A.C./D.C.)	Objective: 262L-S2-12
Knowledge of the effect that a loss or malfunction of the UNINTERRUPTABLE POWER SUPPLY (A.C./D.C.) will have on following:	Process monitoring: Plant-Specific

Unit 2 just completed a refueling outage.

- Start up is in progress.
- The Mechanical Vacuum pump is in operation.
- "A" Main Steam Line radiation monitor has failed upscale

Then the following occurs:

- "ESS UPS TROUBLE" annunciator alarm.
- "ESS UPS ON DC OR ALTERNATE AC" annunciator alarm.
- "120/240V ESS BUS VOLT LO" annunciator alarm.
- The NLO reports from the AEER that the ESS Bus voltage is zero.

As a result of this the....

A. mechanical vacuum pump trips.

B. refuel floor rad monitors fail downscale.

C. 24/48 VDC system battery chargers lose power.

D. Reactor Feed Pump minimum flow valve fails closed.

Explanation:
ANSWER
a. The mechanical vacuum pump trips

Explanation
The main steam line rad monitors are powered from the ESS bus and when the ESS bus loses power the rad monitors lose power, which trips the mechanical vacuum pump.

Reference: SDM262006 and 272002	Question Pedigree: NEW
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
49	BOTH	264000	A1.09	3.0	3.1

Emergency Generators (Diesel/Jet)	Objective: 264L-S1-6
Ability to predict and/or monitor changes in parameters associated with operating the EMERGENCY GENERATORS (DIESEL/JET) controls including:	Maintaining minimum load on emergency generator (to prevent reverse power)

The NSO is performing a EDG surveillance:

To prevent a reverse power trip of the output breaker, after closing the output breaker the NSO must ______(1)_____ load using the ______(2) _____ control switch in accordance with DOS 6600-01, Diesel Generator Surveillance Tests.

	1	2
A.	raise	GOVERNOR
B.	raise	VOLTAGE REG
C.	lower	GOVERNOR
D.	lower	VOLTAGE REG

Explanation:

a. raise, GOVERNOR

Explanation:
By raising the Governor control switch the DG accepts some load to prevent a reverse power condition.

Reference: DOS 6600-01, Diesel Generator Surveillance Tests.	Question Pedigree: New
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
50	RO	264000	A3.06	3.1	3.2

Emergency Generators (Diesel/Jet)	Objective: 264L-S1-06
Ability to monitor automatic operations of the EMERGENCY GENERATORS (DIESEL/JET) including:	Cooling water system operation

Given the following:

- A Loss of Coolant Accident has occurred on Unit 2 resulting in drywell pressure of 11 psig.
- Unit 2 Emergency Diesel Generator is supplying power to the emergency bus.
- A large leak develops in the Unit 2 DG Cooling Water System.

With NO operator action, which statement below describes the response of the Unit 2 EDG to this condition?

A. Unit 2 EDG continues to run to destruction.

B. Unit 2 EDG trips when cooling water temperature reaches 200°F.

C. Unit 2 EDG trips when cooling water pressure drops below 35 psig.

D. When cooling water pressure drops to 35 psig, the Unit 2 EDG will continue to run for 6 minutes and then shutdown.

Explanation:
ANSWER:

a. Unit 2 EDG continues to run to destruction.

Explanation:
The student must recognize the a high drywell signal causes the engine trips to be bypassed. With trips bypassed and loss of the heat sink, the engine will run to destruction.

Reference: SDM 264001	Question Pedigree: BANK 26400S0261
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
51	BOTH	271000	K5.07	2.7	2.9

Offgas System	Objective: 271L-S1-6
Knowledge of the operational implications of the following concepts as they apply to OFFGAS SYSTEM:	Radioactive decay

The Off Gas Charcoal adsorbers are required to be in service above 30% reactor power to allow for

A. monitoring using the Flux Tilt Monitor.

B. the recombination of hydrogen and oxygen.

C. proper mixing prior to discharge out the chimney.

D. the decay of gaseous radioactive nuclides to particulate.

Explanation:
ANSWER
d. to allow for the decay of gaseous radioactive nuclides to particulate

Explanation
The recombiner recombines hydrogen and oxygen. The is no mixing in the holdup pipe. And absorption occurs in the charcoal beds which allows for the decay to take place. The Flux Tlit monitor is not bypassed when the adsorbers are.

Reference: SDM27100	Question Pedigree: Modified Question #23 of the Aug 97 NRC Exam K/A for that exam was 271000K508
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
52	BOTH	28800(	A2.01	3.3	3.4

Plant Ventilation Systems	Objective: 288L-S1-12
Ability to (a) predict the impacts of the following on the PLANT VENTILATION SYSTEMS; and (b) based on those predictions use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations:	High drywell pressure: Plant-Specific

Unit 3 is at rated conditions when the following occur:

- A small LOCA develops inside the drywell
- Drywell pressure is 1.5 psig and rising slowly

What will be the impact as drywell pressure continues to rise and what actions are necessary?

IMPACT	ACTION
A. Reactor Building ventilation isolates	Restart Reactor Building ventilation
B. Reactor Building ventilation isolates	Verify SBGT system operating
C. Turbine Building ventilation isolates	Restart Turbine Building ventilation
D. Turbine Building ventilation isolates	Verify SBGT system operating

Explanation:
ANSWER:
b. Reactor Building ventilation isolates and verify SBGT system operating

Explanation:
The turbine building ventilation will not isolate and restarting the Reactor Building ventilation is not the correct action..

Reference: DAN 902-5 G5 and 923-5 A1	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
53	SRO	290002	2.1.32	3.4	3.8

Reactor Vessel Internals	Objective: 202L-S1-7
Conduct of Operations	Ability to explain and apply system limits and precautions.

Prior to returning to two loop operation from one loop operation which of the following limits must be met and what is the reason for that limit?

LIMIT	REASON
A. The temperature difference between the bottom head coolant and the recirc loop coolant in the loop to be started is ≤ 145°F.	To prevent a violation of the RPV pressure and temperature limitation that minimize the chances of brittle fracture from occurring.
B. The temperature difference between the recirc loop coolant in the loop to be started and the reactor vessel coolant is ≤ 50°F.	To prevent a violation of the RPV pressure and temperature limitation that minimize the chances of brittle fracture from occurring.
C. The temperature difference between the bottom head coolant and the recirc loop coolant in the loop to be started is ≤ 145°F.	To prevent damage to the fuel cladding that would result from the sudden increase in power due to the injection of cold water.
D. The temperature difference between the recirc loop coolant in the loop to be started and the reactor vessel coolant is ≤ 50°F.	To prevent damage to the fuel cladding that would result from the sudden increase in power due to the injection of cold water.

Explanation:
ANSWER:
b. The temperature difference between the recirc loop coolant in the loop to be started and the reactor vessel coolant is ≤ 50°F. To prevent a violation of the RPV pressure and temperature limitation that minimize the chances of brittle fracture from occurring.

Explanation:
A and C are wrong because the other limit is between the operating loop and the bottom head coolant temperature. D is wrong because the limit is for brittle fracture reasons, the thermal limits, MCPR, APLHGR, and LHGR prevent damage to the cladding. ITS sections 3.4.9 and 3.2 explain the reason for these limits.

Reference: DOP 0202-01, ITS section 3.4.9 and 3.2	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
54	BOTH	288000	2.1.33	3.4	4.0

Plant Ventilation Systems	Objective: 288L-S1-5
Conduct of Operations	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

Unit 3 is at rated conditions.

Which ONE of the following would require LCO action?

A. Reactor Steam Dome Pressure is 900 psig.

B. Secondary Containment at -0.1 inches H_2O.

C. Reactor Coolant System identified leakage is 2 gpm.

D. One of the Turbine Building to Reactor Building Interlock Doors is closed but unable to be opened.

Explanation:
Answer:
b. Secondary Containment at -0.1 inches H_2O.

Explanation:
The other items are not LCO entries. Steam dome pressure must be between 785 and 1005 psig, Unidentified leakage is allowed to go up to 5 gpm. The Turbine Building to Reactor Building Interlock Doors must be closed but do not have to be able to be opened.

Reference: ITS 3.6.4.1	Question Pedigree: New
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
55	RO	290003	A3.01	3.3	3.5

Control Room HVAC	Object: ± 288L-S3-05
Ability to monitor automatic operations of the CONTROL ROOM HVAC including:	Initiation/reconfig...on

Given the following information regarding the Control Room Ventilati... system:

- Train "A" Air Handling Unit control switch has a RED-TARGE...
- Train "B" Air Handling Unit is operating.
- Air Filtration Unit is secured.
- The Train "B" Air Handling Unit Isolation Dampers (XCV-2 3-...-059 A and B) are OPEN
- All other dampers are CLOSED.

The Control Room Ventilation system is in the ___________ mode.

A. smoke purge

B. normal operating

C. emergency operating

D. isolation/recirculation

Explanation:
ANSWER:

d. isolation/recirculation

Explanation:
With all dampers closed except the 59 A and B, and the B AHU the recir... the air in the Control Room with the AFU secured.

Reference: SDM 288003	Question Pedigree: BANK 28803...141
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
56	SRO	295001	2.2.25	2.5	3.7

Partial or Complete Loss of Forced Core Flow Circulation	Objective: 202L-S1-7
Equipment Control	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.

What is the bases for the LCO that states "Two recirculation loops with forced flow shall be in operation."

A. Prevent entering the "Instability Region" of core flow.

B. To prevent excessive vibrations of the jet pump risers.

C. Natural circulation will not remove the heat generated by the fuel.

D. To ensure that the assumptions of the LOCA analysis are satisfied.

Explanation:
ANSWER:
d. To ensure that the assumptions of the LOCA analysis are satisfied.

Explanation:
Two recirculation loops are normally required to be in operation with their flows matched within the limits specified in S.R. 3.4.1.1 to ensure that during a LOCA caused by a break of piping of one recirculation loop the assumptions so the LOCA analysis are satisfied.

Reference: ITS Bases 3.4.1	Question Pedigree: New
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
57	SRO	295002	2.4.49	4.0	4.0

Loss of Main Condenser Vacuum	Objective: 275L-S1-6
Emergency Procedures and Plan	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Unit 2 is at rated conditions when the following occurs:

- Annunciator 902-7 B-15 "SCREEN WASH CONTROL PANEL TROUBLE" alarms
- The NLO reports the following:
  - A large buildup of fish on the inlet side of the travelling screens.
  - There is a 14 inch level difference across the travelling screens.

