Draft Submittal

(Pink Paper)

DRAFT Written Exam ~~Quality Checklist (ES-401-6~~)

& Written Exam Sample Plan

SURRY 2008-301
DRAFT

Draft

Facility: Surry Date of Exam: 4/9/08

Tier	Group	RO K/A Category Points												SRO-Only Points		
		K 1	K 2	K 3	K 4	K 5	K 6	A 1	A 2	A 3	A 4	G *	Total	A2	G*	Total
1. Emergency & Abnormal Plant Evolutions	1	3	3	3	N/A			4	3	N/A		2	18	2	4	6
	2	1	1	2				0	3			2	9	2	2	4
	Tier Totals	4	4	5				4	6			4	27	4	6	10
2. Plant Systems	1	4	3	3	2	2	3	1	2	2	4	2	28	2	3	5
	2	1	0	0	2	1	1	1	1	1	1	1	10	2	1	3
	Tier Totals	5	3	3	4	3	4	2	3	3	5	3	38	4	4	8

3. Generic Knowledge and Abilities Categories	1	2	3	4	10	1	2	3	4	7
	3	3	2	2		2	2	1	2	

1. Ensure that at least two topics from every applicable K/A category are sampled within each tier of the RO and SRO-only outlines (i.e., except for one category in Tier 3 of the SRO-only outline, the "Tier Totals" in each K/A category shall not be less than two).
2. The point total for each group and tier in the proposed outline must match that specified in the table. The final point total for each group and tier may deviate by ±1 from that specified in the table based on NRC revisions. The final RO exam must total 75 points and the SRO-only exam must total 25 points.
3. Systems/evolutions within each group are identified on the associated outline; systems or evolutions that do not apply at the facility should be deleted and justified; operationally important, site-specific systems that are not included on the outline should be added. Refer to ES-401, Attachment 2, for guidance regarding the elimination of inappropriate K/A statements.
4. Select topics from as many systems and evolutions as possible; sample every system or evolution in the group before selecting a second topic for any system or evolution.
5. Absent a plant-specific priority, only those K/As having an importance rating (IR) of 2.5 or higher shall be selected. Use the RO and SRO ratings for the RO and SRO-only portions, respectively.
6. Select SRO topics for Tiers 1 and 2 from the shaded systems and K/A categories.
7. *The generic (G) K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
8. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings (IRs) for the applicable license level, and the point totals (#) for each system and category. Enter the group and tier totals for each category in the table above; if fuel handling equipment is sampled in other than Category A2 or G* on the SRO-only exam, enter it on the left side of Column A2 for Tier 2, Group 2 (Note # 1 does not apply). Use duplicate pages for RO and SRO-only exams.
9. For Tier 3, select topics from Section 2 of the K/A catalog, and enter the K/A numbers, descriptions, IRs, and point totals (#) on Form ES-401-3. Limit SRO selections to K/As that are linked to 10 CFR 55.43.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
007EK2.02	Reactor Trip - Stabilization - Recovery / 1	2.6	2.8	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of electrical power supplies to the following:(CFR: 41.7)	Breakers, relays and disconnects
008AK2.01	Pressurizer Vapor Space Accident / 3	2.7	2.7	☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of electrical power supplies to the following:(CFR: 41.7)	Valves
011EK1.01	Large Break LOCA / 3	4.1	4.4	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	Natural circulation and cooling, including reflux boiling.
022AA2.03	Loss of Rx Coolant Makeup / 2	3.1	3.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Failures of flow control valve or controller
026AA1.07	Loss of Component Cooling Water / 8	2.9	3	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	Flow rates to the components and systems that are serviced by the CCWS; interactions among the components
027AA1.01	Pressurizer Pressure Control System Malfunction / 3	4	3.9	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	PZR heaters, sprays, and PORVs

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
029EK3.10	ATWS / 1	4.1	4.1	☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)	Manual rod insertion
038EK1.01	Steam Gen. Tube Rupture / 3	3.1	3.4	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	Use of steam tables
040AA1.24	Steam Line Rupture - Excessive Heat Transfer / 4	3.8	3.8	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	Main steam header pressure gauges
054AK1.02	Loss of Main Feedwater / 4	3.6	4.2	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	Effects of feedwater introduction on dry S/G
055EA2.05	Station Blackout / 6	3.4	3.7	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	When battery is approaching fully discharged
056AA1.04	Loss of Off-site Power / 6	3.2	3.1	☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)	Adjustment of speed of ED/G to maintain frequency and voltage levels

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
057AA2.07	Loss of Vital AC Inst. Bus / 6	3.3	3.5	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Valve indicator of charging pump suction valve from RWST Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)
062AG2.1.32	Loss of Nuclear Svc Water / 4	3.8	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to explain and apply all system limits and precautions. This is a Generic, no stem statement is associated.
065AK3.03	Loss of Instrument Air / 8	2.9	3.4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Knowing effects on plant operation of isolating certain equipment from instrument air Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)
we04EG2.4.3	LOCA Outside Containment / 3	4.2	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of annunciators alarms, indications or response procedures This is a Generic, no stem statement is associated.
WE05EK3.2	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.7	4.1	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Normal, abnormal and emergency operating procedures associated with (Loss of Secondary Heat Sink). Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)
WE12EK2.2	Steam Line Rupture - Excessive Heat Transfer / 4	3.6	3.9	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems and relations between the proper operation of these systems to the operation of the facility. Knowledge of electrical power supplies to the following:(CFR: 41.7)

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001AK2.06	Continuous Rod Withdrawal / 1	3	3.1	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	T-ave./ref. deviation meter Knowledge of electrical power supplies to the following:(CFR: 41.7)
003AG2.4.1	Dropped Control Rod / 1	4.6	4.8	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of EOP entry conditions and immediate action steps. This is a Generic, no stem statement is associated.
005AA2.01	Inoperable/Stuck Control Rod / 1	3.3	4.1	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Stuck or inoperable rod from in-core and ex-core NIS, in-core or loop temperature measurements Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)
061AA2.05	ARM System Alarms / 7	3.5	4.2	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Need for area evacuation; check against existing limits Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)
068AK3.09	Control Room Evac. / 8	3.9	4.4	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Transfer of the following to local control: charging pumps, charging header flow control valve, PZR heaters and boric acid transfer pumps Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)
076AK3.05	High Reactor Coolant Activity / 9	2.9	3.6	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Corrective actions as a result of high fission-product radioactivity level in the RCS Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
we02EG2.4.3	SI Termination / 3	4.2	4.1	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of annunciators alarms, indications or response procedures
WE13EK1.2	Steam Generator Over-pressure / 4	3.0	3.3	☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)	Normal, abnormal and emergency operating procedures associated with (Steam Generator Overpressure).
WE16EA2.2	High Containment Radiation / 9	3.0	3.3	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
003K3.01	Reactor Coolant Pump	3.7	4.0	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	RCS
				Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)											
003K6.14	Reactor Coolant Pump	2.6	2.9	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Starting requirements
				Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)											
004A2.13	Chemical and Volume Control	3.6	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Low RWST
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)											
004K5.15	Chemical and Volume Control	3.3	3.5	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Boron and control rod reactivity effects as they relate to MTC
				Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)											
004K6.13	Chemical and Volume Control	3.1	3.3	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Purpose and function of the boration/dilution batch controller
				Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)											
005K2.03	Residual Heat Removal	2.7	2.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	RCS pressure boundary motor-operated valves
				Knowledge of electrical power supplies to the following:(CFR: 41.7)											
006A3.05	Emergency Core Cooling	4.2	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	Safety Injection Pumps
				Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)											

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
007K4.01	Pressurizer Relief/Quench Tank	2.6	2.9	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Quench tank cooling
				Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)											
008A1.04	Component Cooling Water	3.1	3.2	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Surge tank level
				Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)											
008K1.05	Component Cooling Water	3.0	3.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Sources of makeup water
				Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)											
010K6.03	Pressurizer Pressure Control	3.2	3.6	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	PZR sprays and heaters
				Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)											
012G2.1.27	Reactor Protection	3.9	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of system purpose and or function.
				This is a Generic, no stem statement is associated.											
013K2.01	Engineered Safety Features Actuation	3.6	3.8	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	ESFAS/safeguards equipment control
				Knowledge of electrical power supplies to the following:(CFR: 41.7)											
022K1.01	Containment Cooling	3.5	3.7	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	SWS/cooling system
				Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)											

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
026A4.01	Containment Spray	4.5	4.3	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	CSS controls
039K5.01	Main and Reheat Steam	2.9	3.1	☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)	Definition and causes of steam/water hammer
059A4.03	Main Feedwater	2.9	2.9	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	Feedwater control during power increase and decrease
059A4.10	Main Feedwater	3.9	3.8	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)	ICS
061K4.01	Auxiliary/Emergency Feedwater	3.1	3.3	☐ ☐ ☐ ☑ ☐ ☐ ☐ ☐ ☐ ☐ ☐ Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)	Turbine trip, including overspeed
062A3.05	AC Electrical Distribution	3.5	3.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)	Safety-related indicators and controls
063A2.01	DC Electrical Distribution	2.5	3.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Grounds

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
064A4.06	Emergency Diesel Generator	3.9	3.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Manual start, loading and stopping of the ED/G
				Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)											
064K3.03	Emergency Diesel Generator	3.6	3.9	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	ED/G (manual loads)
				Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)											
073K1.01	Process Radiation Monitoring	3.6	3.9	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Those systems served by PRMs
				Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)											
076K1.12	Service Water	1.9	2.1	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Intake screen system
				Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)											
078K2.01	Instrument Air	2.7	2.9	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	Instrument air compressor
				Knowledge of electrical power supplies to the following:(CFR: 41.7)											
103G2.2.12	Containment	2.9	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to apply Technical Specifications for a system
				This is a Generic, no stem statement is associated.											
103K3.02	Containment	3.8	4.2	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Loss of containment integrity under normal operations
				Knowledge of the effect that a loss or malfunction of the (SYSTEM) will have on the following:(CFR: 41.7 / 45.6)											

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
001G2.1.27	Control Rod Drive	3.9	4	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of system purpose and or function.
				This is a Generic, no stem statement is associated.											
002K6.02	Reactor Coolant	3.6	3.8	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	RCP
				Knowledge of the effect that a loss or malfunction of the following will have on the (SYSTEM):(CFR: 41.7 / 45.7)											
011A2.10	Pressurizer Level Control	3.4	3.6	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Failure of PZR level instrument - high
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)											
015K5.10	Nuclear Instrumentation	2.8	3.0	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Ex-core detector operation
				Knowledge of the operational implications of the following concepts as they apply to the (SYSTEM):(CFR: 41.5 / 45.7)											
029A3.01	Containment Purge	3.8	4.0	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	CPS isolation
				Ability to monitor automatic operations of the (SYSTEM) including:(CFR: 41.7 / 45.5)											
035K1.01	Steam Generator	4.2	4.5	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	MFW/AFW systems
				Knowledge of the physical connections and/or cause-effect relationships between (SYSTEM) and the following:(CFR: 41.2 to 41.9 / 45.7 to 45.8)											

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
045A1.05	Main Turbine Generator	3.8	4.1	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Expected response of primary plant parameters (temperature and pressure) following T/G trip Ability to predict and/or monitor changes in parameters associated with operating the (SYSTEM) controls including:(CFR: 41.5 / 45.5)
071K4.04	Waste Gas Disposal	2.9	3.4	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Isolation of waste gas release tanks Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)
079K4.01	Station Air	2.9	3.2	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Cross-connect with IAS Knowledge of (SYSTEM) design feature(s) and or interlock(s) which provide for the following:(CFR: 41.7)
086A4.05	Fire Protection	3.0	3.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Deluge valves Ability to manually operate and/or monitor in the control room:(CFR: 41.7 / 45.5 to 45.8)

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
G2.1.1	Conduct of operations	3.8	4.2	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of conduct of operations requirements.
				This is a Generic, no stem statement is associated.											
G2.1.14	Conduct of operations	3.1	3.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of criteria or conditions that require plant-wide announcements, such as pump starts, reactor trip, mode changes, etc.
				This is a Generic, no stem statement is associated.											
G2.1.7	Conduct of operations	4.4	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior and instrument interpretation.
				This is a Generic, no stem statement is associated.											
G2.2.13	Equipment Control	4.1	4.3	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of tagging and clearance procedures.
				This is a Generic, no stem statement is associated.											
G2.2.22	Equipment Control	4.0	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of limiting conditions for operations and safety limits.
				This is a Generic, no stem statement is associated.											
G2.2.28	Equipment Control	2.6	3.5	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of new and spent fuel movement procedures.
				This is a Generic, no stem statement is associated.											
G2.3.2	Radiation Control	2.5	2.9	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of the facility ALARA program
				This is a Generic, no stem statement is associated.											

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
G2.3.4	Radiation Control	3.2	3.7	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of radiation exposure limits under normal and emergency conditions
G2.4.11	Emergency Procedures/Plans	4.0	4.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of abnormal condition procedures.
G2.4.49	Emergency Procedures/Plans	4.6	4.4	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to perform without reference to procedures those actions that require immediate operation of system components and controls.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
007EG2.4.4	Reactor Trip - Stabilization - Recovery / 1	4.5	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.
				This is a Generic, no stem statement is associated.											
008AA2.26	Pressurizer Vapor Space Accident / 3	3.1	3.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Probable PZR steam space leakage paths other than PORV or code safety
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)											
038EG2.4.6	Steam Gen. Tube Rupture / 3	3.7	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge symptom based EOP mitigation strategies.
				This is a Generic, no stem statement is associated.											
054AA2.04	Loss of Main Feedwater / 4	4.2	4.3	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Proper operation of AFW pumps and regulating valves
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)											
055EG2.4.30	Station Blackout / 6	2.7	4.1	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge of events related to system operations/status that must be reported to internal orginizations or outside agencies.
				This is a Generic, no stem statement is associated.											
we05EG2.4.6	Inadequate Heat Transfer - Loss of Secondary Heat Sink / 4	3.7	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Knowledge symptom based EOP mitigation strategies.
				This is a Generic, no stem statement is associated.											

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
060AG2.4.6	Accidental Gaseous Radwaste Rel. / 9	3.7	4.7	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge symptom based EOP mitigation strategies.
061AG2.2.25	ARM System Alarms / 7	3.2	4.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of the bases in Technical Specifications for limiting conditions for operations and safety limits.
069AA2.02	Loss of CTMT Integrity / 5	3.9	4.4	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Verification of automatic and manual means of restoring integrity
WE03EA2.1	LOCA Cooldown - Depress. / 4	3.4	4.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Facility conditions and selection of appropriate procedures during abnormal and emergency operations.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
013G2.1.23	Engineered Safety Features Actuation	4.3	4.4	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to perform specific system and integrated plant procedures during all modes of plant operation.
039A2.03	Main and Reheat Steam	3.4	3.7	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Indications and alarms for main steam and area radiation monitors (during SGTR)
062A2.03	AC Electrical Distribution	2.9	3.4	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ ☐ ☐ ☐ Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)	Consequences of improper sequencing when transferring to or from an inverter
073G2.1.10	Process Radiation Monitoring	2.7	3.9	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of conditions and limitations in the facility license
078G2.1.20	Instrument Air	4.6	4.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to execute procedure steps.

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	TOPIC:
034A2.01	Fuel Handling Equipment	3.6	4.4	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Dropped fuel element
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)											
071G2.4.4	Waste Gas Disposal	4.5	4.7	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.
				This is a Generic, no stem statement is associated.											
086A2.04	Fire Protection	3.3	3.9	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	Failure to actuate the FPS when required, resulting in fire damage
				Ability to (a) predict the impacts of the following on the (SYSTEM) and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal operation:(CFR: 41.5 / 43.5 / 45.3 / 45.13)											

KA	NAME / SAFETY FUNCTION:	IR RO	IR SRO	K1 K2 K3 K4 K5 K6 A1 A2 A3 A4 G	TOPIC:
G2.1.11	Conduct of operations	3.0	3.8	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of less than one hour technical specification action statements
G2.1.20	Conduct of operations	4.6	4.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Ability to execute procedure steps.
G2.2.22	Equipment Control	4.0	4.7	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of limiting conditions for operations and safety limits.
G2.2.6	Equipment Control	3.0	3.6	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of the process for making changes to procedures
G2.3.8	Radiation Control	2.3	3.2	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knoledge of the process for performing a planned gaseous radioactive release
G2.4.1	Emergency Procedures/Plans	4.6	4.8	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of EOP entry conditions and immediate action steps.
G2.4.28	Emergency Procedures/Plans	3.2	4.1	☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☑ This is a Generic, no stem statement is associated.	Knowledge of procedures relating to emergency response to sabotage.

Draft Submittal

(Pink Paper)

Reactor Operator Written Exam

SURRY 2008-301

DRAFT

Question #: 1 KA 008.AK2.01

Unit 1 conditions are as follows:

RX Power is 50% and stable
PZR Pressure is 2100 and decreasing
B/U Heaters are in auto and energized.

Which ONE of the following correctly describes the instrument failure and associated plant response that would cause the plant conditions above?

References

ND-93-3

Choice_a:
PT-445 has failed high causing PORV-1456 is open

Choice_b:
PT-445 has failed high causing PORV-1455C is open

Choice_c:
PT-444 has failed high causing PORV-1456 is open

Choice_d:
PT-444 has failed high causing PORV-1455C is open

COMMENT
A - Correct -

B - Wrong - PT-445 does not control PORV-1455C

C. Wrong - If PT-444 failed high B/U heaters would be off.

D. Wrong - If PT-444 failed high B/U heaters would be off.

Question #: 2 KA 011.EK3.12

Given the following plant conditions:

•A large break LOCA has occurred on Unit 1.
•The crew has transitioned to EOP-ES-1.3, TRANSFER TO COLD LEG RECIRCULATION.
•The operators have progressed in EOP-ES-1.3 to the point where SI suction has been aligned to the Containment Recirc. Sump.
•One SI pump has been started when the following indications are noted:
The running SI pump amps are oscillating
SI flow is abnormally low and oscillating

Which ONE of the following correctly describes the reason for the abnormal SI pump indications and the initial actions the crew should take?

Choice_a:
The Recirculation Sumps are blocked. Place both LHSI pumps in Pull-to-Lock and continue performing the remaining steps of ES-1.3

Choice_b:
The running LHSI pump suction is blocked. Start the other LHSI pump and continue performing the remaining steps of ES-1.3.

Choice_c:
The Recirculation Sumps are blocked. Transition to 1-EOP-ECA-1.1, "Loss of Emergency Coolant Recirculation," and add makeup to the RWST.

Choice_d:
The running LHSI pump suction is blocked. Transition to 1-EOP-ECA-1.1, "Loss of Emergency Coolant Recirculation," and start the other LHSI pump.

COMMENT

A. Incorrect. Both recirc sumps are not known to be blocked. The running SI pump should be stopped. The operators should remain in ES-1.3 and start the other LHSI pump.

B. Correct. Oscillating amps and flow indicate sump blockage on that pump. The operators should remain in ES-1.3 and attempt to start the other LHSI pump.

C. Incorrect. Both recirc sumps are not known to be blocked. This action is correct if both pumps were blocked.

D. Incorrect. It is correct to transition to start the other LHSI pump but a transition to ECA-1.1 is not required to perform this.

Knowledge of the reasons for the following responses as the apply to the Large Break LOCA: Actions contained in EOP for emergency LOCA (large break)

4.4 / 4.6

References

EOP-ES-1.3, TRANSFER TO COLD LEG RECIRCULATION
EOP-ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION

Question #: 3 KA 007.EK2.02

Given the following plant conditions:

Unit 1 has just tripped.
Breakers 15A1, B1, and C1, Transfer Bus to SS Bus Supply Breakers, are closed.

Unit 2 is in Intermediate Shutdown and due to electrical problems, 25A1 and 25B1, Transfer Bus to SS Bus Supply Breakers, are open.
Breaker 25C1, Transfer Bus to SS Bus Supply Breaker, is closed.

Which ONE of the following describes the effect this electrical lineup has on Station equipment?

References

ND-90.3-LP-7, SS and Emergency Dist Prot and Control

Choice_a:
All SS buses on both Units will experience a load shed signal.

Choice_b:
Only "C" SS buses on both Units will experience a load shed signal.

Choice_c:

#2 and #3 EDGs will start and load on the respective 2H and 2J buses.

Choice_d:
Component Cooling Water Pump, 1-CC-P-1A will receive an auto-start inhibit signal.

COMMENT

A. Incorrect. Only 25C1 on Unit 2 is aligned to the SS Bus and is therefore the only bus on Unit 2 that will load shed.

B. Correct. Only Unit 1 and Unit 2 "C" SS busses are properly aligned for load shed to occur.

C. Incorrect. An EDG start and load signal sequence has not been met.

D. Incorrect. Auto Start Inhibit feature is activated via SI or High High CLS signal.

References
ND-90.3-LP-7, SS and Emergency Dist Prot and Control

Comprehension / Anal

Question #: 4 KA 022.AA2.03

Given the following plant conditions:

•Unit 1 is operating at 100%
•Letdown flow, CH-FI-1150, is oscillating
•"CHG PP TO REGEN HX HI-LO FLOW" is in alarm

Which ONE of the following describes the malfunction in progress?

Choice_a:
The Regenerative Heat Exchanger has developed a tube leak.

Choice_b:
1-CC-TCV-103, NRHX Temperature Control Valve, has failed open.

Choice_c:
1-CH-PCV-1145, Letdown Pressure Control Valve, has failed closed.

Choice_d:
1-CH-FCV-1122, Charging Line Flow Control Valve, has failed closed.

COMMENT

A. Incorrect. A leak from the tubes would not decrease the amount of cooling provided to letdown.

B. Incorrect. This would increase cooling.

C. Incorrect. This would increase the amount of backpressure on the system and reduce the likelihood of flashing.

D. Correct. A minimum of 25 gpm is needed to prevent flashing downstream of the letdown orifice.

References
ND-88.3-LP-2, Charging & Letdown

Comprehension / Anal

References

ND-88.3-LP-2, Charging & Letdown

Question #: 5 KA 026.AA1.07

Given the following plant conditions:

A loss of all AC power occurred
offsite power was restored after 10 minutes,
The actions of ECA-0.1, LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED, are being performed to start a CC Pump

Why are 1-CC-TV-140A and B, RCP CC Return Manual Isolation Valves verified closed prior to restarting the CC Pump?

References

ND-95.3-LP-18-DRR

1-ECA-0.1
, LOSS OF ALL AC POWER RECOVERY WITHOUT SI REQUIRED

Choice_a:
Protect CC availability by precluding steam formation in the CC piping.

Choice_b:
Reduce CC heat loads to the minimum based on SW loads.

Choice_c:

Prevent damage to the RCP bearings due to excessive cooldown rate.

Choice_d:
Maximize flow to the CVCS components for reestablishing charging, letdown and seal return.

COMMENT

A. Correct. Prevents the introduction of steam into the CC system when CC pump is started.

B. Incorrect. Plausible, the loss of SW due to the loss of power is addressed at step 12 of the procedure. This would not place CC loads at minimum, however.

C. Incorrect. Plausible, step 1 also addresses closing RCP Seal injection valves to prevent possible seal damage.

D. Incorrect. Plausible, isolating CC to the RCPs would increase flow to other components but would not maximize flow to the CVCS.

Ability to operate and/or monitor the following as they apply to the Loss of Component Cooling Water: Flow rates to the components and systems that are serviced by the CCWS; interactions among the components

Question #: 6 KA 027.AA1.01

Unit 1 conditions are as follows:

Reactor Power is 100%
Pressurizer Pressure control is in automatic

Which one of the following correctly describes the immediate response of the pressure control system if the master pressure controller refrence fails high?

References

ND-93-3-LP-5

Choice_a:
Both spray valves close and proportional heaters go to maximum output

Choice_b:
Both spray valves close and only back-up heaters energize

Choice_c:

Both spray valves open and proportional heaters go to minimum output

Choice_d:
Both spray valves open and both proportional and backup heaters deenergize

COMMENT

1- Correct - Changing setting reduces the output from the controller and raises the demanded pressure setpoint. The reduction results in spray valve closure and heaters turning fully on.

2- Wrong - Proportional heaters are normally energized. An increase in pressure setpoint would ensure they are on at full .

3- Wrong This is the opposite reaction to actual pressure being lower than setpoint.

4- Wrong - This is the opposite reaction to actual pressure being lower than setpoint.

Question #: 7 KA 029.EK3.10

Unit 1 conditions are as follows:

An ATWS is in progress
The reactor is NOT tripped
The Turbine Generator is tripped
RCS Pressure is 2335 PSI and rising
Rods are automatically stepping in at 45 steps per/min
All S/G levels are 10% NR and decreasing
"A" MDAFW Pump is providing a total AFW Flow of 300GPM

The crew has just transitioned from E-0.0 to FR-S.1

Which of the following correctly describes the immediate action required per 1-FR-S.1 based on plant conditions and the reason for performing the actions?

References

FR-S.1

Choice_a:
Manually insert control rods to maximize reactivity insertion.

Choice_b:
Start all available AFW Pumps to increase AFW Flow to at least 700GPM to ensure secondary heat sink.

Choice_c:
Initiate Emergency Boration to insert negative reactivity.

Choice_d:
Open at least one PORV and Block Valve to maintain RCS Pressure to less than 2335PSI.

COMMENT

A. Correct - per FR-S.1

B. Incorrect - Operation of the AFW system is not an immediate action of FR-S.1 Plausable - AFW flow is lower than required by step 10 RNO of FR-S.1

C. Incorrect - Emergency Boration is not an immediate action of FR-S.1 Plausable - Method of adding reactivity

D. Incorrect - RCS pressure control is not an immediate action of FR-S.1. Plausable - RCS pressure is high enough to warrant action in FR-S.1 step 5

Question #: 8 KA 038.EK1.01

A SGTR has occurred on Unit 1. Current conditions are:

- RCS pressure 1350 psig
- RCS temperature (CETCs) 542 °F
- SG pressures 1000 psig (A) 1050 psig (B) 960 psig (C)
- SG 1B has been confirmed as the ruptured SG

While performing the steps of 1-E-3, "Steam Generator Tube Rupture", the Unit Supervisor found ALL available copies of the procedure had an illegible page. This page contained the required temperatures for determining RCS cooldown temperatures.

The US directs you to use the steam tables to determine the required RCS (core exit) temperature with an allowance of 50 °F for subcooling.

The required core exit temperature after the RCS cooldown is…

(Steam Tables provided)

References

1-E-3
, STEAM GENERATOR TUBE RUPTURE

Choice_a:
492 °F

Choice_b:
500 °F

Choice_c:
503 °F

Choice_d:
553 °F

COMMENT

C. Correct - 1050psig for lowest ruptured SG + 14.7 = 1065 psia = ~553(Saturation temp) - 50 (subcooling)= 503

A. Incorrect - 960 psig + 14.7 = 975 psia = 542 - 50= 492 Plausible if candidate used the lowest of all SG pressures.

B. Incorrect - 1050 psig = 550 - 50= 500 Plausible if candidate picks the lowest ruptured SG pressure but does not account for psia vs psig in steam tables.

D. Incorrect - (Sat temp. for 1065 psia w/ No subcooling added in) Plausible if candidate forgets to subtract another 50 °F for subcooling.

Knowledge of the operational implications of the following concepts as they apply to the SGTR: Use of steam tables

Question #: 9 KA 040.AA1.24

Given the following plant conditions exist on Unit 1:

•Unit is at 20% power.
•A faulted steam generator has occurred.
•RCS hot leg temperatures: 547F (A), 544F (B), 545F (C)
•RCS cold leg temperatures: 545F (A), 530F (B), 543F (C)
•S/G pressures: 525 psig (A), 515 psig (B), 530 psig (C)
•Steam line flow is 50% of rated on A & B S/Gs.
•Steam line flow is 35% of rated on C S/G.
•Containment pressure (Channel): 8 psig (1), 7.5 psig (2), 7.5 psig (3), 8 psig (4)

For the given plant conditions, which ONE of the following correctly describes whether or not a Main Steam Line Isolation should or should not have occurred and the reason?

(Have licensee provide actual steam line flow numbers)

References

T.S. TABLE 3.7-4
ENGINEERED SAFETY FEATURE SYSTEM INITIATION LIMITS
INSTRUMENT SETTING

Choice_a:
A MSIL should have occurred because of high steam line flow coincident with low steam line pressures.

Choice_b:
A MSIL should have occurred because of high steam line flow coincident with low loop average temperatures.

Choice_c:

A MSIL should NOT have occurred because Containment pressure is below the required setpoint to receive a MSIL signal.

Choice_d:
A MSIL should NOT have occurred because two S/Gs have pressures above the isolation setpoint and only one indicates high steam flow.

COMMENT
Answer - A
Steam line isolation signal generated by:

(1) 1/2 channels High steam flow per steam line in 2/3 of the steam lines

IN COINCIDENCE WITH EITHER

(2) 2/3 steam lines low pressure (1 detector/ line)
OR
(3) 2/3 RCS loops low Tavg signal (1 detector/ loop)

1-E-2, Faulted SG Isolation

Comprehension / Anal

Ability to operate and / or monitor the following as they apply to
the Steam Line Rupture: Main steam header pressure gauges
3.8 / 3.8

Question #: 10 KA 054.AK1.02

Given the following plant conditions:

•Unit 1 has experienced a loss of all feed condition
•The SRO has entered into 1-FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK and directed the OATC to trip all RCPs
•Several minutes later the auxiliary operator reports that the AFW booster pump is available
•RCS hot leg temperatures are 570 °F and slowly decreasing
•All 3 S/Gs are reading approximately 5% Wide Range level

When recovering feed for these conditions, which ONE of the following statements correctly describes how feed must be aligned per 1-FR-H.1 and the reason?

Choice_a:
Feed ONE S/G at the maximum flow rate possible in order to reestablish a heat sink as soon as possible.

Choice_b:
Feed ONE S/G at the minimum verifiable flow rate possible in order to minimize thermal stresses applied to SG U-tubes.

Choice_c:
Feed ALL S/Gs at the maximum flow rate possible in order to reestablish a heat sink as soon as possible.

Choice_d:
Feed ALL S/Gs at the minimum verifiable flow rate possible in order to minimize thermal stresses applied to SG U-tubes.

COMMENT

A. Incorrect. This is correct if the indications given supported a complete loss of heat sink, i.e. RCS hot leg temp increasing.

B. Incorrect. All available S/Gs should be fed to keep the U-tubes wetted until level is restored on the NR.

C. Incorrect. All available S/Gs should be fed at the minimum flow to avoid stresses to the U-tubes.

D. Correct. This is an acceptable mitigating strategy to recover the secondary heat sink if RCS Hot leg temp is stable or lowering.

Memory

Knowledge of the operational implications of the following concepts as they apply to Loss of Main Feedwater (MFW): Effects of feedwater introduction on dry S/G
3.6 / 4.2

References

1-FR-H.1, RESPONSE TO LOSS OF SECONDARY HEAT SINK
ND-95.3-LP-41, FR-H.1

Question #: 11 KA 055.EA2.05

Given the following plant conditions:

•Unit 1 experienced a loss of all AC power at 09:38
•The total amount of DC loads on the battery at this time is 225 amps

If the DC loading does not change, which ONE of the following is the LATEST time by which AC power must be restored to ensure that the Station Batteries have NOT reached the end of their design discharge rating?

Choice_a:
11:38

Choice_b:
13:38

Choice_c:
15:38

Choice_d:
17:38

COMMENT
A. Incorrect. Plausible, this is the two hour minimum acceptable time for the batteries to provide power during a blackout condition.

B. Incorrect. Plausible if the operator performs an incorrect math calculation or does not know the correct battery rating of 1800 amp-hrs.

C. Incorrect. Plausible if the operator performs an incorrect math calculation or does not know the correct battery rating of 1800 amp-hrs.

D. Correct. 1800 amp-hrs/225 amps = 8 hrs

References
ND-80-LP-13, Batteries
ND-90-LP-6, 125 VDC Distribution

Memory

Ability to determine or interpret the following as they apply to a Station Blackout: When battery is approaching fully discharged
3.4 / 3.7

References

Question #: 12 KA 056.AA1.04

Plant conditions are as follows;

- "B" diesel generator is running and independently supplying the emergency bus @ 60hz

- Governor Speed Droop is set to 30

Which ONE of the following correctly describes the response of the EDG frequency to changes in load?

References

ND-90.3-LP-1

Choice_a:
As additional load is placed on the bus, frequency will lower and stabilize at a value lower than 60hz.

Choice_b:
As additional load is placed on the bus, frequency will rise and stabilize at a value higher than 60hz.

Choice_c:

As additional load is placed on the bus, frequency will lower slightly but will be restored to 60 hertz by the automatic governor control system.

Choice_d:
There will be no effect since this setting only has an effect on the diesel operating characteristics when it is operating in parallel with another source.

COMMENT

A. Correct

B. Wrong - Improper assumption on how the speed droop mechanism works. Plausible - as load increases , power output is needed to increase.

C. Wrong - With the speed droop setting at 30, the speed of the machine will not increase to raise frequency but lower in an attempt to share load. Plausible - that is how the system would respond with the speed drop at zero.

D. Wrong - The speed droop works independent of another source being paralleled with. Plausible - speed droop is intended to allow paralleling sources without overloading the generator.