15 minutes later the following occurs:

- The NSO reports vacuum starting to trend down at 0.5 inches Hg per minute.
- The NLO reports the level difference is getting worse as more fish are accumulating on the travelling screens.

Based on these reports, which of the following actions must be performed, AND what is the reason for the action?

Action	Reason
A. Scram	protect the condenser from over pressure and maintain heat sink available
B. Lower power and leave only one Circulating Water pump running	maintain vacuum and CCSW system available
C. Scram	maintain vacuum and CCSW system available
D. Lower power and leave only one Circulating Water pump running	protect the condenser from over pressure and maintain heat sink available

Explanation:
ANSWER:
a Scram the protect the condenser from over pressure and maintain heat sink available.

Explanation:
SRO only per criteria 1 and 5.
The DOA has under immediate actions that if a loss of condenser vacuum is IMMINENT and bar rack level difference does not improve scram the reactor. The Tech Spec Bases states that the reason for a low vacuum scram is to protect the main condenser from over pressure and maintain the heat sink available

Reference: DOA 4400-06 and Tech Spec Bases 3.3.1.1	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
58	BOTH	295002	AK2.04	3.2	3.3

Loss of Main Condenser Vacuum	Objective: 245L-S1-05
Knowledge of the interrelations between LOSS OF MAIN CONDENSER VACUUM and the following:	Reactor/turbine pressure regulating system

A reactor cooldown is in progress on Unit 2 using the BYPASS VALVE-OPENING JACK.

The circulating water pumps trip.

What will occur?

A. The MSIV's will isolate on low pressure.

B. The rupture disk on the LP turbine will blow out.

C. The bypass valves will close on low main condenser vacuum.

D. Turbine exhaust hood spray will initiate on high backpressure.

Explanation:
ANSWER:

c. The bypass valves will close on low main condenser vacuum.

Explanation:
When the circ water pumps trip vacumm goes away. When vacuum is less than 7 inches of Hg the bypass valves go closed to protect the condenser.

Reference: SDM 275001 and SDM 241000	Question Pedigree: Modified 24501S0401
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
59	BOTH	295003	AA1.03	4.4	4.4

Partial or Complete Loss of A.C. Power	Objective: 264S L1-12
Ability to operate and/or monitor the following as they apply to PARTIAL OR COMPLETE LOSS OF A.C. POWER:	Systems necessary to assure safe plant shutdown

Unit 2 is at 40% power when the following alarms annunciate:

- 4KV MAIN FEED BKR TRIP
- 4KV BUS 23-1/24-1 VOLT LO
- 4KV BUS 24-1 VOLTAGE DEGRADED

Upon investigation, you notice:

- the Main Feed Breaker for Bus 24-1 is tripped
- Bus 24-1 is de-energized.
- Unit 2 Emergency Diesel Generator is NOT running.

What actions, if any, are required?

A. Be in cold shutdown condition within 7 days.

B. Attempt to manually start the U2 Diesel Generator from the 902-8 panel.

C. Leave Bus 24-1 de-energized while the Maintenance Department repairs the Diesel Generator.

D. No action required since no ECCS signal is present (the Diesel Generator is NOT supposed to auto start)

Explanation:
ANSWER:

b. Attempt to manually start the #2 Diesel Generator from the 902-8 panel.

Explanation:
With an ECCS signal present and the EDG not starting the correct action is to manually start the diesel from the 902-8 panel.

Reference: DOA 6600-01	Question Pedigree: Bank 26400S0011
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
60	BOTH	295003	AK2.03	3.7	3.9

Partial or Complete Loss of A.C. Power	Objective: 262L-S1-12
Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF A.C. POWER and the following:	A.C. electrical distribution system

Given the following:

- Unit 2 is at 40% power.
- The electric plant is in a normal line up.
- The Unit 3 EDG is OOS for repairs to the governor.

A fault develops on Bus 23 causing it to denergize.

As a result of this…

A. Bus 25 will be picked up by Bus 27.

B. Bus 26 or 27 will be picked up by Bus 25.

C. Bus 28 will stay tied to Bus 23-1 and be energized when the EDG starts and closes on Bus 23-1.

D. Bus 28 will be load shed from Bus 23-1 and will have to be reclosed on Bus 23-1 after the EDG starts and closes on Bus 23-1.

Explanation:
ANSWER
c. Bus 28 will stay tied to Bus 23-1 and be energized when the EDG starts and closes on Bus 23-1.

Explanation:
Bus 25 will be picked up by Bus 26. "a" is incorrect. Bus 23 was denergized so "b" is what would happen if Bus 24 lost power. Bus 28 does not load shed so "d" is incorrect.

Reference: SDM 262001	Question Pedigree: NEW
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
61	BOTH	295004	AK3.02	2.9	3.3

Partial or Complete Loss of D.C. Power	Objective: 263S-L2-6
Knowledge of the reasons for the following responses as they apply to PARTIAL OR COMPLETE LOSS OF D.C. POWER:	Ground isolation/fault determination

During performance of DOP 6900-06 125 VDC GROUND DETECTION – UNIT 2, the following ground detection meter indications are observed:

- the meter reads +40 volts with no buttons pushed
- the negative button is pushed and the meter goes to -60 volts
- the positive button is pushed and the meter goes to +100 volts

The NLO then opens the U2 125 VDC TURB. BLDG. RESERVE BUS 2B-2 breaker on RESERVE BUS 2B. There is a known ground of +10 volts on RESERVE BUS 2B-2.

How will Unit 2 ground detection indication respond and what is the reason for the response?

A. All Unit 2 ground detection is lost because of the opened breaker.

B. Unit 2 grounds stay the same because the deenergized bus is powered from Unit 3.

C. The Unit 2 ground detector goes to +30 with no buttons pushed because of the known ground.

D. The Unit 2 ground detector goes to +50 with no buttons pushed because of the known ground.

Explanation:
ANSWER:
b. Unit 2 grounds stay the same because the opened breaker is powered from Unit 3.

Explanation:
The U2 125 VDC reserve turbine building loads are powered from U3. When the breaker in the question is opened it has no effect on the u2 125 VDC grounds.

Reference:	Question Pedigree:
SDM 263002 and DOP 6900-06	New

Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
62	BOTH	295005	AA1.04	2.7	2.8

Main Turbine Generator Trip	Objective: 245011.K017
Ability to operate and/or monitor the following as they apply to MAIN TURBINE GENERATOR TRIP:	Main generator controls

A manual scram occurred on Unit 2 the following conditions are noted:

- The Main Turbine Stop Valves, Control Valves and Intercept Valves are closed.
- MWe on the 902-5 panel indicates -18 MWe
- There are no alarms up on the 923-2 panel

Two minutes later conditions are the same.

Based on these conditions the NSO will...

A. start the Emergency Bearing Oil Pump.

B. open the Main Generator OCB's.

C. open the Turbine Vacuum Breaker.

D. depress the Main Turbine trip pushbutton.

Explanation: ANSWER:

b. open the Main Generator OCB's.

Explanation:
DGP 2-3 directs the NSO to open the OCB's if they have less than or equal to 0 MWe on the 902-5 panel, with the turbine tripped over 90 seconds ago.

Reference: DGP 2-3	Question Pedigree: Modified 03000S0421
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
63	BOTH	295005	AK1.02	3.2	3.6

Main Turbine Generator Trip	Objective: BTO9-35
Knowledge of the operational imp ::ations of the following concepts as they apply :: MAIN TURBINE GENERATOR TRIP:	Core thermal limit considerations

The fuel is protected from damage during a Main Turbine Generator trip by maintaining...

A. MCPR greater than one.

B. MCPR less than one.

C. MAPLHGR greater than one.

D. MAPLHGR less than one.

Explanation:
ANSWER
A MCPR greater than one.

Explanation:
MCPR is the limit that prevents transients from damaging the fuel. Maintaining MCPR greater than 1 prevents damage from occurring during transients.

Reference: COLR, ITS 3.2.2 and GF lesson plan Core thermal limits.	Question Pedigree: New
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
64	BOTH	295031	EA2.01	4.6	4.6

Reactor Low Water Level	Objective: 216L-S1-3
Ability to determine and/or interpret the following as they apply to REACTOR LOW WATER LEVEL:	Reactor Water Level

Unit 3 is shutdown with the following conditions:

- No recirc pumps are running.
- Drywell temperature is 115°F.
- RPV pressure is 0 psig
- SDC pumps are secured.

Which of the following is the lowest usable level indication available at the 903-5 panel to the NSO?

A. -39 inches

B. -51 inches

C. -60 inches

D. -295 inches

Explanation:
ANSWER
d. -295 inches.

Explanation:
At rated conditions -295 is the lowest level that is available to the NSO at the 5 panel.

Give the students a copy of DEOP 100 with the entry conditions blanked out.

Reference SDM 216000 and Figures A, B and C of the DEOPs	Question Pedigree: New
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
65	BOTH	295008	AK3.04	3.3	3.5

High Reactor Water Level	Objective: 259-S1-9
Knowledge of the reasons for the following responses as they apply to HIGH REACTOR WATER LEVEL:	Reactor feed pump trip: Plant-Specific

The feed pumps trip on high reactor level to prevent….

A. jet pump damage due to steam carryunder.

B. HPCI turbine damage due to moisture carryover.

C. feed pump damage due to cavitation and/or runout.

D. main turbine damage due to moisture carryover.

Explanation:
ANSWER
D Main turbine damage due to moisture carryover.

Explanation:
With high level in the vessel there will not be carryunder. The HPCI turbine is protected by a trip at 46 inches. The RFP trip occurs at 53 inches. The RFP are protected from cavitation and/or runout by a low suction pressure trip.

Reference: SDM259L-S1, SDM223004, DAN 902(3)-3-6 F-7 and 902(3)-3 A-9	Question Pedigree: Modified 25600S0051
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
66	SRO	295009	AA2 [illegible]	3.6	3.7

Low Reactor Water Level	Objective: 259L-S-12
Ability to determine and/or interpret the following as they apply to LOW REACTOR WATER LEVEL:	Steam flow/feedflow mismatch

Unit 3 is a rated conditions when a transient occurs resulting in the following:

- Total Steam flow is 9.8 Mlbm/hr
- Total Feed flow is 8.7 Mlbm/hr
- Reactor Water Level is currently at 27 inches.