Question #: 13 KA 057.AA2.19

Given the following plant conditions:

•Unit 1 shutdown 72 hrs earlier and is in an Intermediate Shutdown condition.
•RCS Temperature is 310 °F.
•Both trains of RHR are in service.
•A loss of UPS 1A2 occurs.

Which ONE of the following correctly describes the effect of the loss of UPS 1A2 on RHR?

Choice_a:

RHR outlet temp increases.
Component Cooling flow to RHR train A HX is lost.

Choice_b:
RHR discharge flow decreases to zero.
Component Cooling flow to RHR train A HX is lost.

Choice_c:
RHR outlet temp remains the same.
Component Cooling flow to RHR train A HX remains the same.

Choice_d:
RHR discharge flow increases.
Component Cooling flow to RHR train A HX remains the same.

COMMENT

A. Incorrect. Plausible, a loss of vital bus I from UPS 1A1 causes a loss of CC flow to A HX.

B. Incorrect. Plausible, if the candidate believes that RH-FCV-1758 fails closed on loss of power from Vital Bus III via UPS 1A2.

C. Incorrect. Plausible, if candidate believes that 1758 fails as is with no affect on CC flow.

D. Correct. Vital Bus III causes the RH-FCV-1758, RHR HX Flow Control Valve, to fail open. CC flow to the HX is not affected.

Comprehensive

Ability to determine and interpret the following as they apply to the Loss of Vital AC Instrument Bus: The plant automatic actions that will occur on the loss of a vital ac electrical instrument bus.

4.0 / 4.3

References

1-AP-10.02, LOSS OF VITAL BUS II

1-AP-27.00,LOSS OF DECAY HEAT REMOVAL CAPABILITY

Question #: 14 KA 062.AG2.1.32

Which ONE of the following correctly states (1) the minimum required level at the high level intake structure IAW 0-AP-12.01, Loss of Intake Level, and (2) the reason for maintaining the minimum level?

Choice_a:

17.2 feet to ensure cooldown on the non-accident unit and one In-Service RSHXs in service on the Unit with a DBA LOCA.

Choice_b:
17.2 feet to ensure cooldown on the non-accident unit and two In-Service RSHXs in service on the Unit with a DBA LOCA.

Choice_c:
23.5 feet to ensure cooldown on the non-accident unit and one In-Service RSHXs in service on the Unit with a DBA LOCA.

Choice_d:
23.5 feet to ensure cooldown on the non-accident unit and two In-Service RSHXs in service on the Unit with a DBA LOCA.

COMMENT

A. Incorrect. Plausible, if candidate believes that only one RSHS is required.

B. Correct.

C. Incorrect. Plausible, if candidate mistakes the AP caution concerning 23.5 ft for no restrictions on CC HX SW flow and only 1 HX required for DBA LOCA.

D. Incorrect. Plausible, if candidate mistakes improper level with correct # of HX for DBA LOCA criteria.

Memory

Loss of Nuclear Service Water: Ability to explain and apply all system limits and precautions.

References

1-AP-12.01, LOSS OF INTAKE CANAL LEVEL

Question #: 15 KA 065.AK3.03

Unit 1 is operating at 50% after a shutdown for maintenance.

Containment Instrument Air header is 70psi and decreasing.

Which one of the following correctly describes the air supply to the PZR PORV's and air pressure to the Letdown isolation valves?

References

ND92.1-LP-1

Choice_a:
PZR PORV's are supplied from compressed air back-up
Letdown isolation valves air pressure is above minimum to keep valves fully open

Choice_b:
PZR PORV's are supplied from compressed air back-up
Letdown isolation valves air pressure is below minimum to keep valves fully open

Choice_c:
PZR PORV's are supplied from instrument air header
Letdown isolation valves air pressure is above minimum to keep valves fully open

Choice_d:
PZR PORV's are supplied from instrument air header
Letdown isolation valves air pressure is below minimum to keep valves fully open

COMMENT

A. Correct - PORV's are supplied from a 80# regulator supplied from compressed air bottles. Letdown isolation valves require 65# to remain fully open.

B. Wrong -

C. Wrong -PORV's are supplied from a 80# regulator supplied from compressed air bottles. L

D. Wrong -

Question #: 16 KA WE04.EG2.4.31

Given the following plant conditions:

•Unit 1 has tripped due to lowering Pressurizer level.
•The SRO has entered 1-E-0, REACTOR TRIP OR SAFETY INJECTION.

Which ONE of the following valid alarms REQUIRES transition to 1-ECA-1.2, LOCA OUTSIDE CONTAINMENT?

Choice_a:
0-RMA-D5, VENT STACK #2 RAD MON TRBL.

Choice_b:
0-RMA-C5, PROCESS VENT RAD MON TRBL.

Choice_c:
1-1A-E5, SW RS HX VV PIT A HI LVL.

Choice_d:
1-ACB-C4, LOW COND SUMP A LEVEL HI-HI/LO-LO

COMMENT

A. Correct. Annunciated by 1-VG-RM-131A/B/C in alarm

B. Incorrect. Annunciated by 1-GW-RM-130A, Rad Monitor Process Vent Particulate Detector, 1-GW-RM-130B, Rad Monitor Process Vent Noble Gas Detector, or 1-GW-RM-130C, Rad Monitor Process Ionization Chamber. Plausible, doesn't detect gas stream from aux bldg.

C. Incorrect. Plausible, indication of leak outside containment.
Not located as part of 1-E-0 transition guidance.

D. Incorrect. Plausible, indication of leak outside containment.
Not located as part of 1-E-0 transition guidance.

Memory

Inadequate Heat Transfer: Knowledge of annunciators alarms and indications, and use of the response instructions.

References

1-E-0, LOSS REACTOR TRIP OR SAFETY INJECTION

1-ECA-1.2, LOCA OUTSIDE CONTAINMENT

ND-93.5-LP-3

Question #: 17 KA WE12.EK2.2

Unit 1 was at 100% power when a steam rupture occurred inside containment.

The crew is performing 1-ECA-2.1, Uncontrolled Depressurization of all SG's.

RCS Temperature is 450 degrees F and increasing slowly
RCS pressure is 2250 psi and increasing slowly
One charging pump is running and aligned to the RCS
All main steam trip valves and main steam trip bypass valves are closed
All SG pressures are 215 psig and decreasing
All SG levels are 20" NR and decreasing
Total auxiliary feedwater flow is 700 gpm

Which ONE of the following correctly describes how heat removal from the RCS must be accomplished per 1-ECA-2.1 for the given plant conditions?

References

ECA-2.1

Choice_a:
RCS forced circulation and dumping steam from S/G's

Choice_b:
RCS natural circulation and dumping steam from S/G's

Choice_c:
RCS forced circulation and RCS "Feed and Bleed"

Choice_d:
RCS natural circulation and RCS"Feed and Bleed"

COMMENT
A. Correct IAW 1-ECA-2.1

B. Wrong - Natural circulation is only required if forced circulation is required to be secured or RCP cannot be started.

C/D. Wrong - Plausable - methods to remove heat from primary

Question #: 18 KA WE05.EK3.2

Given the following plant conditions:

•Unit 1 experienced a Reactor Trip.
•E-0, "Reactor Trip or Safety Injection," was completed and the team transitioned to ES-0.1, "Reactor Trip Response."
•Subsequently all AFW pumps were lost and the team entered FR-H.1, "Response to a Loss of Secondary Heat Sink."
•The operators have started a MFW pump and the SRO directs the RO to use the FRV bypasses to control flow to the SG.
•Annunciator A-F-3, SI INIATIATED TRAIN A is NOT LIT
•Annunciator A-F-4, SI INIATIATED TRAIN B is LIT

Which ONE of the following correctly describes the minimum actions necessary to open the FRV bypass valves?

Choice_a:
Reset the B train SI Signal from the MCR only.

Choice_b:
Reset the B train SI signal from the MCR first and then depress the S/G level reset pushbuttons.

Choice_c:
Depress the S/G level reset pushbuttons only.

Choice_d:
Locally block or clear the A train signals and then reset the A & B train SI signals from the MCR.

COMMENT

A. Incorrect. Plausible, if the candidate believes that a local reset is required for a partial SI initiation signal.

B. Incorrect. Plausible, if candidate believes conditions for block to be in effect based on one SI annunciator not lit.

C. Correct.

D. Incorrect. Plausible, if candidate believes a full SI signal is required to close the FW valves.

Memory

Loss of Secondary Heat Sink: Knowledge of the reasons for the following responses as they apply to the (Loss of Secondary Heat Sink) Normal, abnormal and emergency operating procedures associated with (Loss of Secondary Heat Sink).

References

1-E-0, LOSS REACTOR TRIP OR SAFETY INJECTION

Question #: 19 KA 001.AK2.06

Unit one reactor power is at 85% and stable

Control rods are in automatic.

The following alarms just actuated:

H-A-4 Tave/Tref Deviation
H-C-4 Low Tave to FW Cont

Tave is 569F

Which one of the following correctly describes how control rods will initially respond w/ no operator action?

References

ND-93.3-LP-3/LP-2

Choice_a:
Rods step out at 72 SPM

Choice_b:
Rods step out at 40 SPM

Choice_c:

Rods step in at 8 SPM

Choice_d:
Rods remain at the current rod height

COMMENT

A. Correct - The alarms indicate that median Tave failed low. With Tave/Tref deviation alarm in, deviation is > than 5F. This creates a demand for outward rod motion of 72 spm.

B. Wrong - With Tave/Tref deviation alarm in, deviation is > than 5F. A demand for outward rod motion of 72 spm is generated. Plausible - when Tave/Tref deviation is 4F a demand for rod motion of 40 spm is generated. If applicant references HFPO program Tave

C. Wrong -With Tave/Tref deviation alarm in, deviation is > than 5F. A demand for rod motion of 8 requires a temperature difference of betwee. 1.5 and 3

D. Wrong - The combination of the 2 alarms indicates median Tave failed low generating an outward rod demand. Plausible - if applicant calculated reference delta T and finds out that there is less than 1 F difference..

Referenced Tavs/Tref deviation alarm due to no deviation meter.

Question #: 20 KA 003.AG2.4.1

Given the following plant conditions:

•Unit 1 is operating at 100% power.
•One Bank "A" Rod Bottom Light has dropped into the core.
•At the same time as the initial rod drop occurred, another Bank "A" Rod is noticed to be moving erratically into the core (Moving several steps then stopping then moving several more steps)
•1E-E3, DELTA FLUX DEVIATION in alarm.

Which ONE of the following actions is required to be taken IMMEDIATELY?

Choice_a:
Trip the reactor.

Choice_b:
Reduce Reactor Power to between 70% - 74%.

Choice_c:
Initiate boration to reduce power to < 90% rated with no rod movement.

Choice_d:
Place the ROD CNTRL MODE SEL switch to the MAN position.
Power reduction is not required.

COMMENT

A. Correct. Required if more than one rod is affected.

B. Incorrect. Required by Control Rod misalignment procedure.

C. Incorrect. Required by misalignment procedure to return delta flux to target band within 15 minutes by ARP and T.S.

D. Incorrect Correct if only one rod affected.

Memory

Dropped Control Rod: Knowledge of EOP entry conditions and immediate action steps.

4.3 / 4.6

References

0-AP-1, ROD CONTROL SYSTEM MALFUNCTION
0-AP-1.01, CONTROL ROD MISALIGNMENT

Question #: 21 KA 005.AA2.01

Unit 1 started a plant shutdown from 100% power with all control rods fully withdrawn.

The following conditions currently exist:

The plant is at 80% power ramping down at 1/4%/min

Bank D rod position indication is 190 steps withdrawn

Upper Ion Chamber Deviation is alarming

Lower Ion Chamber Deviation is normal

NIS PR Channel Average Flux Deviation is normal

Which ONE (1) of the following correctly describes the cause of the given indications?

References

ND-93.2-LP-4

Choice_a:
On Bank D rod is stuck at the fully withdrawn position

Choice_b:
One Bank D rod has fallen to the bottom of the core

Choice_c:
Loss of High Voltage power supply to a PR Channel

Choice_d:
Summing and level amplifier failure for one PR Channel

COMMENT

A. Correct - The stuck rod will cause the Upper Ion Chamber Deviation to exceed it's 2% threshhold.

B. Wrong - If a rod fell to the bottom of the core it would also cause the Lower Ion Chamber Deviation to alarm.

C. Wrong - A loss of High Voltage power supply to a channel would cause Both Upper and Lower Alarms as well as NIS PR Average Flux Deviation.

D. Wrong - Loss of a summing and level amp would only cause the NIS PR Channel Average Flux Deviation Alarm.

Question #: 22 KA 061.AA2.05

Given the following plant conditions:

•Unit 1 is in a Refueling Shutdown condition
•There are 35 individuals in containment performing various maintenance activities
•A valid HIGH level alarm is received on 1-RM-RMS-162, Manipulator Crane Area
•Containment Purge is in operation
•No fuel movements are currently in progress

Which ONE of the following actions is required IAW 1-RM-K8, "1-RM-RI-162 HIGH" alarm response procedure?

Choice_a:
Immediately evacuate containment.

Choice_b:
Verify containment purge is isolated.

Choice_c:
Verify containment air recirc is isolated.

Choice_d:
Initiate 0-AP-22.00, FUEL HANDLING
ABNORMAL CONDITIONS.

COMMENT

A. Incorrect. ALERT & HIGH level requires notification and discussion of appropriate action with HP prior to directing an evacuation of containment.
B. Correct. Containment isolation should occur at the HIGH setpoint.
C. Incorrect. This is not directed by the Alarm Response.
D. Incorrect. With no abnormal conditions in containment concerning fuel handling, this step is NA.

Ability to determine and interpret the following as they apply to the Area Radiation Monitoring (ARM) System Alarms: Need for area evacuation; check against existing limits

3.5 / 4.2

References

1-RM-K8, 1-RM-RI-162 HIGH

Question #: 23 KA 068.AK3.09

Given the following plant conditions;

Unit 1 was at 100% power with 'B' Charging Pump out of service for maintenance.
Noxious fumes forced the evacuation of the control room.
0-AP-20.00, Main Control Room Inaccessibility was entered.

Which ONE of the following identifies the MINIMUM required manipulation(s) to transfer "A" CCP control to the ASDP?

Choice_a:
Place "H" Group Transfer Switch to "LOCAL" only

Choice_b:
Place "J" Group Transfer Switch to "LOCAL" only

Choice_c:
Place "J" Group Transfer Switches to "LOCAL" and the switches
for half station & Manual/Auto controller 1-CH-FCV-1122 to "LOCAL."

Choice_d:
Place "H" Group Transfer Switch to "LOCAL" and the switch for
half station controller 1-CH-FCV-1122 to "LOCAL".

COMMENT

A. Incorrect. . Plausible if candidate reads the question to mean only the Charging Pump and not the flow controller also.
B. Incorrect. This alone will not provide a flow path with flow control for charging. The "J" Group Transfer Switch would provide power to "C" CCP if on alternate power supply.
C. Incorrect. Correct if both "A" & 'B" CCPs were available, or if "C" was on it's alternate power supply. Only "J" power supply is required for "B" CCP.
D. Correct. This will transfer power for the "A" CCP and the flow control valve.

Memory

Knowledge of the reasons for the following responses as they apply to the Control Room Evacuation: Transfer of the following to local control: charging pumps, charging header flow control valve, PZR heaters, and boric acid transfer pumps

3.9 / 4.4

References

0-AP-20.00

Question #: 24 KA 076.AK3.05

Given the following plant conditions:

•Unit 1 is @ 100% power
•A ramp to 75% is in progress to perform turbine valve testing
•Mixed Bed Demin 1A is in service
•Mixed Bed Demin 1B is in standby
•Annunciator 1-RM-E7, RC LDN HIGH ALERT/FAILURE, is in alarm

Which ONE of the following correctly describes the actions the RO must perform IAW 1-OP-CH-011, CVCS MIXED BED DEMIN OPERATIONS, to minimize the consequences of this event?

Choice_a:

Align BOTH 1A and 1B mixed bed demin in service with the Cation IX.

Choice_b:
Place the 1A demin in standby. Align 1B mixed bed demin in service with the Cation IX.

Choice_c:
Align BOTH 1A and 1B mixed bed demin in service without the Cation IX.

Choice_d:
Place the 1A demin in standby. Align 1B mixed bed demin in service without the Cation IX.

COMMENT

A. Incorrect. The Cation IX is not addressed by the ARP or the OP and would not be appropriate for this condition. Used to increase pH by removing excess free lithium.
B. Incorrect. The Cation IX would not be placed in service for this condition.
C. Incorrect. Both IXs are not placed in service simultaneously.
D. Correct. Only one mixed bed demin is normally placed into service. The Cation IX would not be placed in service for this condition.

Memory

Knowledge of the reasons for the following responses as they apply to the High Reactor Coolant Activity: Corrective actions as a result of high fission-product radioactivity level in the RCS

2.9 / 3.6

References

1-RM-E7, RC LDN HIGH ALERT/FAILURE

1-OP-CH-011,
CVCS MIXED BED DEMIN
OPERATIONS

ND-88.3-LP-2-DRR, CHARGING AND LETDOWN

Question #: 25 KA WE13.EK1.2

Plant conditions are as follows:

Unit 1 operators are performing FR-H.2 "Response to S/G Overpressure."

- A S/G pressure is 1145 psig and stable

- A S/G level is 50% and rising.

- RCS Thot temperatures are 545 degrees F and stable

- All three RCPs are running.

Attempts to dump steam from "A" SG were unsuccessful

Which ONE of the following correctly describes the required actions based on plant conditions?

References

FR-H.2

Choice_a:
Isolate the steam supply to the TDAFW pump from "A" SG and dump steam from the unaffected SG's to reduce RCS temperature

Choice_b:
Increase AFW flow to the "A" SG and dump steam from the unaffected SG's to reduce RCS temperature

Choice_c:
Isolate the steam supply to the TDAFW pump from "A" SG and reduce "A" SG pressure using the S/G blowdown system

Choice_d:
Increase AFW flow to the "A" SG and reduce "A" SG pressure using the S/G blowdown system

COMMENT

A. Correct - IAW 1-FR-H.2

B. Wrong - AFW is isolated - Plausable is operator believes that increasing AFW will help C/D the S/G

C/D. Wrong - Plausable if operator bel;ieves that SG Blowdown is an approved method of reducing S/G pressure

Question #: 26 KA WE16.EA2.2

Given the following plant conditions:

@ 10:00 AM Unit 1 experienced a LOCA that resulted in significant core damage.
@ 11:20 AM Peak Containment Pressure is observed to be 6.2 psig.
@ 11:30 AM Peak Containment Radiation level is observed to be 110,000 R/hr.
@ 11:35 AM (Current time) Containment radiation level is 90,000 R/hr, Containment pressure is 5.0 psig. Both are slowly lowering.

Which ONE of the following correctly describes whether or not the crew must use Adverse Values when implementing the EOPs and the reason?

Choice_a:
Adverse values MUST still be used.
Adverse containment conditions now exist due to the current containment pressure.

Choice_b:
Adverse values MUST still be used.
Adverse containment radiation values previously existed.

Choice_c:
Adverse values MUST still be used.
Adverse containment conditions now exist due to the current containment radiation dose rate.

Choice_d:
Adverse values are NO longer required to be used.
Adverse containment conditions no longer exist.

COMMENT

A. Incorrect. Containment press for adverse conditions is 20 psia. 5 psig + 14.7 = 19.7 psia

B. Correct. Rad levels exceeded setpoint and therefore instrument operability must be evaluated.

C. Incorrect. Current rad levels are below the adverse value of > 1 E 5 R/hr.

D. Incorrect. Adverse values are required to be used. Adverse containment conditions no longer exist.

Ability to determine and interpret the following as they apply to the (High Containment Radiation): Adherence to appropriate procedures and operation within the limitations in the facility's license and amendments.

3.0 / 3.3

References

EOP Continuous Action Page

Question #: 27 KA WE02.EG2.4.31

Given the following plant conditions:

- A Small Break LOCA has occurred on Unit 1
- RCS pressure is 1100 psig and slowly lowering
- The crew is performing the actions of ES-1.2, Post LOCA Cooldown and Depressurization
- The crew is depressurizing the RCS per step 14 of ES-1.2
- Pressurizer level is 36% and slowly increasing
- Both LHSI pumps have been stopped
- One HHSI pump has been stopped
- Normal charging is aligned

When the depressurization is stopped, the SRO directs the RO to verify that SI is not required. The following conditions are noted:

- RCS subcooling is 35°F and trending DOWN
- 1C-D8, PRZR LO LVL annunciator is lit

Based on these indications which ONE of the following actions is required IAW ES-1.2?

Choice_a:

Manually start the charging pumps and align HHSI to the cold legs.

Choice_b:

Start the last charging pump secured and leave normal charging aligned.

Choice_c:

Re-initiate SI by using the manual SI pushbuttons.

Choice_d:

Manually start the LHSI pumps and align LHSI to the cold legs.

COMMENT

A. Correct per ES-1.2. Step 20 of ES-1.2 states to control PZR level by using LHSI or charging flow. LHSI has been secured. Step 25 and the C.A. steps address restarting SI pumps if subcooling drops below 30 degrees F or PZR level <22%. PZR low level alarm comes in at 5% off program (22% for 0% Rx power). Press is not given, but SI accumulators are not stated as isolated yet, therefore Rx press is still > LHSI shutoff head.

B. Wrong - Plausible due to starting last pump would stop pressure decrease.

C. Wrong - Plausible due to it would reinitiate inflow into primary and stop pressure decrease

D. Wrong - Plausible. Cooldown and initial depressurization have occurred to increase PZR level. A decreasing pressure indicates a leak/shrink rate greater than SI flow and RCS CD. Depressurization is appropriate in combination with increasing SI flow. HHSI flow is directed by the EOP and charging flow is directed by the ARP.

Analysis / Comprehension

SI Termination: Knowledge of annunciators alarms and indications, and use of the response instructions.

References

ES-1.2, POST LOCA COOLDOWN AND DEPRESSURIZATION

ND-95.3-LP-9, ES-1.2, POST-LOCA COOLDOWN AND DEPRESSURIZATION

1C-D8, PRZR LO LVL

Question #: 28 KA 003.K6.14

A RCP breaker failed to close while staring a RCP. The following conditions were noted during the investigation into the Problem:

Hot Leg Loop Isolation Valve Open
Cold Leg Loop Isolation Valve Open
Bearing Lift Pump Running with a discharge pressure of 400#
4160V busses energized

Which one of the following is a possible cause of the RCP motor breaker failing to close?

References

ND-88.1-LP-6

Choice_a:
A failure of the RCP speed sensing relay

Choice_b:
Loop Bypass Line Isolation Valve Limit Switch indicating open

Choice_c:
RCP motor stator temperature element failed high

Choice_d:
RCP oil reservoir low level

COMMENT

A. Correct - An input from the speed sensing unit is required for RCP start.

B. Wrong - It takes the Loop Bypass Line Isolation Valve position and Cold Leg Loop Isolation Valve position to prevent RCP start

C. Wrong - RCP Motor stator temperature has no input into start logic. Plausable becouse a temperature from the speed sensing unit is required.

D. Wrong - Oil reservoir level has no input into RCP start logic. Plausable - Not having oil could damage the pump.

Question #: 29 KA 004.A2.13

Plant conditions are as follows:

Unit 1 is in a refueling outage with core offload in progress
Unit 2 is at 100%

Unit 1 RWST level is 5% in preparation for tank inspection.

Which one of the following correctly identifies the source of makeup water to the Unit 1 refueling cavity IAW 1-AP-22.01 "Loss Of Refueling Cavity Level"?

Choice_a:
Unit 1 HHSI from Unit 2 RWST

Choice_b:
Unit 1 HHSI from Unit 1 VCT

Choice_c:
Unit 1 LHSI from Unit 2 RWST

Choice_d:
Unit 1 LHSI from Unit 1 VCT

COMMENT

A. Correct - With a low RWS (<6%) only HHSI is available to be used with RWST crosstie.

B. Incorrect - VCT is not used to replenish refueling cavity

C. Incorrect -LHSI is not used with RWST crosstie.

D - Incorrect - LHSI is not used with RWST crosstie.

References

1-AP-22.01

Question #: 30 KA 005.K2.03

Which one of the following correctly describes the effect of deenergizing Bus 1J1 on the RHR system?

References

ND-88.2 / 90.3

Choice_a:
Only 1-MOV-1701, RHR Suction Isolation, would be deenergized
Only the ability to remotely establish an RHR suction path is lost

Choice_b:
Only 1-MOV-1720B, RHR Discharge Isolation, would be deenergized
Only the ability to remotely establish an RHR discharge path is lost

Choice_c:
1-MOV-1701, RHR Suction Isolation, and 1-MOV-1720B, RHR Discharge Isolation, would be deenergized
The ability to remotely establish both an RHR suction and discharge path is lost

Choice_d:
1-MOV-1701, RHR Suction Isolation, and 1-MOV-1720B, RHR Discharge Isolation, would be deenergized
The ability to remotely establish both an RHR suction and discharge path is available

COMMENT

A. Correct - MOV-1701 is deenergized - suction valves are in series= suction path lost

B. Incorrect - Discharge valves are in parallel

C. Incorrect - Discharge valves are in parallel

D. Incorrect - suction valves are in series=> suction path lost

Question #: 31 KA 006.A3.05

Which ONE of the following identifies the time requirement and the basis for manually securing one of two running Low Head Safety Injection pumps if RCS pressure is greater than 185 psig?

References

ND91-LP-2/3

Choice_a:
30 minutes, prevent overheating of a LHSI pump running at shutoff head

Choice_b:
60 minutes, prevent overheating of a LHSI pump running at shutoff head

Choice_c:
30 minutes, prevent overheating of a LHSI pmup motor running at shutoff head

Choice_d:
60 minutes,prevent overheating of a LHSI pmup motor running at shutoff head

COMMENT

A - Correct

B - Incorrect - Time requirement is 30 min

C - Incorrect - Motor heatload would be reduced with pump flow decreased.

D - Incorrect - Time requirement is 30 min. Motor heatload would be reduced with pump flow decreased.

Question #: 32 KA 004.K6.13

Which ONE of the following correctly describes the condition that will directly cause an automatic closure of the letdown orifice isolation valves (HCV-1200 A, B, C)?

Choice_a:
No charging pumps running

Choice_b:
Letdown high flow signal

Choice_c:
High VCT level

Choice_d:
Low VCT level

COMMENT
A - Correct -

B - Incorrect

C. Incorrect

D. Incorrect

References

ND-88.3-LP-2C

Question #: 33 KA 008.K1.02

Unit one is operating at 100% power and all systems are in their normal configuration.

CC discharge header radiation level and CC surge tank level are steadily rising.

Which one of the following components, if leaking, can cause an automatic valve closure due to increased CCW flow?

References

ND-88.5-LP-1

Choice_a:
RCP Thermal Barrier - CC-TV-120

Choice_b:
Primary Sample Cooler

Choice_c:
Excess Letdown Heat Exchanger

Choice_d:
Non-regenerative Heat Exchanger

COMMENT

A - Correct - High flow can cause CC-TV-120 or CC-TV-140

B. & D - Plausable - can cause inleakage into CCW Syatem - but now flow associations

C. Wrong - is isolated during normal operation. Plausable due to can cause CCW inleakage - and has a flow isolation of CC-HCV-108

Question #: 34 KA 010.K6.03

Given the following plant conditions for Unit 1:

Reactor Power - 100%
A 20% power reduction is required for emergent maintenance
Boration is initiated to allow for the power reduction with NO rod movement
As the down power is initiated the PZR Pressure Master Controller sticks at 30%

Which one of the following correctly describes the difference in the final conditions for this power reduction (PZR Pressure Master Controller sticks) when compared to the power reduction under normal conditions (PZR Pressure Master Controller working normally)?

Choice_a:
PZR pressure would be HIGHER during the down power with the PZR controller malfunction

Choice_b:
PZR pressure will be LOWER during the power reduction with the PZR controller malfunction

Choice_c:
PZR level will be HIGHER during the power reduction with the PZR controller malfunction

Choice_d:
PZR level will be LOWER during power reduction with the PZR controller malfunction

COMMENT
A - Correct - With the master pressure controller in manual, spray will not initiate as pressure increases in the PZR due to the increased level.

B. Incorrect

C. PZR Level will be the same as during a down power with the Master pressure controller in auto

D. PZR Level will be the same as during a down power with the Master pressure controller in auto

References

ND-93.3-LP-5

Question #: 35 KA 012.G2.1.27

Unit 1 is at 100% power

Reactor Trip Breaker "A" (RTA) is racked out for maintenance and closed
Reactor Trip Bypass Breaker "A" (BYA) is racked in and closed

A Reactor trip signal for channel "A" RPS is received

Which one of the following correctly describes the operation of the Reactor trip and bypass breakers with the plant conditions given?

** Need licensee to verify what alarms would be in for this condition**

Choice_a:
Only Reactor Trip Breaker "A" trips open

Choice_b:
Reactor Trip Breaker "A" trips open and Reactor Trip Bypass Breaker "A" trips open

Choice_c:
Only Reactor Trip Bypass Breaker "A" trips open

Choice_d:
Reactor Trip Breaker "B" trips open and Reactor Trip Bypass Breaker "A" trips open

COMMENT

A. Correct -

B. Incorrect - "A" Bypass breaker receives a trip signal from B RPS

C. Incorrect - "A" Bypass breaker receives a trip signal from B RPS

D. Incorrect - A B RPS trip signal would cause this

References

ND-93.3-LP-10

Question #: 36 KA 013.K2.01

Unit 1 is at 90% power and ramping down due to excessive temperatures on the "A" DC bus. During the shutdown a short caused the "A" DC bus to deenergized and "F" Transfer Bus feeder to open.

Prior to any operator action, which one of the following correctly describes the status of the power supplies for the "A" train SI components?

References

ND-90.3-PP-2/3

Choice_a:

#1 EDG is running with its output breaker open. Local manual breaker operation is required to energize "A" train SI components

Choice_b:

#1 EDG is running with its output breaker open. "A" train SI components have power available from Reserve Station Service Transformers

Choice_c:

#1 EDG must be started manually. Local manual breaker operation is required to provide power to "A" train SI components

Choice_d:

#1 EDG must be started manually. "A" train SI components have power available from Reserve Station Service Transformers

COMMENT

A. Correct - With a loss of power to the 1H bus #1 EDG will start, but with a loss of the "A" DC bus the output breaker will loose control power and is required to be closed manually

B. Wrong - A loss of power to the "F" transfer bus deenergizes the 1H bus which powers the "A" train SI components. Plausable - E trans bus powers 2H Bus, and if normal power is available then EDG bkr would not shut.

C. Wrong - EDG does not require DC bus to start.

D. Wrong - EDG does not require DC bus to start. A loss of power to the "F" transfer bus deenergizes the 1H bus which powers the "A" train SI components.

Question #: 37 KA 003.K3.01

Given the following plant conditions:

- Reactor Startup is in progress below the ECP
- Control Bank "C" is at 35 steps withdrawn
- Reactor Coolant System pressure is 2235 psig and stable
- Tavg is 547 °F and stable
- "A" Reactor Coolant Pump trips

Which ONE of the following correctly describes the effect on the plant?

Choice_a:
Tavg will decrease

Choice_b:
The reactor will automatically trip

Choice_c:
Source Range count rate will decrease (with no reactor trip)

Choice_d:
RCS pressure will increase

COMMENT

A. - Correct

B. - Incorrect. RCP trip not in effect

C. - Incorrect. No effect on count rate until critical

D. - Incorrect. No effect on RCS pressure. Not at power.

Knowledge of the effect that a loss or malfunction of the RCPS will have on the following: RCS

3.7 / 4.0

References

ND-83-LP-3-DRR, Thermodynamic Terminology and Behavior of Water

Question #: 38 KA 076.K1.12

Which one of the following correctly describes the components isolated by placing a stop log in the 1D high level screenwall?

Choice_a:
One flow path to Unit 1 component cooling heat exchangers
One flow path to both units' charging pump service water

Choice_b:
One flow path to Unit 1 component cooling heat exchangers
One flow path to Unit 1 recirc spray heat exchangers

Choice_c:
One flow path to Unit 1 bearing cooling heat exchangers
One flow path to both units' charging pump service water

Choice_d:
One flow path to Unit 1 bearing cooling heat exchangers
One flow path to Unit 1 recirc spray heat exchangers

COMMENT

A. Correct

B. Incorrect - RS Spray not on 1D on 1C/A

C. Incorrect - Bearing cooling not on 1D - (1C)

D. Incorrect - Bearing cooling not on 1D - (1C)

References

ND-89.5-LP-2

Question #: 39 KA 078.K2.01

Unit 2 is at 100 % power

Unit 2 TB instrument air compressor (2-IA-C-1) is running in auto and maintaining normal air pressure.

A Loss of off-site power and a Unit 1 SI have occurred.

Which one of the following correctly describes the power source and status of the unit 2 TB instrument air compressor (2-IA-C-1) for the plant conditions given above?

References

ND-90.3-LP-5

Choice_a:
2J Bus is deenergized
Compressor is not running

Choice_b:
2H Bus is energized from #2 EDG
Compressor is running in auto

Choice_c:
2H Bus is deenergized
Compressor is not running

Choice_d:
2J Bus is energized from #3 EDG
Compressor is running in auto

COMMENT

A - Correct - 25J3 trip on unit 1 SI requires the 2J bus to be reenergized.