What is the expected trend for Reactor Water Level and what procedure will be required to be entered if operator actions to correct the problem are UNSUCESSFUL?

	LEVEL	PROCEDURE
A.	Trending up	DEOP 100, RPV Control
B.	Trending up	DOA 600-1, Transient Level Control
C.	Trending down	DEOP 100, RPV Control
D.	Trending down	DOA 600-1, Transient Level Control

Explanation:
ANSWER:
c. Trending down, DEOP 100, RPV Control

Explanation:
steamflow greater than feedflow would cause level to go down An entry into DEOP 100-1 RPV control would be needed when level reaches 8 inches.

Reference: DOA 600-1 and DEOP 100	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
67	SRO	295010	AA2.06	3.6	3.6

High Drywell Pressure	Objective: 29501LP004
Ability to determine and/or interpret the following as they apply to HIGH DRYWELL PRESSURE:	Drywell temperature

Following a station blackout event the STA reports the following parameters to the Unit Supervisor.

- RPV level -35 inches.
- drywell temperature of 325°F
- drywell pressure of 6 psig

Which of the following action should be taken and what is the reason for that action?

ACTION	REASON
A. Spray the Drywell	Convection cooling of the Drywell is needed to prevent over pressure condition in the drywell.
B. Spray the Drywell	Evaporative cooling of the Drywell is needed to prevent over pressure condition in the drywell.
C. Blowdown	Evaporative cooling would result in drywell pressure reducing to less than 2 psig and possible implosion of the Drywell.
D. Blowdown	Convection cooling would result in drywell pressure reducing to less than 2 psig and possible implosion of the Drywell.

Explanation:
ANSWER:

c. Blow down Evaporative cooling resulting in drywell pressure reducing to less than 2 psig and possible implosion of the Drywell.

Explanation
Spraying the Drywell with these conditions would rapidly lower pressure in the drywell with the potential for implosion. The mechanism the this would be caused by is evaporative cooling not convection cooling.

Reference: DEOP 200-1 and BWROG EPGs	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
68	BOTH	295013	AA2.01	3.8	4.0

High Suppression Pool Temperature	Objective: 223L-S1-9
Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL TEMPERATURE:	Suppression pool temperature

Unit 2 is at rated conditions with the 902-36 back-panel recorder TIRS 2-1640-200A, TORUS TEMP MON DIV I OOS due to a failed power supply and all appropriate Technical Specifications have been entered.

TIRS 2-1640-200B currently indicates the following:

Point 1	112°F	Point 5	85°F
Point 2	95°F	Point 6	85°F
Point 3	90°F	Point 7	87°F
Point 4	85°F	Point 8	90°F

What actions (if any) are required based on the current readings?

A. No actions are required at this time.

B. Immediately place the Mode Switch in Shutdown.

C. Enter DEOP 200-1 because two readings satisfy the entry requirement.

D. Enter DEOP 200-1 because the average readings satisfy the entry requirement

Explanation:
ANSWER
a. No actions are required at this time.

Explanation:
Bulk water temperature is the average of points 1 through 8. Average water temperature would be 91.125°F. No action is required. The requirements of ITS section 3.6.2.1 specifically state that the temperature is average temperature, not the highest of any one area.

Reference: 295L-S2 and ITS 3.6.2.1	Question Pedigree: Last years NRC Exam question 71
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
69	BOTH	295014	AK2.01	3.9	4.1

Inadvertent Reactivity Addition	Objective: 24501LK021
Knowledge of the interrelations between INADVERTENT REACTIVITY ADDITION and the following:	RPS

A startup is in progress on Unit 3 with the following conditions:

- Reactor pressure is 170 psig.
- One bypass valve is full open.
- Control rods are being withdrawn to achieve two bypass valves open.
- IRMs are between 30 and 70 on range 8

Which of the following would be expected to occur if all bypass valves were to fail closed with no operator action?

A. The reactor would scram due to high flux.

B. The reactor would scram due to high pressure.

C. Reactor power would increase and stabilize due to the change in void fraction.

D. Reactor power would decrease and stabilize due to the change in void fraction.

Explanation:
ANSWER
a. The reactor would scram due to high flux.

Explanation:
Large increases in reactor pressure at the above conditions would result in a reactor scram due to high flux.

Reference: DGP 01-01 page 19	Question Pedigree: Last years NRC Exam #72
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
70	BOTH	295014	AK3.02	3.7	3.7

Inadvertent Reactivity Addition	Objective: 215L-S2-01
Knowledge of the reasons for the following responses as they apply to INADVERTENT REACTIVITY ADDITION:	Control rod blocks

The basis for the RBM rod block function is to prevent exceeding the:

A. MCPR Limit during a single rod withdrawal error.

B. MCPR Limit during multiple rod withdrawal errors.

C. LHGR Limit for a fuel node during a single rod withdrawal error.

D. LHGR Limit for a fuel node during multiple rod withdrawal errors.

Explanation:
ANSWER:

a. MCPR Limit during a single rod withdrawal error.

Explanation:
The RBM prevents power in bundles surrounding a single control rod being withdrawn from approaching MCPR.

Reference: SDM215002	Question Pedigree: Modified 21502S0164
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
71	SRO	295015	2.4.30	2.2	3.6

Incomplete SCRAM	Objective: 29900LK026
Emergency Procedures and Plan	Knowledge of which events related to system operations/status should be reported to outside agencies.

Unit 3 was at rated conditions when the NSO reports:

- Immediate actions for responding to a reactor water level of -4 inches are complete.
- All rods are in.
- The A and B RPS solenoid group lights are lit.

Which of the following lists or identifies the HIGHEST level of notification that is required to be made for this condition?

A. Illinois EMA per EP-AA-114 Notifications

B. Plant Manager per OP-AA-106-101 Significant Event Reporting

C. Illinois EMA AND Grundy County Sheriff per EP-AA-114 Notifications

D. Plant Manager AND Site Vice President per OP-AA-106-101 Significant Event Reporting

Explanation:
ANSWER
a Illinois EMA per EP-AA-114 Notifications

Give the students page DR 3-3 of the EALs

Explanation:
The key to the questions is the If rods go in when ARI is initiated manually the event is classified as an Alert not a Site Emergency. OP-AA-106-101 Significant Event Reporting does not apply since this is an EP classification (section 4.1.1)

Reference: EALs MS3 and MA3, EP-AA-114, OP-AA-106-101	Question Pedigree: New
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
72	BOTH	295015	AK1.04	3.8	3.8

Incomplete SCRAM	Objective: 29501LK031
Knowledge of the operational implications of the following concepts as they apply to INCOMPLETE SCRAM:	Reactor pressure: Plant-Specific

An automatic scram occurred on Unit 3

Control rods did not fully insert and reactor power decreased to 10%

Containment parameters will require an emergency depressurization within fifteen minutes if trends are not changed.

Opening the bypass valves now to rapidly reduce reactor pressure should….

A. be performed to allow for the reduction of reactor power.

B. be performed to anticipate an emergency depressurization.

C. NOT be performed since the pressure reduction will add significant positive reactivity.

D. NOT be performed since the pressure reduction will result in removal of boron from the RPV.

Explanation:
ANSWER

c. NOT be performed since the pressure reduction will add significant positive reactivity.

Explanation:
With the reactor still at power, the rapid depressurization will add significant positive reactivity to the core complicating the power actions underway. It is for this reason that an emergency depressurization is only performed if the conditions that require it are actually met.

Reference: 295L-S1	Question Pedigree: Last years NRC exam #99
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
73	SRO	295016	2.1.32	3.4	3.8

Control Room Abandonment	Objective: 29501RK001
Conduct of Operations	Ability to explain and apply system limits and precautions.

During the performance of DSSP 0100-CR "Control Room Evacuation" it is reported that the Isolation Condenser Make-up Pumps will not start.

According to the UFSAR this is a concern because ______(1)_______ and this is prevented by ______(2)_____ .

	1	2
A.	damage will occur to the Isolation Condenser tubes	isolating the Isolation Condenser from the reactor vessel
B.	damage will occur to the Isolation Condenser tubes	adding make up to the Isolation Condenser from another source
C.	inventory in the vessel will be lost	isolating the Isolation Condenser from the reactor vessel
D.	inventory in the vessel will be lost	adding make up to the Isolation Condenser from another source

Explanation:
ANSWER

D. inventory in the vessel will be lost AND adding make up to the Isolation Condenser from another source

Explanation:
There is a NOTE in the Control room abandonment procedure that says make up to the isolation condenser must be initiated within 20 minutes. The UFSAR states with out the Iso condenser to lower pressure inventory will be lost when the ERVs lift to control pressure.

Reference: DSSP 100-CR and UFSAR section 5.4.6.3	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
74	BOTH	295016	AA1.04	3.1	3.2

Control Room Abandonment	Objective: 262L-S4-12
Ability to operate and / or monitor the following as they apply to CONTROL ROOM ABANDONMENT:	A.C. electrical distribution

DSSP 0100-CR "Control Room Evacuation" is in progress.

How is the Bus 29-28 Tie breaker closed?

A. Depress the manual close pushbutton on the front of the breaker.

B. Plug in the local pushbutton control station and depress the close button.

C. Place the two hooks of the operating handle in the lower portion of the cubicle and push down on the operating tool.

D. Place the ratchet type maintenance tool on the shaft that protrudes from the breaker and operate the handle until the breaker closes.

Explanation:
ANSWER:
b. Place the ratchet type maintenance tool on the shaft that protrudes from the breaker and operate the handle until the breaker closes..

Explanation:
The Bus 29-28 TIE requires the ratchet type tool to close the breaker.

Reference: DSSP 100-CR	Question Pedigree: New
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
75	BOTH	295017	AK2.04	3.1	3.3

High Off-Site Release Rate	Objective: 288L-S1-05
Knowledge of the interrelations between HIGH OFF-SITE RELEASE RATE and the following:	Plant ventilation systems

Which ONE of the following conditions will cause a Reactor Building Ventilation Isolation?

A. A 10 R/hr radiation level in the drywell.

B. A 10 mR/hr radiation level on the refuel floor.

C. An upscale trip on one Reactor Building ventilation radiation monitor.

D. A downscale trip on one Reactor Building ventilation radiation monitor.

Explanation:
ANSWER:
c. An upscale trip on one Reactor Building exhaust plenum monitor.