B - Incorrect - Compressor is powered from 2J

C - Incorrect - 2H is powered from 2EDG / Compressor is powered from 2J

D. - Incorrect - 25J3 trip on unit 1 SI requires the 2J buss to be reenergized.

Question #: 40 KA 103.G2.1.12

Given the following plant conditions:

- Unit 1 is currently in an INTERMEDIATE SHUTDOWN condition
- Unit restart is scheduled to commence this shift
- Tavg is 510 °F
- RWST is 50 °F
- Service Water temperature is 60 °F
- Containment temperature is 100 °F
- Containment pressure is 15 psig

Which ONE of the following is the required action IAW Tech Specs to continue with the restart (if any)?

Choice_a:

No action with regard to containment pressure is required to continue to Power Operation.

Choice_b:
No action with regard to containment pressure is required to enter Hot Shutdown, however, the crew must restore Containment Pressure to within acceptable limits before entering Power Operation.

Choice_c:
The crew must restore containment pressure to within acceptable limits before entering Hot Shutdown, but can remain in Intermediate Shutdown indefinitely at the current containment conditions.

Choice_d:
The crew cannot enter Hot Shutdown without restoring containment pressure to within acceptable limits and must restore containment pressure within 1 hour while in Intermediate Shutdown

COMMENT

A - Incorrect. A mode change to power operation would not be allowed.
B - Correct. With the containment air partial pressure outside the acceptable operation range, restore the air partial pressure to within acceptable limits within 1 hour or be in at least HOT SHUTDOWN within the next 6 hours and in
COLD SHUTDOWN within the following 30 hours
C - Incorrect. The Unit is already below the T.S. required Hot Shutdown condition and is only req'd to be in HSD..
D - Incorrect. ISD is a lower mode than HSD. The crew can enter HSD mode and then have up to one hr to correct..

Memory

Ability to apply technical specifications for a system.

RO 2.9 SRO 4.0

References

Tech Spec 3.8.D & 3.4.A.3

Question #: 41 KA 073.K1.01

Which ONE of the following correctly describes the automatic actions that occur when a HIGH alarm is received on Condenser Air Ejector Radiation Monitor, RM-SV-111?

References

Choice_a:
OPENS SV-TV-102 (Air Ejector Containment Isolation TV) and CLOSES SV-TV-103 (Air Ejector Atmospheric Vent Isolation Valve).

Choice_b:
OPENS SV-TV-102 (Air Ejector Containment Isolation TV) and OPENS SV-TV-103 (Air Ejector Atmospheric Vent Isolation Valve).

Choice_c:
CLOSES SV-TV-102 (Air Ejector Containment Isolation TV) and OPENS SV-TV-103 (Air Ejector Atmospheric Vent Isolation Valve).

Choice_d:
CLOSES SV-TV-102 (Air Ejector Containment Isolation TV) and CLOSES SV-TV-103 (Air Ejector Atmospheric Vent Isolation Valve).

COMMENT
A - Correct

B - One correct one incorrect

C - Both incorrect

D - One correct one incorrect

Question #: 42 KA 007.K4.01

Unit 1 is operating at 100% power and the following conditions exist in the Unit 1 PRT:

Temperature - 130F
Pressure - 8#

Which one of the following correctly describes the action required IAW 1-OP-RC-11 for the given plant conditions?

References

ND-88.1-LP-3

Choice_a:
The PRT must be sprayed/drained to decrease temperature

Choice_b:
The PRT must be sprayed/drained to decrease pressure

Choice_c:
The PRT must be vented/purged to decrease temperature

Choice_d:
The PRT must be vented/purged to decrease pressure

COMMENT

A. Correct

B. Alarm for Pressure is 10#

C. venting/purging is only for pressure control

D. Alarm for Pressure is 10#

Question #: 43 KA 064A.4.06

Plant conditions are as follows:
- A Loss of Off-Site Power has occurred
- #1 Emergency Diesel Generator has started but failed to auto load
- It has been determined that the auto-closure circuit for 15H3, #1 EDG Output Breaker, is inoperable and that 15H3 can be manually closed
- When the operator places the sync switch for 15H3 to "ON" he observes 120 volts on the "incoming" meter, 0 volts on the "running" meter, and the synchroscope is stationary at "3-o'clock"

Which ONE of the following correctly describes the actions (if any) required to close 15H3?

References

ND-90.3-LP-7 pg. 18

Choice_a:
No additional action is necessary. Close 15H3.

Choice_b:
Raise EDG speed until the synchroscope is turning slowly in the fast direction, then close 15H3 at "11 o'clock".

Choice_c:
Momentarily press the "field flash" pushbutton, close 15H3.

Choice_d:
Raise EDG voltage until the running meter indicates 120 volts, close 15H3.

COMMENT

A. Correct because the synchroscope has been turned on, there is no over-current ordifferential and the aux trip relay does not need to be reset (ND-90.3-LP-7 pg. 18). Therefore, all criteria for manually closing the breaker are met.
B. Incorrect because the bus is dead. Raising EDG speed will not synchronize the phases.
C. Incorrect , field flash PB does not need to be pushed.

D. Incorrect because raising the EDG voltage will not raise running voltage. Incoming voltage is the EDG voltage (not running voltage).

Question #: 44 KA 008.A1.04

Unit 1 conditions are as follows:

A normal plant cooldown is in progress
Residual heat removal cooling is not yet in service
The component cooling surge tank high-low level annunciator (VSP-D7) is alarming
CCW surge tank level is decreasing slowly

Which one of the following conditions would cause the plant indications given above?

References

0-VSP-D7

Choice_a:
A tube leak in one of the component cooling heat exchangers

Choice_b:
A leak in an reactor coolant pump thermal barrier heat exchanger

Choice_c:
An excessive primary plant cooldown rate

Choice_d:
A leaking relief valve on the component cooling water surge tank

COMMENT

A. Correct - CCW is at a higher pressure than SW - a leak would cause flow from the CCW system to the SW system.

B. Wrong - The RCP thermal barrier leak would cause inleakage into the CCW system.

C. Wrong - Would only cause primary plant contraction

D. Wrong - The relief is located on the top of the tank

Question #: 45 KA 059.A4.03

During a unit 1 shut down the following Feedwater System conditions exist;

"A" MFP is in service
Feed control is in the process of being transferred from the Feed Reg Valves to the Feed Reg Bypass Valves with the FRV's and bypass valves sharing flow.
Total feed flow is 3500gpm
"A" Main Feed Recirculation valve is in Manual for testing

Indicated main feed flow to all S/G's begins increasing without any operator action.

Which one of the following correctly describes the cause of the increase in flow for the given plant conditions?

Choice_a:
Loss of all air to all S/G Feedwater Regulating Bypass Valves

Choice_b:
Loss of all air to all S/G Feedwater Regulating Valves

Choice_c:
"A" MFP discharge flowmeter failing low

Choice_d:
"A" MFP discharge flowmeter failing high

COMMENT
A. Correct - A loss of air will cause the valves to close and cause pressure to increase therefore increasing flow through FRV. During S/D the bypass valves also bypass the flowmeters for the S/G's

B. Wrong - FRV's fail closed = decreasing flow to S/G's

C. Wrong - If the Discharge flowmeter fails low the MFP recirc valves will open causing flow to decrease

D. Wrong - In manual the valve will not shut if flow goes over 5000GPM

NEW

References

ND-89.3-LP-3

Question #: 46 KA 022.K1.01

Unit 1 is operating at 100% power

The containment air cooling system is in Normal mode

A complete loss of air to hand control valves 1- CC-HCV 101A/B &102A/B has occurred.

Which one of the following correctly describes the status of the containment air cooling system if no operator actions taken?

Choice_a:
Component Cooling flow is isolated from the containment air coolers
Chilled Component Cooling flow is isolated from the containment

Choice_b:
Component Cooling flow is directed to the containment air coolers
Chilled Component Cooling flow is isolated from the containment

Choice_c:
Component Cooling flow is isolated from the containment air coolers
Chilled Component Cooling flow is directed to the containment

Choice_d:
Component Cooling flow is directed to the containment air coolers
Chilled Component Cooling flow is directed to the containment

COMMENT
New

A. Correct - Upon a loss of air all valves fail shut isolating cooling water flow.

B. Incorrect - Upon a loss of air all valves fail shut isolating cooling water flow.

C. Incorrect - Upon a loss of air all valves fail shut isolating cooling water flow.

D. Incorrect - Upon a loss of air all valves fail shut isolating cooling water flow.

All answers plausible if the failing positions of the supply valves are misunderstood.

References

ND-88.5-LP-1

Question #: 47 KA 026.A4.01

A Consequence Limiting Safeguards actuation (Hi-Hi CLS) is actuated.

Which ONE of the following Containment Spray System manipulations can be accomplished from benchboard 1-1 in the Control Room without CLS signal being reset?

Choice_a:

Close MOV-RS-155A, Containment Recirculation Sump Isolation Valve.

Choice_b:
Close MOV-CS-102A, Caustic Additive Tank (CAT) Isolation Valve.

Choice_c:
Stop Containment Spray Pump 1A.

Choice_d:
Close MOV-CS-100A, Containment Spray Suction Valve.

COMMENT

A - Correct - Can be operated from benchboard even when CLS signal is present

B - Wrong Cannot be operated until CLS signal is reset. Plausible - it receives an open signal from CLS actuation and is operated from benchboard 1-1

C. Wrong - Pump cannot be stopped from benchboard until CLS signal is reset

D. Wrong - Cannot be operated until CLS signal is reset. Plausible - it receives an open signal from CLS actuation and is operated from benchboard 1-1

References

ND-91-LP-6

Question #: 48 KA 039.K5.01

Which two (2) of the following four (4) conditions are MOST LIKELY to result in water hammer?

1. Overfilling a steam generator (YELLOW path condition for secondary inventory).

2. Rapidly heating up secondary piping using the MS trip valve bypass valves.

3. Reinitiating feedwater to a steam generator shortly after the feedring is uncovered.

4. Throttling the Condensate Pump discharge valve before securing the Condensate Pump.

References

References

1-OP-FW-001, Rev. 9, Motor Driven AFW Pumps Startup and Shutdown
1-OP-FW-002, Rev. 14, Turbine Driven AFW Pump Startup and Shutdown
Facility examination bank questions MS00010, MS00011, SD00001
ND-88.1-LP-4, Rev. 4, Steam Generators
ND-95.3-LP-43, Rev. 6, FR-H.3, Response to Steam Generator High Level

Choice_a:

Conditions 1 and 2

Choice_b:

Conditions 1 and 4

Choice_c:

Conditions 2 and 3

Choice_d:

Conditions 3 and 4

COMMENT

A. Correct.
B. Incorrect. One correct condition (1), one incorrect condition (4).
C. Incorrect. One correct condition (2), one incorrect condition (3).
D. Incorrect. Two incorrect conditions (3 and 4).

1. Correct per ND-95.3-LP-43 and ND-83-LP-10, Rev. 11, Applications of Fluid Phenomena.
2. Correct per Caution statements in 1-OP-FW-001 and -002.
3. Incorrect. Per ND-88.1-LP-4, the main feed ring bottom discharge holes are plugged and the ring is outfitted with J-tubes in order to prevent quick drainage of the feedring and minimize the chance of water hammer.
4. Incorrect.

A. Correct.
B. Incorrect. One correct condition (1), one incorrect condition (4).
C. Incorrect. One correct condition (2), one incorrect condition (3).
D. Incorrect. Two incorrect conditions (3 and 4).

References

1-OP-FW-001, Rev. 9, Motor Driven AFW Pumps Startup and Shutdown
1-OP-FW-002, Rev. 14, Turbine Driven AFW Pump

Question #: 49 KA 059.A4.08

Which ONE of the following correctly describes the operation of the Main Feed Reg Valve M/A station if power to the controller is lost in the associated instrument rack in the relay room?

References

ND-93.1-LP-3

Choice_a:
The M/A station will shift to manual and can be controlled manually from the MCR.

Choice_b:
The M/A station will not automatically shift and output of the controller will increase to 100% demand.

Choice_c:
The M/A station will not automatically shift and output of the controller will decrease to 0% demand

Choice_d:
The M/A station will shift to Auto-Hold and can not be controlled manually from the MCR.

COMMENT

A - Correct - Controllers that loose power from the Rack Room still have power supplied from the MCR for manual operation
B - Incorrect - On loss of power controllers shift state
C - Incorrect - On loss of power controllers shift state
D - Incorrect - This is indicitave of a controller that has lost power from the MCR not the Rack room

Question #: 50 KA 061K4.01

Which on of the following correctly describes the normal and backup sources of water supply to the AFW pumps:

Normal_____

Backup_____

Choice_a:

Emergency Condensate Storage tank (1-CN-TK-1) directly to AFWPs' suctions
Emergency Makeup Tank (1-CN-TK-3) to AFW booster pumps

Choice_b:
Emergency Condensate Storage tank (1-CN-TK-1) to AFW booster pumps
Fire main to AFW booster pumps

Choice_c:
Emergency Condensate Storage tank (1-CN-TK-1) directly to AFWPs' suctions
Fire main to AFW booster pumps

Choice_d:
Emergency Condensate Storage tank (1-CN-TK-1) to AFW booster pumps
Emergency Makeup Tank (1-CN-TK-3) to AFW booster pumps

COMMENT

A - Correct

B - Incorrect - CN-TK-1 does not use Booster pumps. Firemain does not go to Booster pumps

C - Incorrect - Firemain does not go to Booster pumps
Plausible - Normal is correct

D - Incorrect - CN-TK-1 does not use Booster pumps
Plausible Back-up is correct

References

1- ES-0.1

Question #: 51 KA 062.A3.05

During a plant tour you observe the following indications on UPS 1A2;

Amber Light - Inverter Output Voltage Low

All other Amber Lights are Dark

Which of the following conditions correctly describes the condition of UPS 1A2?

Choice_a:
Supplied by MCC-1H1-1 with the Manual Bypass Switch in Bypass

Choice_b:
Supplied by MCC-1H1-1 with the Static Switch aligned to the alternate source.

Choice_c:
Supplied by MCC-1H1-2 with the Manual Bypass Switch in Bypass

Choice_d:
Supplied by MCC-1H1-2 with the Static Switch aligned to the alternate source.

COMMENT

A - Correct

B - Incorrect - If static switch was aligned the alternate source supplying load light would be lit

C. Wrong MCC - 1H1-2 supplies it's normal source

D. Wrong MCC - 1H1-2 supplies it's normal source

References

ND-90.3-LP-5

Question #: 52 KA 063.A2.01

The following Unit 1 conditions exist:

-Unit 1 is at 100% power, steady state conditions.
-The operator notices the DC Ground Detection light is dim.
-During a Main Control Board walk-down, the operator observes that the white light for 1-FW-P-3A, ""A"" AFW pump, is out.

Which one of the following correctly describes the cause of the white light being out for the plant conditions given above?

Choice_a:
A hard ground exists on the "A" DC bus

Choice_b:
"1H" bus is de-energized

Choice_c:
The "B" DC bus indicates <75 volts DC

Choice_d:
Operation of the AFWP from the Auxiliary Shutdown Panel has been selected

COMMENT

A. Correct

B. Incorrect - If 1H was deenergized the light on GD would not be dim

C. Incorrect If B DC bus was <75 volts B afwp would be affected

D. Incorrect - does not have effect on GD

References

ND-90.3-LP-6, obj A & D, and ND-88.1-LP-9, obj H & I

Question #: 53 KA 064.K3.03

A LOOP has occurred on Unit 1.
-AP-10.07 "Loss of Unit 1 Power" is in progress.
-The #1 EDG is the only source of power to the 1H Bus.

Which one of the following correctly describes why the "A" CCP may not be started, and the reason, for the plant conditions above?

Choice_a:
The "A" CC pump should not be started because the # 1 EDG could become overloaded if a HI-HI CLS signal was in progress.

Choice_b:
The "A" CC pump should not be started because the # 1 EDG is not sized to handle the starting current in this plant condition.

Choice_c:
The "A" CC pump can not be started because 15H9, Stub bus supply breaker, is interlocked to prevent closure when the #1 EDG is the only source of power to the 1H Bus.

Choice_d:
The "A" CC pump can not be started because the pump breaker 15H10 is interlocked to prevent closure when # 1 EDG is the sole source of power to the 1H Bus.

COMMENT

A. Correct, According to the note in AP-10.07 " Loss of Unit 1 Power": When the EDG is the only source of power to an Emergency Bus, the associated Component Cooling pump should not be in service if a Hi-Hi CLS is in progress.

B. Incorrect - not a starting current issue

C. Incorrect

D. Incorrect

References

1-AP-10.07

Question #: 54 KA 004.K5.15

The plant is operating at 80% power when annunciator EK-0703, "Letdown Ht Ex Tube Outlet Hi Temp," alarms. The operator checks the temperature and notes it is indicating 145 °F.