Explanation:
It take 100 mrem on the refuel floor, or 30 R in the drywell, or two downscale trips to cause an isolation.

Reference: DOA 5750-01	Question Pedigree: Modified 288801S011
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
76	RO	295017	AK3.03	3.3	4.5

High Off-Site Release Rate	Objective: NONE
Knowledge of the reasons for the following responses as they apply to HIGH OFF-SITE RELEASE RATE:	Implementation of site emergency plan

The reason for the implementation of the General Emergency plan is to…

A. minimize the damage done to plant equipment.

B. allow personnel to exceed the normal exposure limits.

C. allow the NRC to be involved in decisions made at the plant.

D. minimize or prevent exposure above federal limits to offsite personnel.

Explanation:
ANSWER:
d. minimize or prevent exposure above federal limits to offsite personnel.

Explanation:
The heath and safety of the public is the reason for GSEP

Reference:	Question Pedigree:
EP-AA-113 and EP-AA-111	New

Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
77	RO	295018	2.1.14	2.5	3.3

Partial or Complete Loss of Component Cooling Water	Objective: 209L-S1-5
Conduct of Operations	Knowledge of system status criteria which require the notification of plant personnel.

Unit 3 is operating at rated conditions when the following occurs:

- The 3A RBCCW pump trips.
- The 3B RBCCW pump is successfully started and all RBCCW system parameters return to normal.
- There is no indication of an electrical trip on the breaker for the 3A RBCCW pump.

What is the lowest level of authority that must authorize a restart of the 3A RBCCW pump?

A. Only the Unit Supervisor

B. The Shift Manager and Engineering

C. The Shift Manager and Electrical Maintenance

D. The Unit Supervisor and Electrical Maintenance

Explanation:
ANSWER
a. Only the Unit Supervisor

Explanation:
With no electric fault indicated only the US authorization is needed to attempt to restart the pump,

Reference: DOA 6500-10	Question Pedigree: New
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
78	SRO	295019	AA2.02	3.6	3.7

Partial or Complete Loss of Instrument Air	Objective: 201L-S1-7
Ability to determine and/or interpret the following as they apply to PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR:	Status of safety-related instrument air system loads (see AK2.1-AK2.19)

Instrument Air on Unit 3 has been lost to the Scram Discharge Volume (SDV) vent and drain valves.

Unit 3 remains at 100% power.

It is expected that the SDV vent and drain valves will fail….

A. CLOSED and be INOPERABLE since the SDV would be isolated from the scram outlet header.

B. CLOSED and be INOPERABLE since proper venting and draining of the SDV could NOT be assured.

C. CLOSED and remain OPERABLE since the reactor coolant system would be isolated from the containment.

D. OPEN and be INOPERABLE since the reactor coolant system could NOT be isolated from the containment.

Explanation:
ANSWER:
b. CLOSED and be INOPERABLE since proper venting and draining of the SDV could NOT be assured.

Explanation:
The SDV would close, for them to be operable they must be able to be opened and closed.

Reference: DOA 4700-01 and ITS 3.1.8 Bases	Question Pedigree: Last years NRC exam #104
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
79	BOTH	295019	AK2.17	2.7	2.7

Partial or Complete Loss of Instrument Air	Objective: 206L-S1-12
Knowledge of the interrelations between PARTIAL OR COMPLETE LOSS OF INSTRUMENT AIR and the following:	High pressure coolant injection: Plant-Specific

What effect will the loss of Instrument Air have on the HPCI system?

A. HPCI Turbine Exhaust Pot Bypass Valve (2301-28) will fail closed.

B. HPCI Steam Line Drain Trap Bypass Valve (2301-31) will fail open.

C. Turbine Steam Supply Line Drain Valves (2301-29, -30) will fail open.

D. Turbine Stop Valve Above Seat Drain Valves (2301-64, -65) will fail closed.

Explanation:
ANSWER:
d. Turbine Stop Valve Above Seat Drain Valves (2301-64, -65) will fail closed.

Explanation:
All of the valves listed in this question fail to the HPCI operating position on a loss of Instrument Air. The 2301-28 fails open, the 2301-31 fails closed, and the 2301-29, -30 fail closed. The 2301-64,-65) will fail as stated in the closed position.

Reference: SDM206000	Question Pedigree: New
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
80	RO	295020	AA2.01	3.6	3.7

Inadvertent Containment Isolation	Objective: 239S-L [illegible]
Ability to determine and/or interpret the following as they apply to INADVERTENT CONTAINMENT ISOLATION:	Drywell/containment pressur[illegible]

Unit 2 is at rated conditions and has been for the last 300 days.

An inadvertent Group 1 isolation signal is received on High Main Steam Line Fl[illegible]

What is the FIRST thing this causes?

A. EDGs to start.

B. HPCI to start.

C. Drywell pressure to go up.

D. Torus temperature to go down.

Explanation:
ANSWER
c. drywell pressure to go up.

Explanation:
With EPU on Unit 2 the ERV will open to control pressure. This will cause drywe[illegible] pressure to go up. The EDGs will not recive a start signal unless drywell pressure reaches 2 psig. HPCI w[illegible] not start till level drops to -59 inches and torus temperature will go up not down.

Reference: 299L-S5	Question Pedigree: New
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
81	SRO	295022	AA2.01	3.5	3.6

Loss of CRD Pumps	Objective: 201L-S1-01
Ability to determine and/or interpret the following as they apply to LOSS OF CRD PUMPS:	Accumulator pressure

Unit 3 was at rated conditions with ALL equipment available when the following events occurred:

- The running CRD pump tripped.
- Two peripheral control rod "ACCUMULATOR TROUBLE" alarms are received.

The following additional information is provided:

- The two controls rods are at notch 48
- Accumulator pressure for the alarming accumulators is 925 psig.

Which of the following describes the NEXT action that should be performed and the reason for the action?

ACTION	REASON
A. Scram the reactor	To prove the ability of the CRD system to scram the reactor without the reliance on the CRD drive water.
B. Scram the reactor	To ensure Shutdown Margin requirements are met should the controls rods associated with the failed accumulators fail to insert.
C. Start the standby CRD pump and verify charging water header pressure is at least 940 psig	To prove the ability of the CRD system to supply drive water pressure to insert the control rods without the accumulators.
D. Start the standby CRD pump and verify charging water header pressure is at least 940 psig	To prevent damage to the control rod drive mechanisms due to overheating.

Explanation:
ASWER
c. Start the standby CRD pump and verify charging water header pressure is at least 940 psig **(ACTION)** and To prove the ability of the CRD system to supply drive water pressure to insert the control rods without the accumulators.**(REASON)**

Explanation
Immediate action of DOA 300-01 is to start standby CRD pump. With accumulators inoperable, operators must prove the ability to insert control rods.

Reference: DOA 300-01	Question Pedigree: Modified Last years NRC exam #83
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
82	BOTH	295023	2.1.14	2.5	3.3

Refueling Accidents	Objective: 23400LK001
Conduct of Operations	Knowledge of system status criteria which require the notification of plant personnel.

Unit 2 is in a refueling outage when the refuel floor radiation alarm sounds.

The AUX NSO reports the Refuel Floor ARM indicates 110 mrem/hr.

Which of the following actions must be taken?

A. Evacuate the Refuel Floor only.

B. Evacuate the Refuel Floor and the Reactor Building.

C. Notify the Fuel Handling Supervisor that the alarm is erroneous.

D. Notify the Fuel Handling Supervisor that the alarm is valid and work may continue with caution.

Explanation:
ANSWER
a. Evacuate the Refuel Floor only.

Explanation:
The action required by DFP 0850-03 are to evacuate the refuel floor when the ARM indicates greater than 100 mrem.

Reference: DFP 0850-03	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
83	BOTH	295023	AA1.03	3.3	3.6

Refueling Accidents	Objective: 23400LK01
Ability to operate and/or monitor the following as they apply to REFUELING ACCIDENTS:	Fuel handling equipment

The reactor building overhead crane and the refueling bridge crane are being used to move equipment during a refueling outage when radiation levels reach 40 mrem / hr on the refuel floor.

What are the consequences of the radiation level?

A. Standby Gas Treatment will auto start.

B. The Reactor Building Ventilation system will isolate.

C. The refueling bridge crane will be prevented from raising fuel.

D. The reactor building overhead crane hoist raise function is inhibited.

Explanation:
ANSWER
d. The reactor building overhead crane hoist raise function is inhibited.

Explanation:
Standby Gas Treatment and Reactor Building Ventilation auto actions occur at 100 mrem / hr. High radiation is not a refueling bridge crane interlock.

Reference: DFP 850-03	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
84	BOTH	295024	EK1.01	4.1	4.2

High Drywell Pressure	Objective: 223S L1-12
Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL PRESSURE:	Drywell Integrity: Plant-Specific

Unit 2 is at rated conditions when the following occurs:

A design basis Loss of Coolant Accident (LOCA).
A Drywell to Torus Vacuum Breaker fails open.

This will FIRST result in drywell pressure...

A. equalizing with Reactor Building pressure.

B. exceeding the design pressure of the containment.

C. dropping rapidly since the cooling effectiveness of the torus has been greatly improved.

D. staying below the design pressure since there are a number of redundant vacuum breakers installed.

Explanation:
ANSWER:

b. exceeding the design pressure of the containment.

EXPLANATION:
A failed open vacuum breaker will allow steam to bypass the suppression pool thereby causing the pressure spike to exceed design pressure.

Reference: SDM223001	Question Pedigree: Bank 22301S0311
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
85	SRO	295025	2.4.4	4.0	4.3

High Reactor Pressure	Objective:
Emergency Procedures and Plan	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.

The following conditions exist on Unit 3:

- RPV level is 26 inches and rising.
- RPV pressure is 1070 and steady.
- All rods are in.
- EHC pressure is 0 psig.
- The MSIVs are OPEN and the bypass valves are CLOSED.

With these indications the operating team should FIRST enter…

A. DEOP 100-1, RPV Control, and restore level using HPCI.

B. DEOP 100-1, RPV Control, and initiate the Isolation Condenser.

C. DOA 600-1, Transient Level Control, and restore level by starting the standby Condensate/condensate booster pumps.

D. DOA 5650-2, Pressure Regulator Failure, and reduce reactor pressure with pressure set.

Explanation:
Answer:
b. DEOP 100-1, RPV Control, and initiate the Isolation Condenser.