Which ONE of the following correctly describes the effect of this condition on reactor power and the reason?

Choice_a:
Power level will lower due to the increase in PCS boron concentration.

Choice_b:
Power level will rise due to the decrease in PCS boron concentration.

Choice_c:
Power level will lower due to MTC becoming more negative.

Choice_d:
Power level will rise due to MTC becoming less negative.

COMMENT

A. Correct. A higher temperature will cause the release of Boron from the mixed bed IX.

B. Incorrect. Plausible if candidate believes that the mixed bed is more efficient at removing Boron from the RCS at higher temperatures.

C. Incorrect. Plausible, Power level would go down due to Boron increase, however MTC becomes less negative as boron is added to the core.

D. Incorrect. Plausible, however MTC becomes more negative as boron is removed from the core.

Memory

Knowledge of the operational implications of the following concepts as they apply to the CVCS: Boron and control rod reactivity effects as they relate to MTC

3.3 / 3.5

References

ND-86.2-LP-8, POWER OPERATIONS

Question #: 55 KA 103.K3.02

Which one of the following correctly describes the required actions IAW Tech Spec 3.8.C if the containment airlock inner door is declared inoperable due to a failed leak test?

Choice_a:
Close the outer door in a maximum of 15 min only if RCS temperature is above 200F

Choice_b:
Close the outer door in a maximum of 15 min only if RCS temperature is above 350F

Choice_c:
Close the outer door in a maximum of 1 hour only if RCS temperature is above 200F

Choice_d:
Close the outer door in a maximum of 1 hour only if RCS temperature is above 350F

COMMENT

A. Correct IAW TS 3.8.C

B Incorrect - TS applicable when temp >200F

C. Incorrect - 1 hour requirement for containment integrity is an exception of this condition

D. Incorrect - TS applicable when temp >200F

References

TS 3.8C

Question #: 56 KA 079.K4.01

Unit 1 is operating at 100% power
Service air header pressure is 85# and decreasing

Which one of the following correctly describes the system response for the plant conditions given above with no operator action?

Choice_a:
The instrument air compressor (1-IA-C-1) will automatically start

Choice_b:
The Service air header isolation valve (1-SA-SOV-124) will automatically shut

Choice_c:
The condensate polishing air compressor (1-CP-AC-1) will automatically start

Choice_d:
The Condensate polishing service air header regulator (CP-PCV-103) will automatically shut

COMMENT

A - Correct - IA is normally supplied from service air - IA compressors automatically start at 90#

B - Incorrect -Manually operated valve

C - Incorrect -service air is not normally aligned to the CP air system

D - Incorrect -service air is not normally aligned to the CP air system

References

ND-92.1-LP-1

Question #: 57 KA 086.A4.05

What modes of initiation are available for the EHC Deluge system?

Choice_a:

Manually at the break-glass pull station.
Manual push-button from the fire control panel in the MCR.

Choice_b:
Manually at the break-glass pull station.
Automatically by heat detectors.

Choice_c:
Manual push-button at the deluge valve.
Automatically by heat detectors.

Choice_d:
Manual push-button at the deluge valve.
Manual push-button from the fire control panel in the MCR.

COMMENT

A - Correct - there is no automatic operation of the Deluge system for this area

B - Incorrect - there is no automatic operation of the Deluge system for this area

C - Incorrect - there is no automatic operation of the Deluge system for this area. Deluge valve operation is manual release of the valve

References

ND-92.2-LP-1

Question #: 58 KA 002.K6.02

Unit 1 is operating at 25% reactor power during a startup.
-RCP 1C Trips.

Which one of the following describes the expected steady state RCS flow following the trip of 1C RCP?

Choice_a:

Loops "A" and "B" will indicate 110%.
Loop "C" RCS flow will indicate 20%.

Choice_b:
Loops "A" and "B" will indicate 95%.
Loop "C" RCS flow will indicate 0%.

Choice_c:
Loops "A" and "B" will indicate 95%.
Loop "C" RCS flow will indicate 20%.

Choice_d:
Loops "A" and "B" will indicate 110%.
Loop "C" RCS flow will indicate 0%.

COMMENT

A- Correct

References

ND-95.1-LP-3

Question #: 59 KA 029.A3.01

Unit 1 is in Refueling Shutdown with fuel movement in progress.
Containment purge is in operation.
Unit 2 is at 100% power.

Which one of the following correctly describes the automatic response (if any) of the Unit 1 Containment Purge system to a Unit 2 Safety injection signal?

Choice_a:

Containment Purge Fans trip
Dampers to Auxiliary ventilation system shut

Choice_b:
Containment Purge Fans trip
Containment isolation valves (MOV-100A/B/C/D) shut

Choice_c:
Containment Purge Fans trip
Containment isolation valves (MOV-100A/B/C/D) shut
Dampers to Auxiliary ventilation system shut

Choice_d:
Unit 2 SI will not affect the Unit 1 purge system

COMMENT

A -Correct

B - Incorrect - Containment isolations are closed by high rad monitor signal

C - Incorrect - Containment isolations are closed by high rad monitor signal

D - Incorrect - Purge fans are tripped off during an SI in either plan

References

ND-88.4-LP-6 Rev. 4, p. 8

Question #: 60 KA 035.K1.01

Unit 1 conditions are as follows:

AFW is being supplied by both MDAFW pumps.
TDAFW pump is tagged out for maintenance.
S/G "C" experiences a major feed line break at the point where the main feed line enters S/G C.

Which ONE of the following sets of AFW flow rates are possible based on the given plant conditions?

COMBINED FLOW TO S/Gs A & B _____

FLOW TO S/G C _____

Choice_a:
350 gpm

350 gpm

Choice_b:
700 gpm

350 gpm

Choice_c:
700 gpm

700 gpm

Choice_d:
0 gpm

700 gpm

COMMENT

A. Correct - AFW lines have flow cavitating venturis that limit the flow permissible to a SG with a ruptured feed line to a maximum of 350 gpm

B. Incorrect - MDAFWP are 350GPM

C. Incorrect - MDAFWP are 350GPM

D. Incorrect - AFW lines have flow cavitating venturis that limit the flow permissible to a SG with a ruptured feed line to a maximum of 350 gpm

References

ND-89.3-LP-4

Question #: 61 KA 045.A1.05

Unit 1 was operating at 35% power.

A plant transient has caused the following plant parameter changes with no operator actions:

Th increasing
Tc increasing
PZR Level increasing
All S/G levels decreasing

Which ONE of the following transients could cause these changes in the plant parameters?

Choice_a:
Turbine trip

Choice_b:
Outward rod motion

Choice_c:
Inward rod motion

Choice_d:
Main Steam rupture

COMMENT
A. Correct

B. Incorrect - S/G Levels would not be decreasing

C. Temperatures would not be increasing

D. Temperatures would not be increasing

References

ND 86.2-LP-8

ND-93.3-LP-11

Question #: 62 KA 071.K4.04

A gaseous waste discharge is in progress

Annunciator RMA-C6 ("PROCESS VENT PART ALERT / HI" alarm) just alarmed
The rad monitor is reading above the Alarm setpoint

Which one of the following correctly describes the automatic actions that must be verified IAW ARP 0-RMA-C6?

Choice_a:
Shut GW-FCV-101 Decay Tank Bleed Isolation

Choice_b:
Secure CTMT Vacuum Pumps

Choice_c:
Shut GW-HCV-106 (NOUN NAME???)

Choice_d:
Shut GW-PCV-103 WGDT Pressure Control Valve

COMMENT

A. Correct

B. Wrong, Pumps are manually shut off after automatic actions are verified

C. Wrong. Valve is not automatically operated but is manually closed later in ARP

D. Valve is a PCV not a manual isolation valve but isolates the same line as FCV-101

References

ARP O-RMA-C6

Question #: 63 KA 015.K5.10

Which ONE of the following correctly describes why excore nuclear instrumentation must be adjusted over core life?

Choice_a:
The radial and axial fluxes shift over core life with fuel burnup.

Choice_b:
"Rod shadowing" becomes a greater influence on detector response as boron concentration is reduced.

Choice_c:
Aging of the detectors and electronic components introduces indication errors.

Choice_d:
Detector response degrades due to the high temperatures in containment over core life.

COMMENT
A - Correct
B - Incorrect. Operate ARO throughout core life.
C, D - Incorrect. Not significant factors

Knowledge of the operational implications of the following concepts as they apply to the NIS: Ex-core detector operation

2.8 / 3.0

References

ND-93.2-LP-5

Facility verify c and d incorrect.

Question #: 64 KA 001.G2.1.27

The following conditions exist:

Reactor power is 45% and stable.
Rods are in bank "D" position due to a failure in the 1AC power cabinet.
One control rod is withdrawn 10 steps.

Which ONE of the following statements correctly describes the change (if any) in rod insertion limits and shutdown margin?

Choice_a:

Rod insertion limits remain the same, shutdown margin remains the same.

Choice_b:
Rod insertion limits increase, shutdown margin remains the same.

Choice_c:
Rod insertion limits increase, shutdown margin increases.

Choice_d:
Rod insertion limits remain the same, shutdown margin increases.

COMMENT

A. Correct

B. Incorrect - Limits and Margin don't change with rod position

C. Incorrect - Limits and Margin don't change with rod position

D. Incorrect - Limits and Margin don't change with rod position

References

ND-93.3-LP-3H

Question #: 65 KA 011.A2.10

The pressurizer level control selector switch is in the 459/460 position when a failure causes the following plant events to occur in sequence: (Assume no operator actions taken.)

1) Charging flow decreased to minimum

2) Pressurizer level decreased

3) Letdown isolated and PZR heaters tripped off

4) Pressurizer level increased until the reactor tripped on pressurizer high level

Based on the above conditions, level channel _____ failed _____.

Choice_a:
459; high

Choice_b:
460; low

Choice_c:
459; low

Choice_d:
460; high

COMMENT

A. Correct -

B Incorrect - Channel 460 is the lower channel and has no effect on level controller Failure of the channel low would cause charging to increase

C. Incorrect - Failure of the channel low would cause charging to increase

D. Incorrect - Channel 460 is the lower channel and has no effect on level controller

References

ND-93.3 LP-7

Question #: 66 KA G2.1.1

Which ONE of the following correctly describes the requirements for verifying a change in position to a throttle valve locked in a throttled position IAW VPAP-1405, Independent, Simultaneous, And Documented Peer Checks Verifications?

Choice_a:
Simultaneous Verification of valve position is required

Choice_b:
Simultaneous Verification of locking device installation is required

Choice_c:
Independent Verification of valve position is required

Choice_d:
Independent Verification of locking device installation is required

COMMENT
A - Correct

References
VPAP-1405, Rev. 5

Question #: 67 KA G2.1.14

During performance of a surveillance it is discovered that a motor operated valve that is required to be operated is deenergized for breaker maintenance.

Which one of the following correctly describes the highest level of permission required to manually operate the valve IAW OP-AA-100?

Choice_a:
Shift Manager

Choice_b:
Electrical Maintenance Supervisor

Choice_c:
Manager of Nuclear Operations

Choice_d:
Unit Supervisor

COMMENT
A Correct IAW OP-AA-100

B. Incorrect

C. Incorrect - MNO permission required for using switches as isolation

D. Incorrect - not highest level of permission

References

OP-AA-100-REV 0

Question #: 68 KA G2.1.7

Given the following plant conditions:

- Reactor power is 90 %
- Control rod bank D is at 180 steps
- Rod control is in automatic
- The median delta T signal selector output fails high

Which one of the following correctly describes an alarm that will annunciate as a result of the median delta T output failure?

Choice_a:
The 1G-H8 "Rod Bank D EXTRA-LOW Limit" alarm will be illuminated.

Choice_b:
The 1E-C8 "OP (D)T" Rx TRIP alarm will be illuminated.

Choice_c:
The 1E-D8 "OT (D)T" Rx TRIP alarm will be illuminated.

Choice_d:
The 1G-H5 "Rod Bank A EXTRA-LOW Limit" alarm will be illuminated.

COMMENT

A. Correct

B. Incorrect - median delta T come off upstream of Median selector

C. Incorrect - median delta T come off upstream of Median selector

D. Incorrect - "A" control rods do not have an input from median Tave

References

ND-93.3-LP-3

Question #: 69 KA G2.2.22

Which ONE of the following conditions requires entry into a Technical Specification action statement during Power operation?

Choice_a:
Tcold is 553 °F.

Choice_b:
"A" diesel generator day fuel tank level contains 209 gallons.

Choice_c:
Fuel Oil below ground storage tanks contain 3550 gallons total.

Choice_d:
One Charging Pump is under clearance.

COMMENT
A. Incorrect. Tcold 552 °F
B. Correct. T.S. min. is 290 gal
C. Incorrect. Min. onsite supply is 35,000 gal.
D. Incorrect. Only need one operable High Head pump

Knowledge of limiting conditions for operations and safety limits.

3.4 /4.1

References

T.S. 3.16

Question #: 70 KA G2.2.13

Which one of the following correctly describes the safety requirements for using a Failed Open Air Operated Valve as vent/drain points IAW OP-AP-200 Equipment Clearance procedure?

Choice_a:

Air supply isolated and vented
Valve position visually verified

Choice_b:
Jacking device installed
Control panel switch tagged

Choice_c:
Air supply isolated and vented
Control panel switch tagged

Choice_d:
Jacking device installed
Valve position visually verified

COMMENT

A - Correct

B - Incorrect - Tagging control panel switches is not a requirement. Jacking device required when using as an isolation boundary

C - Incorrect - Tagging control panel switches is not a requirement

D - Incorrect - Jacking device required when using as an isolation boundary

References

OP-AA-200-REV 1

Question #: 71 KA G2.2.28

Given the following plant conditions:

- Unit 1 is in a Refueling Shutdown
- The Core is currently empty
- Core onload is to commence this shift
- The current PCS Boron concentration is 2300 ppm
- Chemistry is adding Boron to increase PCS Boron concentration to 2350 ppm
- "A" SRM is out of service
- "B" SRM audible count rate is available in the MCR ONLY
- "B" SRM count rate is 4 cpm
- All other equipment is Operable

Which ONE of the following correctly describes whether or not the MINIMUM requirements to allow fuel transfer operations to commence this shift are met and the condition(s) necessary to continue with core onload?

Choice_a:

Minimum fuel transfer operating conditions are met.

Prior to the loading the 9th fuel bundle into the core, a minimum count rate will need to be confirmed.

Choice_b:
Minimum fuel transfer operating conditions are NOT met.

"A" & "B" SRM Detectors must be operable at this time and have audible count rate from at least one SRM available in

Choice_c:
Minimum fuel transfer operating conditions are met.

Prior to the loading the 9th fuel bundle into the core, the "A" & "B" SRM detectors must be in service.

Choice_d:
Minimum fuel transfer operating conditions are NOT met.

"A" & "B" SRM Detectors must be operable at this time and have audible count rate from at least one SRM in both the MCR and in containment.

COMMENT

A - Incorrect. Min fuel transfer conditions are NOT met. Requires 2 SRM detectors operable for chemistry changes.

B - Correct

C - Incorrect. Correct if chemistry changes were not occuring.

D - Incorrect. Audible count rate required in containment, not MCR.

Knowledge of new and spent fuel movement procedures

RO 2.6 SRO 3.5

References

Tech Spec 3.10-2

Question #: 72 KA G2.3.4

Which ONE of the following correctly lists the 10 CFR 20 Whole Body dose limit restriction and the documentation requirements which must be met if the whole body dose limit is to be exceeded?

Choice_a:
Cannot exceed 3 Rem/Qtr whole body dose.

All planned special exposures must be documented.

Choice_b:
Cannot exceed 25 Rem whole body lifetime dose.

Only planned special exposures above the annual limit need to be documented.

Choice_c:
Cannot exceed 3 Rem/Qtr whole body dose.

Only planned special exposures above the annual limit need to be documented.

Choice_d:
Cannot exceed 25 Rem whole body lifetime dose.

All planned special exposures must be documented.

COMMENT

A. Incorrect. Only the doses credited over a year are utilized for documenting planned special exposure.

B. Incorrect. A person could be at or near the 25 Rem lifetime limit and therefore would require a planned special exposure prior to obtaining 5 Rem in the current year.

C. Incorrect. Only the doses credited over a year are utilized for documenting planned special exposure.

D. Correct.

Knowledge of radiation exposure limits and contamination control, including permissible levels in excess of those authorized.

RO 2.5 SRO 3.1

References

10 CFR 20

Question #: 73 KA G2.3.2

Operations has a task to be performed in the Auxiliary Building near a 20 foot line source that reads 300 mr/hr at (2) feet. Two options exist to complete the assignment:

Option 1: Operator A can perform the assignment in 1 hour, working at a distance of (4) feet from the source.

Option 2: Operator B can perform the same task, using special extension tooling, in 2 hours working at a distance of (6) feet from the source.

Which one of the following correctly describes the option that must be selected for the ALARA plan, and the associated total personnel exposure?

Choice_a:
Option 1 with a total dose of 150 mrem.

Choice_b:
Option 1 with a total dose of 75 mrem.

Choice_c:
Option 2 with a total dose of 100 mrem.

Choice_d:
Option 2 with a total dose of 66 mrem.

COMMENT

A. Correct,

B. Incorrect, This is the correct method, but the dose was calculated using the point source method.

C. Incorrect, Line source - only 1 hour work

D. Incorrect, point source @ 2 hours

References

ND-81.2-LP-3

Question #: 74 KA G2.4.49

Given the following plant conditions:

-Reactor power is 75%.
-Feed header pressure has dropped to 790 psig.
Annunciator (1H-G8), FW PP DISCH HDR LO PRESS is in alarm.
-Both Main Feedwater Pumps are operating.

Which ONE of the following is the required IMMEDIATE action of 1-AP-21.00?

Choice_a:
Start a third Condensate pump

Choice_b:
Manually trip the reactor

Choice_c:
Reduce reactor power to 65% or less

Choice_d:
Place feedwater regulating valves in manual

COMMENT

A. Correct - IAW AP-21.00

B. Incorrect - RX Trip only if RX Power is >85%

C. Incorrect - Reduction of turbine load is to match steam and feed flows

D. Incorrect - Action is from ARP 1H-G8

References

AP-21.00

Question #: 75 KA G2.4.11

The following conditions exist:

Unit 1 was operating at 100% power when a control rod dropped 16 hours ago.
The Unit is currently operating at 68% power.

Which ONE of the following describes the proper method of recovery per AP-1.01 and the reason this method is necessary?

Choice_a:

Reactor power must be held constant below 75% while the rod is withdrawn at two (2) steps per hour.

To prevent Xenon oscillations.

Choice_b:
Reactor power must be held constant below 75% while the rod is withdrawn at ten (10) steps per hour.
To prevent rapid changes in local power densities that could cause DNB.

Choice_c:
Reactor power must be increased to between 70 - 74% while the rod is withdrawn at ten (10) steps per hour.
To prevent rapid changes in local power densities that could cause DNB.

Choice_d:
Reactor power must be increased to between 70 - 74% while the rod is withdrawn at two (2) steps per hour.
To prevent Xenon oscillations.

COMMENT

A - Correct

References

ND-93.3-LP-3I;
AP-1.01

Draft Submittal

(Pink Paper)

Senior Reactor Operator Written Exam

SURRY 2008-301

DRAFT

Question #: 76 KA 007 EG2.4.4

Unit 1 is at 100% power when the following occurs:

- An RCS leak occurred at 1900.
- At 1901, AP-16.00 Immediate Actions are completed and the RO identifies a leak rate exceeding the capacity of a charging pump.
- At 1902, a manual reactor trip is performed and the team initiates SI.
- At 1903, Annunciator G-B-1, Approach to Saturation Temp Alarm, is received.

It is now 1905 and you have completed reviewing the emergency actions levels per EPIP-1.01.

Which ONE of the following describes the required (1) event classification and (2) the latest time by which the State must be informed?

(Reference provided)

a. (1) Declare an Alert at 1905.
(2) Notify the State no later than 1930.

b. (1) Declare an Alert 1905.
(2) Notify the State no later than 1920.

c. (1) Declare a Site Area Emergency at 1905.
(2) Notify the State no later than 1930.

d. (1) Declare a Site Area Emergency at 1905.
(2) Notify the State no later than 1920.

Answer (d)

Comments

a. Incorrect – Plausible if candidate thinks pressurizer level can be maintained with SI and notification time is 30 minutes after event initiation.

b. Incorrect – Plausible if candidate thinks pressurizer level can be maintained with SI and declaration time must be based on time of event initiation. Notification time is correct.

c. Incorrect – Correct Declaration, Time is incorrect, but plausible if the candidate believes notification is based off of 30 minutes after event initiation.

d. Correct – SAE based on RCS leak rate requiring Safety Injection and inability to maintain RCS subcooling. (EAL TAB-B-3)

Question #: 77 KA 008AA2.26

Given the following Unit 1 conditions:

-A PORV and its associated block valve are stuck open.
-The reactor is tripped and SI has initiated.
-RCS pressure is 1500 psig and lowering.
-PZR level indicates 90% and rising.
-The crew has just transitioned to E-1, Loss of Reactor or Secondary Coolant.
-The STA recommends that one charging pump be secured to prevent the RCS from going solid and losing pressure control.

Which ONE of the following correctly describes the action the crew must take for the given plant conditions and the reason for the action?

References

1-E-1
ND-95.3-LP-7
WOG ERG HES11BG

Choice_a:
Do not secure a Charging Pump. SI flow must be maintained to make-up for mass loss

Choice_b:
Do not secure a Charging Pump. PZR level instrumentation is inaccurate due to vapor space accident.

Choice_c:
Secure 1 Charging Pump to minimize mass loss from the RCS.

Choice_d:
Secure 1 Charging Pump to prevent the PZR from going solid and transferring the steam bubble to the reactor vessel head.

COMMENT

A - Correct -

B - incorrect - does not meet criteria to secure CCP; brittle fracture is not a concern at these temperatures in the primary; still above RTT.

C - incorrect - securing the CCP is not a correct mitigating strategy

D - incorrect - pressure instrumentation is not affected by vapor space accidents

Question #: 78 KA 038EG2.4.6

Given the following plant conditions:

-Unit 1 was at 100% power.
-A SGTR occurs on S/G B & C.
-The crew is performing 1-E-3, "STEAM GENERATOR TUBE RUPTURE" and have completed step 8, "INITIATE RCS COOLDOWN"
-RCS subcooling is 40°F and rising.
-RCS pressure is 1000 psig and increasing.

Which ONE of the following correctly describes the EOP mitigating strategy for these conditions?

References

WOG Guidance for ECA-3.1
ECA-3.1

Choice_a:

Remain in 1-E-3, "STEAM GENERATOR TUBE RUPTURE". If RCS subcooling does not increase to > 50F prior to RCS depressurization, transition to 1-ECA-3.1, "SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY" .

Choice_b:
Remain in 1-E-3, "STEAM GENERATOR TUBE RUPTURE". If RCS subcooling does not increase to > 50F prior to RCS depressurization, transition to 1-ECA-3.2, "SGTR WITH LOSS OF REACTOR COOLANT - SATURATED RECOVERY"

Choice_c:

Immediately transition to 1-ECA-3.1, "SGTR WITH LOSS OF REACTOR COOLANT - SUBCOOLED RECOVERY".

Choice_d:
Immediately transition to 1-ECA-3.2, "SGTR WITH LOSS OF REACTOR COOLANT - SATURATED RECOVERY".

COMMENT

A. Correct. For multiple tube failures, RCS pressure may temporarily decrease below ruptured SG pressure during cooldown. However, pressure and subcooling should quickly increase when the cooldown is completed. The transition to ECA-3.1 is not necessary if subcooling increases sufficiently after the cooldown is complete.

B. Incorrect. Transitioning to this procedure would be inappropriate.

C. Incorrect. The transition to ECA-3.1 is not necessary if subcooling increases sufficiently after the cooldown is complete. This will be analyzed later in step 18.

D. Incorrect. Transitioning to this procedure would be inappropriate. A temporary loss of subcooling may be indicated with multiple SGTRs.

Question #: 79 KA 054AA2.04

Given the following Unit 1 plant conditions:

- Unit 1 has experienced a loss of all AC power
- ECA-0.0 "Loss of All AC Power" is being performed at step 18, "Check Intact SG Levels"
- The Turbine Drive AFW pump is providing equal AFW flow to each S/G
- NR SG Levels are as follows:
  - A - 10% and rising slowly
  - B - 85% and rising rapidly
  - C - 25% and rising slowly

Which ONE of the following correctly describes the actions to be performed IAW ECA-0.0 "Loss of All AC Power" prior to depressurizing S/G's?

References

ECA - 0.0

Choice_a:
Isolate steam from the "B" S/G to the TD AFW Pump
Adjust the "B" S/G PORV lift setpoint to 1035 psig.

Choice_b:
Isolate steam from the "B" S/G to the TD AFW Pump
Secure AFW to the "B" S/G by shutting 1-FW-140, TD AFW Pump Discharge to "B" AFW Hdr

Choice_c:
Raise "A" S/G NR level to a minimum of 12%
Adjust the "B" S/G PORV lift setpoint to 1035 psig.

Choice_d:
Raise "A" S/G NR level to a minimum of 12%
Secure AFW to the "B" S/G by shutting 1-FW-140, TD AFW Pump Discharge to "B" AFW Hdr

COMMENT

A - Correct - IAW ECA-0.0 step 18

B. Incorrect - Securing AFW is not possible without securing feed to all S/G. Shutting FW-140 will only secure feed to one header.

C. Incorrect - the requirement is to maintain at least 1 S/G levels >12% or depressurization should be stopped. C SG is intact and >12%

D. Same as B&C

Question #: 80 KA 055EG2.4.30

Given the following Unit 1 conditions:

10:00 AM Unit 1 is 100% reactor power
10:15 AM A loss of all onsite and offsite power for Unit 1
10:25 AM Initial Declaration and Notifications Made
10:30 AM LEOF/CEOF has been activated
10:35 AM Power is restored to Emergency Buses H & J and off site power is restored to all Service Buses

Which ONE of the following correctly describes the (1) initial classification of this event, and (2) the required action after the plant is stable, IAW the appropriate EPIP?

(Reference provided)

References

EPIP - 1.01
EPIP - 1.04

Choice_a:
(1) Site Area Emergency
(2) Have LEOF/CEOF get concurrence from the NRC to terminate the event

Choice_b:
(1) Site Area Emergency
(2) Send out update notification of change in plant conditions

Choice_c:
(1) Alert
(2) Have LEOF/CEOF get concurrence from the NRC to terminate the event

Choice_d:
(1) Alert
(2) Send out update notification of change in plant conditions

COMMENT

A - Incorrect - SAE is correct, NRC concurrence is not required.

B - Correct – Loss of on-site/off-site power yields a SAE (A-2).

C. Incorrect - Alert is due to loss of all ac for less than 15 min but is overridden by SAE of A.2

D. Incorrect - Alert is due to loss of all ac for less than 15 min but is overridden by SAE of A.2

Question #: 81 KA WE05EG2.4.6

Given the following plant conditions:

- Unit 1 has had a loss of both MFW Pumps
- The Reactor was tripped automatically due to a Turbine Trip Signal
- The crew has transitioned to 1-ES-0.1 "Reactor Trip Response"
- Total AFW flow has been throttled to 300 gpm.
- NR SG levels are:
  - A: 14% and lowering
  - B: 11% and lowering
  - C: 8% and lowering
- RCS Tave is 548 °F with steam dumps 8% open.

Which ONE of the following correctly states the procedure and action to address the given plant conditions?

References

1-ES-0.1
Status tree F-3 Heat Sink

Choice_a:

Remain in 1-ES-0.1 "Reactor Trip Response"
Increase AFW flow to increase all SG Levels to a minimum of 22% NR IAW ES-0.1

Choice_b:
GO TO 1-FR-H.1 "Loss of Secondary Heat Sink"
Increase AFW flow to increase all SG Levels to a minimum of 22% NR IAW FR-H.1

Choice_c:

Remain in 1-ES-0.1 "Reactor Trip Response"
Increase AFW flow to increase all SG Levels to a minimum of 33% NR IAW ES-0.1

Choice_d:
GO TO 1-FR-H.1 "Loss of Secondary Heat Sink"
Increase AFW flow to increase all SG Levels to a minimum of 33% NR IAW FR-H.1

COMMENT

A. Correct - ES-0.1 required SG levels to be raised to a min of 22% Transition to FR-H.1 not appropriate - no red path exists with one SG > 12%NR

B. Incorrect- Transition to FR-H.1 not appropriate - no red path exists with one SG > 12%NR. Plausible if the requirements for a red path on heat sink are not known

C. Incorrect - 33% is the minimum SG control band level for normal SG level control. ES-0.1 is the correct procedure.

D. Incorrect - Transition to FR-H.1 not appropriate - no red path exists with one SG > 12%NR. Plausible if the requirements for a red path on heat sink are not known. 33% is a min SG control band level for normal SG level control.

Question #: 82 KA WE03EA2.1

Given the following plant conditions:

- A LOCA has occurred outside of containment.
- The crew is performing 1-ECA-1.2, LOCA Outside Containment.
- Efforts to isolate the break were unsuccessful.

Which ONE of the following correctly describes the required EOP transition for the given plant conditions?

References

1-ECA-1.1, LOSS OF EMERGENCY COOLANT RECIRCULATION
1-E-0, REACTOR TRIP OR SAFETY INJECTIO

Choice_a:
1-E-1, Loss of Reactor or Secondary Coolant

Choice_b:
1-ECA-1.1, Loss of Emergency Coolant Recirculation

Choice_c:
1-ES-1.2, Post LOCA Cooldown and Depressurization

Choice_d:
1-ES-1.1, SI Termination

COMMENT

A. Incorrect. Plausible because there is a Loss of Reactor Coolant in progress.
B. Correct. Step 2 RNO of ECA-1.2 directs operators to ECA-1.1 if efforts to isolate the leak are not successful.
C. Incorrect. Plausible because this is a normal transition for long term cooling during a LOCA.
D. Incorrect. Plausible because the goal is to cool and depressurize the RCS

Question #: 83 KA WE08EG2.4.20

Unit 1 plant conditions are as follows:

- The Reactor is tripped
- SI has been actuated
- All S/G are faulted
- All RCP's are secured

The crew has transitioned to FR-P.1, "Response To Imminent Pressurizer Thermal Shock Condition", due to a RED PATH in INTEGRITY.

While performing step 18, "Depressurize RCS To Reduce Subcooling", PZR level rapidly rose from 30 to 55%.

Which ONE of the following correctly describes the cause of the increase in PZR level and action(s) required based on plant conditions given?

References
E-1, LOSS OF REACTOR OR SECONDARY COOLANT
FR-P.1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITION

Choice_a:
A steam void has formed in the upper head
Continue with RCS depressurization

Choice_b:
A steam void has formed in the upper head
Secure RCS depressurization and establish letdown

Choice_c:
SI Accumulators have injected
Secure RCS depressurization and establish letdown

Choice_d:
SI Accumulators have injected
Continue with RCS depressurization

COMMENT
A - Correct IAW FR-P.1

B - Incorrect - depressurization isn't stopped until PZR level is >69%

C - Incorrect - Accumulators are isolated below 2000# IAW step 16

D - Incorrect - Accumulators are isolated below 2000# IAW step 16

Question #: 84 KA 061AG2.2.25

Both Units are at 100% power.

The fuel handling team is loading a dry cask in the fuel building.

0-RMA-D5 VENT STACK #2 RAD MON TRBL is illuminated

Radiation Monitor 1-VG-RM-131-1 (Vent Stack 2 Monitor) has failed

Which ONE of the following correctly describes the action(s) required per Technical Specifications for the plant conditions given above?

References

TRM 3.3.3
TS 3.10
ODCM Att 5

Choice_a:
After placing the fuel assembly in a safe condition, suspend all irradiated fuel movement in the fuel building.

Choice_b:

Stop fuel movement until filtered exhaust is aligned from the fuel building.

Choice_c:
Immediately trip supply fans associated with the Aux Bldg, Fuel Bldg, Decon Bldg and Safeguards.

Choice_d:
Sample Vent Stack #2 every 12 hours during irradiated fuel movement.

COMMENT

A - Correct IAW TRM 3.3.3 which references the specs of TS 3.10

B - Plausible – Filtered exhaust is normally aligned during refueling outages (i.e., fuel movement).

C – Plausible – Actions required to verify release stopped and required by 1-VG-RM-131-1 ARP Procedure.

D- Plausible - 12 hour sampling is required by ODCM attachment 5 for effluent releases.

Question #: 85 KA 069AA2.02

Plant conditions are as follows:

- Unit 1 is performing refueling operations
- The Refuel pool is filled and the fuel transfer tube isolation valve is open.
- Containment Purge is secured while I&C calibrates the Containment particulate and gas radiation monitors RM-RI-159/160.
- Both personnel access hatch doors are Operable and open with dedicated individuals assigned to close the hatch if required.
- The MSTVs and the TD AFW Pump steam isolations are closed.
- The turbine #2 Main Steam Stop Valve is disassembled for seat repair.
- The TD AFW Pump steam admission valve, (PCV-MS-102A) is disassembled.
- An electrical penetration has been removed and a blank flange has been bolted over the hole.

Which ONE of the following correctly describes what must be performed prior to authorizing irradiated fuel movement IAW OP-4.13, "Fuel Transfer System"?