Explanation:
Meets SRO only criteria number 5.
For the conditions given, the action that need to be taken **first** are restoring pressure in accordance with DEOP 100-1.

Reference: DEOP 100-1	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
86	BOTH	295025	EK3.04	4.5	4.7

High Reactor Pressure	Objective: 207L-S1-1
Knowledge of the reasons for the following responses as they apply to HIGH REACTOR PRESSURE:	Isolation condenser initiation: Plant-Specific

Given the following conditions on Unit 3:

- The plant had been operating at 100% for 6 months.
- A Group 1 isolation occurred ten minutes ago.
- All AC power has been lost to Unit 3.

Which of the following systems is designed to provide reactor pressure control/cooling under these conditions?

A. HPCI

B. Isolation Condenser

C. Main steam line drain valves

D. Automatic Depressurization System

Explanation:
ANSWER
b. Isolation Condenser

Only the IC is designed specifically for the conditions described in the stem. HPCI's purpose is medium LOCA, ADS is a backup to HPCI, and the MSL drains are not available (due to loss of A/C power).

Reference: SDM 207000	Question Pedigree: Bank 20700S0401
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
87	BOTH	295028	EK1.02	2.9	3.1

High Drywell Temperature	Objective: 2901LK002
Knowledge of the operational implications of the following concepts as they apply to HIGH DRYWELL TEMPERATURE:	Equipment environmental qualifica: :n

Unit 3 is experiencing a LOCA. The following conditions exist:

- reactor is shutdown
- drywell pressure is 10 psig
- drywell temperature is 350°F (point 9)
- reactor pressure is 75 psig
- reactor water level is –45 inches
- reactor building temperature is 105°F
- Fuel Zone level indication is OOS

Which ONE of the following is the reason that RPV water level indication may NOT be :::iable?

A. Drywell pressure is excessive.

B. Drywell temperature is excessive.

C. Reactor Building temperature is excessive.

D. RPV level is below minimum usable indicating levels.

Explanation:
ANSWER:
b. Drywell temperature is excessive.

Reference: DEOP 100 Figure A and B	Question Pedigree: Modified 29502S0881
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
88	RO	295029	EA2.02	3.5	3.6

High Suppression Pool Water Level	Objective: 29502LK004
Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL:	Reactor pressure

Conditions are as follow on Unit 2

- Torus water level is 19 feet.
- All efforts to lower Torus level have failed.

Which of the following events could jeopardize containment integrity?

A. Core Spray initiation and injection

B. ERVs cycling on high reactor pressure.

C. HPCI initiation with suction from the torus.

D. Lining up the LPCI system for torus cooling.

Explanation:
ANSWER:
b. ERVs cycling on high reactor pressure.

Explanation:
If torus level can not be held < 18.5 feet all outside injection sources must be stopped. If the relief valves were to lift damage to the containment could occur.

Reference: 295L-S2	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
89	SRO	295029	EA2.03	3.4	3.5

High Suppression Pool Water Level	Objective: 223L-S1-07
Ability to determine and/or interpret the following as they apply to HIGH SUPPRESSION POOL WATER LEVEL:	Drywell/containment water level

Unit 3 was at rated conditions when a LOCA occurred.

The Aux NSO makes the following report to the Unit Supervisor, " Torus level rose to 20 feet immediately after the LOCA occurred then returned to a level of 15 feet 3 to 5 seconds later."

This report indicates that...

A. DEOP 400-2 should be entered due to high Torus level.

B. the Unit is experiencing a LOCA outside the design bases.

C. an NLO must be dispatched to locally determine Torus level.

D. "Pool Swell" has occurred as described in the design bases.

Explanation:
ANSWER
d. "Pool Swell" has occurred as described in the design bases.

The UFSAR explains this phenomenon and the design basis accounts for its occurrence. Locally verifying level with the sightglass is not required. The DEOP entry is not required unless level cannot be held below 18.5 feet.

This meets SRO criteria #1

Reference: UFSAR section 6.2.1.3.4.1.1	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
90	SRO	295030	EA2.04	3.5	3.7

Low Suppression Pool Water Level	Objective: 29502LK002
Ability to determine and/or interpret the following as they apply to LOW SUPPRESSION POOL WATER LEVEL:	Drywell/ suppression chamber differential pressure: Mark-I&II

The following conditions exist on Unit 3.

- Torus level is -4.4 inches
- Drywell to Torus dP is 1.6 psig
- Annunciator "TORUS NARROW RANGE WTR LVL LO" 902-4 C-23 is alarming.

Which of the following procedures must be entered?

A. DEOP 100 "RPV Control"

B. DEOP 200-1 "Primary Containment Control"

C. DOP 1600-1 "Normal Pressure Control of the Drywell and Torus" to vent the Torus

D. DOS 1600-2 "Torus Level Verification using Local Sightglass" to validate the control room indicator.

Explanation:
ANSWER
b. DEOP 200-1 "Primary Containment Control"

Explanation:
Meets SRO only criteria #5. This is not a listed entry condition on DEOP 200-1, however in DOP 1600-2 Torus Water Level Control states that if dP and level are not within the curves on Attachment A DEOP 200-1 must be entered.

Give the students a copy of DOP 1600-2

Reference: DEOP 200-1 and DOP 1600-2	Question Pedigree: New
Cog level: High	Rev 2

Exam Submittal

Q#	Exam	System	K/A	RO	SRO
91	BOTH	295031	EK2.1-	4.1	4.1

Reactor Low Water Level	Objective: 259S L2-12
Knowledge of the interrelations between REACTOR LOW WATER LEVEL and the following:	Reactor water level control

Unit 2 is at rated conditions when the following occurs:

- A transient occurs that causes the following RPV level indication:
  - Narrow Range A indicates -2 inches.
  - Narrow Range B indicates +1 inches.
  - Medium Range A indicates -1 inches.
- A Reactor Scram does NOT occur.

What is the response of the FWLC system?

A. Stays in Master Auto and attempts to restore level.

B. Sets RPV level setpoint to +5 inches immediately.

C. Ramps RPV level setpoint to +5 inches at 10 inches/min.

D. Enters Master Manual and the operator must restore level.

Explanation:
ANSWER:

b. Sets RPV level setpoint to +5 inches immediately.

Explanation:
Sets RPV level to +5 inches if FWLCS is in Master Auto and the following occur
1. Reactor Scram

OR

2. Two of the following occur:
   - Narrow Range A indicates <0 inches.
   - Narrow Range B indicates <0 inches.
   - Medium Range A indicates <0 inches.

Reference:	Question Pedigree:
DOA 600-1 and SDM 259002	New

Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
92	SRO	295032	2.4.49	4.0	4.0

High Secondary Containment Area Temperature	Objective: 29502LP016
Emergency Procedures and Plan	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

Unit 2 is at rated conditions when the following occurs:

- Annunciator "CHANNEL A MN STM TUNN TEMP HI" 902-5 D-9 alarms.
- The NSO reports the Shutdown Cooling Pump Room temperature is 190°F and rising slowly.

The Unit Supervisor should direct the NSO to...

A. increase TBCCW flow to the X-Area coolers.

B. manually scram the reactor and perform a blowdown.

C. manually scram the reactor and shut the MSIVs.

D. secure Reactor Building ventilation and start SBGT.

Explanation:
ANSWER:
c manually scram the reactor and shut the MSIVs.

Explanation:
These are the correct action per the DEOP 300-1 flow chart. TBCCW does not cool the X area coolers, a blowdown is not required until TWO areas are above Max Safe and starting SBGT would not cool the area down.

Give the students a copy of DEOP 300-1 with the entry conditions blanked out.

Reference: DEOP 300-1	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
93	BOTH	295032	EA1.03	3.7	3.7

High Secondary Containment Area Temperature	Objective: 288S-L2-5
Ability to operate and/or monitor the following as they apply to HIGH SECONDARY CONTAINMENT AREA TEMPERATURE:	Secondary containment ventilation

After a trip of Reactor Building ventilation it has been determined that Reactor Building ventilation needs to be restarted per DEOP 300-1, Secondary Containment Control, to lower Reactor Building temperature.

What must be done to restart Reactor Building ventilation?

A. Two vent fans must be started first.

B. Two exhaust fans must be started first.

C. Install jumpers to bypass High Reactor Building Temperature isolation.

D. Fan control switch must be held in CLOSE for a minimum of five seconds.

Explanation:
ANSWER:
d. Fan control switch must be held in CLOSE for a minimum of five seconds.

Explanation:
There is no high RB temperature isolation. The fans are started one exhaust the one vent. The switch must be held for 5 seconds to allow air flow to develope.

Reference: DEOP 500-2	Question Pedigree: New
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
94	BOTH	295033	EA1.01	3.9	

High Secondary Containment Area Radiation Levels	Objective: 272L-S1-6
Ability to operate and/or monitor the following as they apply to HIGH SECONDARY CONTAINMENT AREA RADIATION LEVELS:	Area radiation monitoring system

Given the following conditions:

- The 902-3 A-1 "RX BLDG RAD HI annunciator has alarmed.
- The ARM in alarm is still above its alarm setpoint.

The annunciator will be able to be reset...

A. ONLY when that ARM's RESET button is depressed on the 902-11 panel Indicator and Trip Unit.

B. after the ARM BYPASS SWITCH for the ARM in alarm has been placed in the BYPASS position.

C. ONLY when that ARM's SILENCE button has been depressed locally at the auxiliary unit

D. after acknowledging the 902-3 panel annunciator and then by depressing the 902-3 panel Reset pushbutton.

Explanation:
b. after the ARM BYPASS SWITCH for the ARM in alarm has been placed in the BYPASS position.

Explanation:
The toggle switches above the multi-point recorder allow for individual points to be bypassed so the operator would be aware of other alarms.

Reference:	Question Pedigree:
SDM 272001	Bank 27201S0061

Cog level: Memory	Rev:

Q#	Exam	System	K/A	RO	SRO
95	BOTH	295034	EK1.01	3.8	4.1

Secondary Containment Ventilation High Radiation	Objective: 29502LK050
Knowledge of the operational implications of the following concepts as they apply to SECONDARY CONTAINMENT VENTILATION HIGH RADIATION:	Personnel protection

Unit 3 was at rated conditions when a transient occurred.

- An Isolation Condenser steam leak occurred and was isolated.
- Isolation Condenser area temperature is 17[illegible]°F and is too high for personnel access.
- Valid Reactor Building Ventilation isolations are present on each of the following parameters:
  - Drywell Pressure
  - Reactor Building Exhaust Radiation
  - Reactor Water Level

Restarting the Reactor Building Ventilation would allow safer access to the Isolation Condenser area…

A. but is NOT allowed due to the Drywell Pressure isolation.

B. but is NOT allowed due to the Reactor Building Exhaust Radiation isolation.

C. but is NOT allowed due to the Reactor Water Level isolation.

D. and may be performed after bypassing the isolation signals.

Explanation:
ANSWER
b. But is NOT allowed due to the Reactor Building Exhaust Radiation isolation.

Explanation:
Only the drywell and RPV water level isolations are allowed to be bypassed since they do not indicate a release hazard. Reactor building exhaust radiation above the isolation setpoint would be indicated of a potential radioactive release problem and would not be allowed to be bypassed.

Reference: 295L-S3	Question Pedigree: Last years NRC Exam #97
Cog level: Memory	Rev 1

	Exam	System	K/A	RO	SRO
	BOTH	295035	EK3.02	3.3	3.5

Secondary Containment High Differential Pressure	Objective: 288S-L1-6
Knowledge of the reasons for the following responses as they apply to SECONDARY CONTAINMENT HIGH DIFFERENTIAL PRESSURE:	Secondary containment ventilation response

Why do the Reactor Building Ventilation supply fans trip on high Reactor Building pressure?

A. To prevent an auto initiation of SBGT.

B. To prevent actuation of the Reactor Building blowout panels.

C. To ensure that airflow is from high contamination to low contamination.

D. To prevent damage to the Reactor Building Ventilation supply fans butterfly dampers.

Explanation:
ANSWER:
b. To prevent actuation of the Reactor Building blowout panels.

Explanation:
The fans trip at 2.2 inches H_2O, this protects the building from overpressure. If an overpressure condition was to develop the RB blowout panels would activate at 13 inches H_2O to protect the secondary containment.

Reference: SDM 288001 and 223001 and LP 288S-L1	Question Pedigree: New
Cog Level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
97	BOTH	295037	EA1.04	4.5	4.5

SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	Objective: 211L-S1-06
Ability to operate and/or monitor the following as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN:	SBLC

The following conditions exist:

- A transient has occurred on Unit 2.
- The Unit Supervisor has ordered both SBLC pumps started for injection into the reactor.
- After placing the INJECTION CONTROL switch to the SYS 1&2 position, the operator observes the following indications:
  - The SQUIB A and SQUIB B lights are lit.
  - The Pump 1 and Pump 2 lights are lit.

Which ONE of the following is the proper course of action in order to attempt to get full initiation of BOTH SBLC subsystems?

A. Dispatch an NLO to start the SBLC pumps locally.

B. Dispatch an NLO to manually open the SQUIB valves.

C. Position the INJECTION CONTROL switch to the SYS 1 position.

D. Position the INJECTION CONTROL switch to the SYS 2&1 position.

Explanation: ANSWER:

d. Position the INJECTION CONTROL switch to the SYS 2&1 position.

Explanation:
There is no ability to manually open the squib; "b" is incorrect. Taking the switch to the SYS 1 position will not allow both subsystems to inject, “c” is incorrect The pumps are already running; "a" is incorrect. The reason the squib valve may not have fired might be due to a circuitry problem, taking the switch to the other dual pump position may successfully fire the squib; "d" is correct.

Reference: SDM211000	Question Pedigree: Modified 21100S0171
Cog level: High.	Rev 1

Q#	Exam	System	K/A	RO	SRO
98	BOTH	295037	EK1.02	4.1	4.3

SCRAM Condition Present and Reactor Power Above APRM Downscale or Unknown	Objective:
Knowledge of the operational implications of the following concepts as they apply to SCRAM CONDITION PRESENT AND REACTOR POWER ABOVE APRM DOWNSCALE OR UNKNOWN:	Reactor water level effects on reactor power

When flooding the RPV during a Failure to Scram condition, why must injection into the RPV be increased slowly?

A. To minimize the thermal shock the clad experiences.

B. To prevent a large power transient that may cause core damage.

C. To allow the operators time to ensure the Main Steam lines do not become flooded.

D. To ensure the reactor does not pressurize uncontrollably when the reactor goes solid.

Explanation:
ANSWER:
b. To prevent a large power transient that may cause core damage

Explanation:
Since the reactor may become critical with addition of cold feedwater the water must be added slowly to prevent a large transient on the core.

Reference: 295L-S4	Question Pedigree Bank 35900S008
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
99	BOTH	295038	EA1.03	3.7	3.9

High Off-Site Release Rate	Objective: 272L-S2-8
Ability to operate and/or monitor the following as they apply to HIGH OFF-SITE RELEASE RATE:	Process liquid radiation monitoring system

Unit 2 is at rated conditions when the "LIQUID PROCESS RAD MONITOR HI" 902-3 G-1 annunciator alarms.

Where can the operator determine the actual RBCCW effluent monitor levels?

A. 902-10 panel - control room backpanel

B. 923-7 panel - SPING panel

C. Rad Waste Control Room

D. at the RBCCW expansion tank

Explanation:
ANSWER
a. 902-10 panel - control room backpanel

Explanation:
The rad monitor for RBCCW is located at the 902-10 panel.

Reference: DAN 902(3)-3 G-1	Question Pedigree: New
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
100	BOTH	295038	EK1.03	2.8	3.8

High Off-Site Release Rate	Objective: 29501LK063
Knowledge of the operational implications of the following concepts as they apply to HIGH OFF-SITE RELEASE RATE:	Meteorological effects on off-site release

The following conditions exist at Dresden.

- A Tornado Warning is in effect for the area that includes Dresden.
- Reactor Building crane lifts are in progress to move material from the 517 foot level of the reactor building to the refuel floor.
- Dresden Security personnel have sighted a tornado.

Which of the following must be performed as a result of these conditions?

A. Start EDG's in anticipation of a loss of off-site power.

B. Verify blowout panels are in place on both Unit 2 and 3 Reactor Buildings.

C. Open Unit 2 and 3 Turbine Building rollup doors to equalize building pressure.

D. Stop crane lifts ONLY if a local assessment determines the tornado will hit on site.

Explanation:
ANSWER
b. Verify blowout panels are in place on both Unit 2 and 3 Reactor Buildings.

Explanation:
Verifying the blowout panels is the required action per DOA 10-2. Answers a and c are items the procedure directs NOT to do and all crane lifts are stopped whether or not the tornado will impact on site. This would affect the off-site release rate due to a loss of secondary containment.

Reference: DOA 0010-02 Tornado Warning / Severe Winds	Question Pedigree: New
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
101	RO	300000	K4.02	3.0	3.0

Instrument Air System (IAS)	Objective: 278L-S1-5.d.
Knowledge of (INSTRUMENT AIR SYSTEM) design feature(s) and or interlocks which provide for the following:	Cross-over to other air systems

The Unit 2 Service Air to Unit 2 Instrument Air crosstie will automatically open if:

A. service air header pressure decreases to 95 psig

B. instrument air header pressure decreases to 85 psig

C. radwaste sparging air header pressure decreases to 95 psig

D. control room breathing air header pressure decreases to 85 psig

Explanation:
ANSWER:

b. instrument air header pressure decreases to 85 psig

Explanation:
The crosstie between service air and instrument air opens at 85 psig.

Reference: SDM278000	Question Pedigree: Bank 27800S0074
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
102	SRO	400000	2.1.33	3.4	4.0

Component Cooling Water System (CCWS)	Objective: 277L-S1-7
Conduct of Operations	Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.

During performance of DOS 1500-02 the following pump flow values were recorded:

Unit 2:

- 2A CCSW pump 3610 gpm

Unit 3

- 3A CCSW pump 3590 gpm

Based on these indications....

A. Neither pump is operable because both pumps require 3621 gpm.

B. Both pumps are operable because only 3500 gpm is required for each pump.

C. 2A is operable but 3A is NOT because Unit 3 pumps must also supply cooling to the Control Room ventilation.

D. 3A is operable but 2A is NOT because Unit 2 pumps must also supply cooling to the Control Room ventilation.

Explanation:
ANSWER
d. 3A is operable but 2A is NOT because Unit 2 pumps must also supply cooling to the Control Room ventilation.

Explanation:
Unit 2 pumps must have flow greater than 3621 because they also supply cooling to the control room ventilation system.

Reference: ITS 3.7.1 Bases and DOS 1500-02	Question Pedigree: New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
103	BOTH	500000	EK2.09	3.0	3.3

High Containment Hydrogen Concentration	Objective:223L-S3-1
Knowledge of the interrelations between HIGH CONTAINMENT HYDROGEN CONCENTRATIONS the following:	Drywell nitrogen purge system

During power operation, the drywell and torus are normally inerted to ...

A. allow detection of Iodine gas more readily.

B. prevent the occurence of a flammable mixture in the primary containment.

C. control temperatures of the containment during Loss of Coolant Accidents.

D. limit the amount of oxygen generated during a LOCA so an explosive mixture is NOT achieved.

Explanation:
ANSWER:

b. prevent the occurrence of a flammable mixture in the primary containment.

Explanation:
During a LOCA if the drywell and torus were not inerted with nitrogen the build up of hydrogen caused by the zirc-water reaction could lead to a combustible atmosphere in the drywell.

Reference: 223L-S3	Question Pedigree: Modified 22301S0241
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
104	BOTH	500000	EK3.01	2.9	3.3

High Containment Hydrogen Concentration	Objective: 29502LK018
Knowledge of the reasons for the following responses as they apply to HIGH PRIMARY CONTAINMENT HYDROGEN CONCENTRATIONS:	Initiation of containment atmosphere control system

Nitrogen purging of the primary containment without venting while performing the actions of DEOP 200-2 Hydrogen Control will...

A. NOT reduce the hydrogen concentration.

B. increase the pressure in the containment.

C. make the hydrogen monitoring indications unreliable.

D. increase the oxygen concentration in the primary containment.

Explanation:
ANSWER
b increase the pressure in the containment.

Explanation:
Purging the containment without venting will result in pressurizing the containment without lowering the partial pressure or mass of hydrogen.

Reference: DEOP 500-4	Question Pedigree: New
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
105	RO	600000	AK1.02	2.9	3.1

Plant Fire On Site	Objective: 286L-S[illegible]
Knowledge of the operation applications of the following concepts as they apply to Plant Fire On Site:	Fire Fighting

Given the following information:

- loss of all 125 vdc to unit 2
- a fire occurs in the U2 DG room

Where would you dispatch personnel to manually inject CO_2 to the Unit 2 DG room?

A. the main CO_2 tank.

B. the CO_2 reset panel.

C. the Unit 2 DG room.

D. the Unit 2 DG room and the main CO_2 tank.

Explanation:
ANSWER
c. the Unit 2 DG room.

Explanation:
On a loss of 125 vdc the header is flooded with CO_2, in order to inject CO_2 into the diesel room an individual must initiate inject from right outside the diesel room.

Reference: SDM 286002	Question Pedigree: Bank 28600S0451
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
106	SRO	GENERIC	2.1.11	3.0	3.8

	Objective: 223L-S4-07
Conduct of Operations	Knowledge of less than one hour technical specification action statements for systems.

Unit 3 is operating at rated power.

Torus temperature has increased to 112°F

Operators are required to _____(1)_____ to ensure that _____(2)_____ during a DBA LOCA.

	1	2
A.	scram the reactor and emergency depressurize	the peak primary containment pressures and temperatures do NOT exceed maximum allowable values
B.	scram the reactor and emergency depressurize	sufficient net positive suction head is maintained for ECCS pumps
C.	scram the reactor	the peak primary containment pressures and temperatures do NOT exceed maximum allowable values
D.	scram the reactor	sufficient net positive suction head is maintained for ECCS pumps

Explanation:
ANSWER
c scram the reactor and the peak primary containment pressures and temperatures do NOT exceed maximum allowable values

Explanation:
ITS 3.6.2.1 action D requires that with torus average temperature greater than 110°F and reactor power grater than 1%, immediately place the mode switch in shutdown. This is done to prevent the torus from heating up beyond design limits.

Reference:	Question Pedigree:
ITS 3.6.2.1 step D and Bases	Last years SRO NRC exam #128 (was used for a different KA last year)

Cog level: High	Rev 1

Exam Submittal

Q#	Exam	System	K/A	RO	SRO
107	SRO	GENERIC	2.1.13	2.0	2.9

	Objective:
Conduct of Operations	Knowledge of facility requirements for controlling vital / controlled access.

What is the MINIMUM level of authority that may authorize an assignment of a security access status that allows entry into the security areas?

A. Unit Supervisor

B. Shift Manager

C. Any Security Personnel

D. Nuclear Security Manager

Explanation:
ANSWER:

c. Nuclear Security Manager

Explanation:
Only the Nuclear Security manager can assign an access status level that allows entry into security areas.

Reference: SY-AA-103-511	Question Pedigree: New
Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
108	BOTH	GENERIC	2.1.22	2.8	3.3

	Objective: 212L-S1-3
Conduct of Operations	Ability to determine Mode of Operation.

The following conditions exist on Unit 2:

- The MODE Switch is in the Shutdown position.
- Reactor coolant temperature is 200°F.
- Mechanical Maintenance has detensioned two reactor vessel closure bolts.

The Reactor is in Mode...

A. 2 "Startup"

B. 3 "Hot Shutdown"

C. 4 "Cold Shutdown"

D. 5 "Refueling"

Explanation:
ANSWER
d. 5 "Refueling"

Explanation:
With the reactor shutdown and one or more closure bolts detensioned the reactor is in mode 5.

Reference:	Question Pedigree:
ITS Table 1.1-1	New
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
109	RO	GENERIC	2.1.32	3.4	3.8

Objective: 21504LK001

Conduct of Operations	Ability to explain and apply system limits and precautions.

DOA 0700-02 SRM OR IRM DETECTOR STUCK, provides a caution with regard to the use of portable radios near the SRM/IRM Preamp Cabinet.

What is the reason for this caution?

A. Keying the radio may cause a voltage spike resulting in blown fuses in the detector circuitry.

B. The operation of the radio near the preamp could cause interference resulting in a reactor scram.

C. The operation of the radio near the preamp could cause circuit dampening resulting in lower than actual indication on the SRM/IRM instruments.

D. The high voltage that is used by the preamp could cause extreme radio interference resulting in poor communications or miscommunication between parties.

Explanation:
ANSWER
b. The operation of the radio near the preamp could cause interference resulting in a reactor scram.

Explanation:
The radio could cause interference and cause a scram, there is a note in the surveillance to remind the operators of this.

Reference:	Question Pedigree:
DOA 700-2	Bank [illegible]3000S0011

Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
110	BOTH	GENERIC	2.1.8	3.8	3.6

	Objective: 20200LP008
Conduct of Operations	Ability to coordinate personnel activities outside the control room.

Unit 3 is at rated conditions.

Local adjustment of Reactor Recirculation pump 3A speed is required.

Which of the following describes the MINIMUM requirements to perform this evolution?

A. Communication with any on shift Operator prior to adjustment.

B. Communication between the Control Room and a licensed Operator at the motor generator.

C. Communication between the Control Room and on shift Operator at the motor generator with no physical restriction which would prohibit solo operations at the motor generator.

D. Communication between the Control Room and an active licensed Operator at the motor generator with no license restriction which would prohibit solo operations at the motor generator.

Explanation:
ANSWER
d. Communication between the Control Room and an active licensed Operator at the motor generator with no license restriction which would prohibit solo operations at the motor generator..

Explanation:
In order to perform Recirc MG Scoop Tube Manual Local Operation, communications must be established between the Control Room and the operator at the applicable recirc MG set. The operator at the MG set must have an active license with no license restrictions.

Reference:	Question Pedigree:
DOP 0202-12	Modified last years RO NRC Exam #110

Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
111	BOTH	GENERIC	2.2.2	4.0	3.5

	Objective: 215L002-02
Equipment Control	Ability to manipulate the console controls as required to operate the facility between shutdown and designated power levels.

While performing a reactor startup, the IRMs should be ranged up when indicating between:

A. 5/125 and 15/125 of full scale.

B. 25/125 and 50/125 of full scale.

C. 25/125 and 75/125 of full scale.

D. 50/125 and 100/125 of full scale.

Explanation:
ANSWER:
c. 25/125 and 75/125 of full scale.

Explanation:
When IRMs are indicating 25/125 (8/40) and 75/125 (24/40) of full scale.

Reference: DOP 0700-02	Question Pedigree: Bank 21503B0021 Last years NRC Exam #112
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
112	BOTH	GENERIC	2.2.26	2.5	3.7

	Objective: 29800LK084
Equipment Control	Knowledge of refueling administrative requirements.

During core alterations that potentially affect core reactivity which of the following conditions must be met?

A. The Control Room Nuclear Observer is in the Control Room.

B. Radiation Protection Personnel have placed a high radiation area lock on AND posted the access ladders to the Drywell above the first floor indicating: NO ENTRY FUEL TRANSFER IN PROGRESS

C. A SRO or an SROL is directly supervising and in line of sight of fuel handling operations on the Refueling Platform.

D. A Qualified Nuclear Engineer verifies SRM reading are as expected after each step of the Nuclear Component Transfer List.

Explanation:
ANSWER
c. A SRO or an SROL is directly supervising and in line of sight of fuel handling operations on the Refueling Platform.

Explanation:
DFP requires that an SRO or SROL be in line of sight of fuel handling operation on the refuel floor during core alterations.

Reference:	Question Pedigree:
DFP 800-1 and TRM 3.9.a	New

Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
113	SRO	GENERIC	2.2.3	3.1	3.3

	Objective: 29900LK196
Equipment Control	(multi-unit) Knowledge of the design, procedural, and operational differences between units.

Unit 2 is at 2975 MWth with recirc flow of 94.2 Mlb/hr
Unit 3 is at 2521 MWth with recirc flow of 96.7 Mlb/hr

Unit _____(1)______ is operating outside of design because _____(2)______ is too high.

1	2
A. 2	thermal power
B. 2	recirc flow
C. 3	thermal power
D. 3	recirc flow

Explanation:
ANSWER
a. 2 and thermal power.

Explanation:
The License limits thermal power to 2957 with EPU

Reference:	Question Pedigree:
LP 299L-S5 and EPU change letter to the license.	New

Cog level: Memory	Rev 2

Q#	Exam	System	K/A	RO	SRO
114	BOTH	GENERIC	2.2.34	2.8	3.2

	Objective: 20102LK032
Equipment Control	Knowledge of the process for determining the internal and external effects on core reactivity.

Unit 2 is near the end of an operating cycle with a startup in progress.

Reactor coolant temperature has lowered 30°F below the value that was used to calculate the ECP.

Who is required to recalculate the ECP?

A. Nuclear Station Operator

B. Unit Supervisor

C. Shift Technical Advisor

D. Qualified Nuclear Engineer

Explanation:
ANSWER
d Qualified Nuclear Engineer

Explanation:
At the end of an operating cycle the potential exists for the moderator temperature coefficient to be positive at low moderator temperatures. The QNEs assistance is required to make this determination.

Reference: DGP 1-1	Question Pedigree: New
Cog level: Memory	Rev 1

Exam Submitta

Q#	Exam	System	K/A	RO	SRO
115	SRO	GENERIC	2.2.8	1.8	3.3

	Objective: 29900LK108
Equipment Control	Knowledge of the process for determining if the proposed change, test, or experiment involves an unreviewed safety question.

A systems engineer brings a "Special Procedure" for the Control Rod Drive system to the WEC.

How can it be determined if the "Special Procedure" contains any unreviewed safety questions?

A. The signature on the procedure by the system engineer approving the special procedure.

B. The Shift Manager informed the crew at turnover the special procedure was scheduled to be performed.

C. The special procedure has been screened in accordance with OP-AA-101-304 "Evaluation of Special Tests or Evolutions".

D. The documentation of a 50.59 review being conducted on the special procedure is included with the special procedure.

Explanation:
ANSWER
d. The documentation of a 50.59 review being conducted on the special procedure is included with the special procedure.

Explanation:
SRO only criteria #3
10 CFR 50.59 requires a written Safety Evaluation which provides the bases for the determination that the change, test, or experiment does not involve an Unreviewed Safety Question.

Reference: LS-AA-999 Section A Purpose	Question Pedigree: New
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
116	RO	GENERIC	2.3.1	2.6	3.0

	Objective:
Radiological Controls	Knowledge of 10 CFR 20 ar.. .elated facility radiation control requirements.

The RWCU pump room was recently surveyed and the following radiological co.. ..ions exist:

- General area radiation of 20 mRem per hour
- Smearable contamination of 100 dpm/100 cm^2 (beta-gamma)

Which of the following postings should be applied to this area?

A. Radiation area only

B. High radiation area only

C. Radiation area and Contamination area

D. High radiation area and Contamination area

Explanation:
ANSWER
a. Radiation area only

Explanation:
A Radiation Area is any area within an RPA accessible to individuals, in which rac..ion levels from radiation sources external to the body could result in an individual receiving a deep dose equ..alent greater than 5 mrem/hr but less than 100 mrem/hr at 30 centimeters from the radiation source or f..m any surface that radiation penetrates. A Contamination Area has smearable contamination greater th.n 1000dpm/100 cm^2.

Reference: RP-AA-376	Question Pedigree: Modified 29400S0261 Modified Last years NR. exam #116
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
117	RO	GENERIC	2.3.10	2.9	3.3

	Objective: 29501LK051
Radiological Controls	Ability to perform procedures to reduce excessive levels of radiation and guard against personnel exposure.

Chemistry has reported that high coolant activity exists on Unit 2 and a fuel element failure is suspected.

Which of the following actions is required to prevent excessive personnel exposure if site assembly is required?

A. Isolating HPCI steam drains

B. Isolating the Isolation Condenser

C. Isolating HPCI steam flow

D. Isolating Recirc Sample Lines

Explanation:
ANSWER
a. Isolating HPCI steam drains

Explanation:
Assembly area inside the RPA is near the feedpumps, which is against the condenser shield wall. Any flow of radioactive water to the condenser would increase dose rates in this area, so a is correct. IC drains do not go to the condenser, so b is incorrect. Isolating HPCI steam flow would block the leakage, but would render HPCI unavailable, so this action would not be appropriate. Recirc sample drains also do not go to the condenser.

Reference: DGA-16 section D.11 Caution.	Question Pedigree: 1998 NRC Exam
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
118	BOTH	GENERIC	2.3.2	2.5	2.9

	Objective: 29900LK045
Radiological Controls	Knowledge of facility ALARA program.

A Non-Licensed Operator has an Out Of Service that requires independent verification.

For which of the following conditions can the Shift Manager waive independent verification?

An OOS card to be hung on...

A. a drain valve on the #2 Main Turbine Stop Valve at rated power.

B. the south instrument air cross-connect valve 8 feet off the floor in the turbine building 517 level.

C. the 2/3 Diesel Air Start motor that was just replaced.

D. the 2/3A SBGT Charcoal Filter that was just replaced.

Explanation:
ANSWER
a. a drain valve on the #2 Main Turbine Stop Valve at rated power.

Explanation:
The Shift Manger may waive verification requirements for ALARA concerns.

Reference: HU-AA-101	Question Pedigree: Modified Last years NRC exam #117
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
119	BOTH	GENERIC	2.3.4	2.5	3.1

	Objective: NGET
Radiological Controls	Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

Per RP-AA-203, Exposure Review and Authorization, workers at Dresden have a administrative exposure control level of ____(1)_____ mrem TEDE per year. This can be raised to ____(2)____ mrem TEDE by the Radiation Protection Manager.

1	2
A. 1000	3000
B. 1000	5000
C. 2000	3000
D. 2000	5000

Explanation:
ANSWER
c. 2000 and 3000

Explanation:
Workers at Dresden have a limit of 2000 mrem per year the RP manager can raise this to 3000.

Reference: RP-AA-203	Question Pedigree: New
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
120	SRO	GENERIC	2.3.6	2.1	3.1

	Objective: 272L-S2-01
Radiological Controls	Knowledge of the requirements for reviewing and approving release permits.

DOP 2000-110, Attachment 1: Waste Surge Tank Radioactive Discharge to River Card, contains the calculation for determining the _____(1)_____ flowrate and radiological monitor alarm setpoints, and must be verified by_____(2)_____.

1	2
A. discharge	Field Supervisor
B. discharge	Shift Manager or designee
C. dilution	Field Supervisor
D. dilution	Shift Manager or designee

Explanation:
ANSWER
B discharge and SM or designee

Explanation:
The discharge flow rate is determine and verified by the SM or designee.

Reference: 268N-03, DOP 2000-110	Question Pedigree: Last years NRC exam #119
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
121	SRO	GENERIC	2.3.9	2.5	3.4

	Objective: 29502LK068
Radiological Controls	Knowledge of the process for performing a containment purge.

The drywell is being vented to control H_2 and O_2.

The following values were noted prior to initiating venting:

Torus level is 3 feet.

	Drywell	Torus
Hydrogen	7%	7%
Oxygen	7%	7%

After some period of time, it is determined that drywell hydrogen and oxygen cannot be controlled with SBGT and Nitrogen Purge.

In this condition, which of the following is the proper response?

A. Immediately spray the torus

B. Begin simultaneous venting of the torus AND drywell.

C. Vent and purge the containment per DEOP 500-4 "Containment Venting", Attachment 4.

D. Vent and purge the containment per DEOP 500-4 "Containment Venting", Attachment 5.

Explanation:
ANSWER
c Vent and purge the containment per DEOP 500-4 "Containment Venting", Attachment 4.

Explanation
Only Attachment 4 addresses venting the drywell through the RB ventilation system. With the concentrations given torus sprays are not allowed. Simultaneous venting of the torus and drywell is never done. Torus level is too high to allow venting of the Torus.

Provide DEOP 200-2 and DEOP 500-4 with Section H blanked out.

Reference: DEOP 200-2 and 500-4	Question Pedigree: Modified last years SRO only NRC exam #127
Cog level: High	Rev 1

Q#	Exam	System	K/A	RO	SRO
122	SRO	GENERIC	2.4.32	3.3	3.5

	Objective: 29501LP059
Emergency Procedures and Plan	Knowledge of operator response to loss of all annunciators.

Unit 2 was at rated conditions when "ANNUN DC PWR FAILURE" alarms are received on several panels simultaneously.
A bell inside 902-4 sounds
Which of the following describes the expected operator actions?

A. Scram the reactor due to the loss of annunciators. The Shift Manager should evaluate for a possible GSEP condition.

B. Verify that the normal AC power supply is still available by performing an annunciator checks on each effected panel. Notification of the Shift Manager is NOT required.

C. Verify that the normal AC power supply is still available by performing an annunciator checks on each effected panel. Notification of the Shift Manager is required.

D. Determine the cause of the loss of annunciators. The Shift Manager should evaluate for a possible GSEP condition.

Explanation:
ANSWER
e. Determine the cause of the loss of annunciators. The Shift Manager should evaluate for a possible GSEP condition.

Explanation:
Receipt of these alarms indicates a failure of the panels Annunciator System. Operators should determine the cause of the loss of annunciators and attempt to restore. The Shift Manager should evaluate for a possible GSEP condition.

Reference: DAN 902(3)-5 H-3	Question Pedigree: Last years NRC exam #122
Cog level: High	Rev 2

Q#	Exam	System	K/A	RO	SRO
123	BOTH	GENERIC	2.4.35	3.3	3.5

	Objective: 20101LP010
Emergency Procedures and Plan	Knowledge of local auxiliary operator tasks during emergency operations including system geography and system implications.

In order to vent the overpiston area of the control rod drive, the operator will need a hose, adjustable wrench and a CRD vent valve tool.

Tools and/or equipment required to perform this task are located in the...

A. DEOP equipment cart

B. Reactor building ground floor at the CO_2 gas bottle rack.

C. Reactor building second floor in the DEOP storage locker.

D. Turbine building second floor in the DEOP storage locker.

Explanation:
ANSWER:

d. Turbine building second floor in the DEOP storage locker

Explanation:
The tools and equipment needed to vent the overpiston area of the CRDs is located in the DEOP storage locker in the TB between the Units near the TBCCW HX.

Reference: DEOP 500-05	Question Pedigree: Bank 29502S0521
Cog level: Memory	Rev 1

Q#	Exam	System	K/A	RO	SRO
124	BOTH	GENERIC	2.4.45	3.3	3.6

	Objective: 29900LK042
Emergency Procedures and Plan	Ability to prioritize and interpret the significance of each annunciator or alarm.

During normal plant operations, an annunciator alarms which has a RED backlight.

What is the significance of this RED backlight?

A. Identifies a parameter which could cause a unit scram.

B. Identifies a parameter which causes a critical change in plant status.

C. Identifies a condition that requires immediate entry into the DOA's or DEOP's.

D. Informs the operators of annunciators that are expected to alarm due to maintenance being performed.

Explanation:
ANSWER:
b. Identifies a parameter which causes a critical change in plant status.

Explanation:
The backlit red annunciators do not all identify a condition that could cause a scram or entry into a DOA or DEOP. They also do not indicate when maintenance is being performed.

Reference: Operator Aid #84	Question Pedigree: Bank 29902S0401
Cog level: Memory	Rev 1

Q=	Exam	System	K/A	RO	SRO
125	BOTH	GENERIC	2.4.7	3.1	3.8

	Objective: 29502LK003
Emergency Procedures and Plan	Knowledge of event based EOP mitigation strategies.

DEOP 200-01 requires emergency depressurization if torus water level cannot be maintained above 11 ft. What is the reason for this action?

A. T-Quenchers are uncovered at 10.8 ft

B. The loss of HPCI requires Low Pressure ECCS injection

C. Reject energy from the vessel while the suppression pool is still available

D. Torus water volume is too low to absorb RPV energy with pressure greater than 1100 psig

Explanation:
ANSWER:

C reject energy from vessel while suppression pool still available

Explanation:
Emergency Depressurize must be performed if level cannot be maintained above 11ft since that's the level of the downcomers. If a LOCA occurred, with level below 11 ft, the steam would not be discharged under water and would pressurize the Torus Air Space.

Reference: 295L-S2	Question Pedigree: Bank 29502S0271
Cog level: Memory	Rev 1