References

Choice_a:
Restore radiation monitors RM-RI-159/160 to Operable status and initiate Containment Purge.

Choice_b:
Disable the Containment Purge Valves and ensure air flow through the personnel access hatch is to Containment.

Choice_c:
Ensure the TD AFW Pump steam admission valve, (PCV-MS-102A) has been reassembled, leak tested, and closed.

Choice_d:
Reinstall the electrical penetration and ensure a satisfactory local leak rate test has been performed.

COMMENT

A. Correct. Both doors of the hatch may be left open provided at least one door is Operable and capable of being closed under administrative control, and Containment Purge is in operation and it must be capable of being secured by an Operable Containment Purge Ventilation Isolation system.

B. Incorrect. Disabling the Containment Purge valves will NOT satisfy the requirements for Refueling Ops with the personnel access doors open.

C. Incorrect. This opening in the main steam header is downstream of the TD AFW Pump steam isolation valves.

D. Incorrect. An electrical penetration sleeve may be isolated by a blank flange and satisfy containment isolation.

Question #: 86 KA 013G2.1.23
Given the following plant conditions:

- Unit 1 is at 100% power.
- A valid Safety Injection signal results in a reactor trip and safety injection.
- All systems functioned as designed.

Which one of the following correctly describes the most restrictive requirement to report this event in accordance with VPAP-2802, Notifications and Reports.

(References Provided)

a. A one (1) hour report.

b. A four (4) hour report.

c. An eight (8) hour report.

d. A twenty-four (24) hour report.

Answer (b)

Comments

a. Incorrect – Plausible if candidate thinks that since all systems functioned as designed, it is not reportable.

b. Correct – Safety Injection actuation is a 4 hour report.

c. Incorrect – Plausible – Reactor Trip and Safety Injection actuation are listed under the 8 hour notification criteria but the 4 hour report is more limiting.

d. Incorrect – Plausible - a significant change in the normal operation is a statement in VPAP-2802 for 24 notification but the 4 hour report is more limiting.

NOTE – Candidates must be provided VPAP-2802 Section 6.3.3 thru 6.3.7.

Question #: 87 KA 039A2.03

Given the following plant conditions:

- Unit 2 is at 100% power.
- Annunciator 2A-A3 "N16 HIGH" illuminated.
- 2-MS-RI-290, "A" Steam Generator Radiation Monitor, is 190 GPD and stable.
- Air ejector radiation monitor is 170 cpm and stable.
- Charging line flow is 90 gpm and stable.
- Letdown flow is 105 gpm and stable.
- Combined seal return flow is 9 gpm and stable.
- Total seal injection flow is 24 gpm and stable.
- VCT Level is 50% and stable.
- RCS Tave is stable.
- Pressurizer level is 53% and stable.

Which ONE of the following describes the required actions for the plant conditions given above and the reason for the actions?

References

2A-A3, ANNUNCIATOR RESPONSE PROCEDURE

Choice_a:

Reduce load to < 50% within an hour and be in HSD within the following 2 hrs. The Tech Spec primary to secondary leakage limit is being exceeded.

Choice_b:

Be in HSD within the next 6 hrs and CSD within the following 30 hours. The Tech Spec primary to secondary leakage limit is being exceeded.

Choice_c:

Reduce load to < 50% within an hour and be in HSD within the following 2 hrs. The EPRI guideline for primary to secondary leakage is being exceeded.

Choice_d:

Reduce load to < 50% within an hour and be in HSD within the following 6 hrs. The EPRI guideline for primary to secondary leakage is being exceeded.

COMMENT

A. Incorrect. T.S. 3.1-13.C If the primary-to-secondary leakage through all steam generators not isolated from the Reactor Coolant System exceeds 1 gpm total and 500 gallons per day through any one steam generator not isolated from the Reactor Coolant System, reduce the leakage rate to within limits within 4 hours or be in hot shutdown within the next 6 hours and in cold shutdown within the following 30 hours.

B. Incorrect.

C. Correct. The high limit alarm correlates to a 150 gpd leak rate. The reactor must be less than 50% in one hour and in HSD in the following two hours. This is to meet the latest guidelines from EPRI concerning SGTLs.

D. Incorrect.

Question #: 88 KA 062A2.03

Unit 1 is operating at 100% power.

A fire in Unit 1 AMSAC UPS and subsequent loss of all site power have just occurred.

The UPS has been deeenergized.
Station Service switchboards are still deenergized.

125V DC Switchboard 1-1 is deenergized.

Which of the following correctly describes the source of power to the unit 1 plant computers, and the maximum time to restore power, for the plant conditions above?

Modification in progress at SPS. This question needs to be raised to the SRO level.

References

AO 10.07
Electrical Service system drawings

Choice_a:
TSC UPS Battery. Restoration of power is required within 15 min to prevent loss of power.

Choice_b:
TSC UPS Battery. Restoration of power is required within 2 hours to prevent loss of power.

Choice_c:
U-1 Black Battery. Restoration of power is required within 15 min to prevent loss of power.

Choice_d:
U-1 Black Battery. Restoration of power is required within 2 hours to prevent loss of power.

COMMENT
A Correct - Normal power is from station service power. Alternate power supplies are from the AMSAC and TSC inverters. W/ AMSAC deenergized the TSC battery is provideing the only source of power. It has a minimum supply of 15 min.

B. 2 hours supply is the minimum for the Black Battery

C & D . AP-10.07 places power back though the AMSAC USP

88.

In preparation for returning the Regulating Line Conditioner (RLC) for UPS 1A1 to service, the operator inadvertently opened the inverter output breaker prior to clearing the tags on the RLC.

Which one of the following describes the consequences of this action?

a. Loss of power to Vital Bus I and IA only. No TS clock since DC charging capability is maintained.

b. Loss of power to Vital Bus I and IA and all charging capability to DC Bus 1A. 24 hour TS clock to restore DC charging capability or 6 hour clock to HSD.

c. Loss of power to Vital Bus III and IIIA only. No TS clock since DC charging capability is maintained.

Deleted: ¶

d. Loss of power to Vital Bus III and IIIA and all charging capability to DC Bus 1A. 24 hour TS clock to restore DC charging capability or 6 hour clock to HSD.

Answer (a)

Comments

a. Correct

b. Incorrect – Plausible - 1A1 UPS supplies DC bus 1A but it also has an alternate charging source. 24 hour TS is plausible since this is the clock for the EDG battery.

c. Incorrect – Plausible – VB-III/IIIA are supplied from UPS 1A2 (via the same 480v power supply as UPS 1A1). Part 2 correct

d. Incorrect – Plausible 1A1 UPS supplies DC bus 1A but it also has an alternate charging source, but VB-III/IIIA are supplied from UPS 1A2 (via the same 480v power supply as UPS 1A1). 24 hour TS is plausible since this is the clock for the EDG battery.

Question #: 89 KA 073GG2.1.10

Annunciator 0-RM-M5, "1-CC-RI-105 High" actuates and the control operator determines that 1-CC-RI-105, CC Radiation Monitor, has failed.

Which ONE of the following describes the action required by Technical Specifications when declaring 1-CC-RI-105 inoperable?

References

Ref: Surry ARP 0-RM-M5, 1-CC-RI-105 HIGH
Surry Tech Spec 3.13.C, CCW

ND-88.5-LP-1, CC, Obj G

Choice_a:
Secure filling the CC Surge Tank.

Choice_b:
Establish the Auxiliary Building Control Area Radiation Monitor as a compensatory measure.

Choice_c:
Ensure that radiation monitor 1-CC-RI-106 is operable.

Choice_d:
Close the Component Cooling Water Surge Tank vent valve.

COMMENT
D Correct

A Incorrect. Plausible as assuming automatic functions occur the candidate may believe CC should not be added to the system.

B Incorrect. Plausible as overflow of the CC Surge Tank could yield radiation alarms in the Aux. Building.

C Incorrect. Plausible as 1-CC-RI-106 is a redundant Rad. Monitor.

Question #: 90 KA 078GG2.1.20

Unit one was manually tripped due to a loss of instrument air.
Instrument air can not be reestablished.

Which of the following correctly describes the mitigation strategy of AP-40.00 Non-recoverable Loss Of Instrument Air?

References

AP-40

Choice_a:
Establish natural circulation and place the plant in Cold Shutdown.

Choice_b:
Establish natural circulation and place the plant in Hot Shutdown.

Choice_c:
Maintain forced circulation and place the plant in Cold Shutdown.

Choice_d:
Maintain forced circulation and place the plant in Hot Shutdown.

COMMENT

A Correct - AP-40 directs tripping of RCP due to loss of CCW. Also directs the CD and boration of the RCS

B. Wrong - Plausible - natural circ needs to be established but the plant is not held in HSD

C/D Wrong - Forced circulation is not available unless IA is restored.

Question #: 91 KA 034A2.01

Given the following plant conditions:

Unit 1 is in a Refueling outage
Irradiated Fuel is being offloaded from the core to the Fuel Building.
A fuel element inadvertently struck the top of another fuel assembly not fully seated in the refuel pool
Bubbles were seen coming out from around the base of the fuel element
1-RM-RM-153, Fuel Pit Bridge, increased sharply and then stabilized.
No radiation monitors are in alarm.

Per 0-AP-22.0, FUEL HANDLING ABNORMAL CONDITIONS, which ONE of the following actions is required with regard to movement of the affected fuel assembly?

References

AP-22.0

Choice_a:
The Fuel Handling SRO must immediately suspended fuel movement.

Choice_b:
The Fuel Handling SRO will suspend fuel movement only after getting concurrence from the Shift Manager.

Choice_c:

The Fuel Handling SRO will suspend fuel movement once the fuel assembly is placed in its designated storage location.

Choice_d:
The Fuel Handling SRO can continue fuel movement.

COMMENT

A. Correct. Fuel movement must be immediately stopped IAW AP-22.

B. Incorrect. Plausible if student believes that since rad monitors are not in alarm that an immediate response is not required.

C. Incorrect. Plausible if student believes that rad monitors must be in alarm to verify or suspect fuel damage for AOP entry. Placing the fuel in its designated storage location would normally be a safe location.

D. Incorrect. Plausible if student believes that the Fuel Handling SRO is authorize to continue fuel movement during conditions that indicate fuel failure without an alarm.

Question #: 92 KA 002G2.4.20
Original question requires detailed knowledge of procedure that is never used and rarely reviewed.

A Steam Break has occurred and all S/Gs are faulted.

Which ONE of the following indicates the bases for maintaining a minimum flow of 60 gpm in all S/Gs per ECA-2.1, Uncontrolled Depressurization of All Steam Generators?

a. This flow rate avoids dryout of the steam generator tubes AND is the minimum verifiable value on the MCR flow meter.

b. This flow rate is the lowest at which the MOVs will control AND is the minimum verifiable value on the MCR flow meter.

c. This flow rate avoids dryout of the steam generator tubes AND limits thermal stresses to the steam generator feed ring.

d. This flow rate is the lowest at which the MOVs will control AND limits thermal stresses to the steam generator feed ring.

Answer (a)

Comments

a. Correct Answer

b. Incorrect – 1st part incorrect, AFW MOVs can control less than 60 gpm. 2nd part correct.

c. Incorrect – 1st part correct, 2nd part incorrect, SG feed rings are full.

d. Incorrect – 1st part incorrect, AFW MOVs can control less than 60 gpm. 2nd part incorrect, SG feed rings are full.

Question #: 93 KA 086A2.04

The Low Pressure CO2 system in the normal switchgear room is locked out to prevent actuation due to a design calculation error. A fire breaks out in the normal switchgear room resulting in total destruction of all components/switchgear in the room.

In addition to AP-48.00 (Fire), which ONE of the following sets of abnormal procedures will be used to mitigate the resulting plant transient?

a. AP-10.07 (Loss of Unit 1 Power) and AP-39 (Natural Circulation).

b. AP-10.05 (Loss of Semi-Vital Bus) and AP-40 (Non-Recoverable Loss of Instrument Air).

c. AP-10.07 (Loss of Unit 1 Power) and AP-40 (Non-Recoverable Loss of Instrument Air).

d. AP-10.05 (Loss of Semi-Vital Bus) and AP-39.00 (Natural Circulation).

Answer (a)

Comments

a. Correct – AP-10.07 for loss of power to the Station Service Buses and AP-39.00 since the RCPs lose power.

b. Incorrect – AP-10.05 is incorrect but plausible since the SVB loses power until the EDG loads on the bus. AP-40 incorrect but plausible since the Station Air Compressors lose power and the Instrument Air Compressors start after EDGs load on the bus.

c. Incorrect – AP-10.07 is correct. AP-40 incorrect but plausible since the Station Air Compressors lose power and the Instrument Air Compressors start after EDGs load on the bus.

d. Incorrect – AP-10.05 is incorrect but plausible since the SVB loses power until the EDG loads on the bus. AP-39.00 is correct.

Question #: 94 KA G2.1.11

Given the following Unit 1 conditions on 3/8/07:

Initial power level is 85%.

1445 - AFD outside the target band but within the acceptable limits
1530 - AFD back within target band
1600 - AFD outside the target band but within the acceptable limits
1630 - Reactor power reduced to less than 50%
1730 - AFD back within target band
1830 - Reactor power is stable at 45%

Based on these conditions, what is the EARLIEST time the plant can start a power ascension above 50% on 03/09/07?

References

TS 3.12.B.4.c

Choice_a:
1600

Choice_b:
1730

Choice_c:
1630

Choice_d:
1500

COMMENT

A. Correct - TS require 24 hours with less than 1 hr cumulative penalty.

B. Incorrect - @ 1730 there is no penalty left - .5 min for every min when RX PWR is less than 50%

C. Incorrect - @ 1630 there is only 30 min penalty left

D. Incorrect - @ 1500 there is 1.5 hours of penalty left

Question #: 95 KA G2.1.20

Unit 1 is operating at 100% power.

During an engineering review of the MCR Ventilation system, the operability of the 1-VS-E-4E ("E" MCR Chiller) was questioned due to inadequate seismic supports for the associated service water piping.

The other four MCR Chillers are not impacted by this seismic concern.

OP-AA-102 "Operability Determination" was initiated by the Shift Manager and it is determined that compensatory measures are required to ensure proper seismic constraints.

Which one of the following correctly describes the required actions for the conditions given above?

References
OP-AA-102

Choice_a:
Immediately declare the component inoperable.
Restore operability status only after completion of the Operability Determination.

Choice_b:
Immediately declare the component non-functional.
Restore functionality only after completion of the Reasonable Assurance of Safety Determination.

Choice_c:
Declare the component inoperable only if compensatory measures cannot be implemented within 24 hours.
Restore operability status only after completion of the Operability Determination.

Choice_d:
Declare the component non-functional only if compensatory measures cannot be implemented within 24 hours.
Restore functionality only after completion of the Reasonable Assurance of Safety Determination.

COMMENT

A. Correct - Immediate declaration is required

B. Restoration of operability does not require completion of a RAS (RAS – only NS Comps).

C. Component must be immediately declared inoperable. Restoration of operability does not require completion of Operability Determination

D. Component must be immediately declared inoperable.

Question #: 96 KA G2.2.6

A change to an Operation's procedure is needed to change the level of use from "information only" to "reference".

Which ONE of the following correctly describes this type of procedure change and the lowest approval authority required?

References

DNAP-0502

Choice_a:
This is an INTENT change.
The change must be approved by a Senior Reactor Operator and a Cognizant B designated individual.

Choice_b:
This is an INTENT change.
The change must be approved by a Senior Reactor Operator and a Cognizant A designated individual.

Choice_c:
This is a NON-INTENT change.
The change must be approved by a Reactor Operator and a Cognizant A designated individual.

Choice_d:
This is a NON-INTENT change.
The change must be approved by a Reactor Operator and a Cognizant B designated individual.

COMMENT

A. Correct. A change in "Level of Use" is an INTENT change and requires an SRO & Cognizant B designee review.

B. Incorrect. A change in "Level of Use" is an INTENT change and requires an SRO & Cognizant B designee review.

C. Incorrect. A change in "Level of Use" is an INTENT change and requires an SRO & Cognizant B designee review.

D. Incorrect. A change in "Level of Use" is an INTENT change and requires an SRO & Cognizant B designee review.

Question #: 97 KA G2.2.22

Unit one is at 100% power.

RWST parameters are as follows;

Temperature 50 degrees F
Boron concentration 2350ppm

Which of the following correctly describes the applicable Limiting Condition of Operation, and the associated Completion Time, for the given plant conditions?

References

TS 3.4

Choice_a:
RWST temperature is above maximum limit and must be restored within 8 hours.

Choice_b:
Boron concentration is below minimum specification and must be restored within 8 hours.

Choice_c:
RWST temperature is above maximum limit and must be restored within 24 hours.

Choice_d:
Boron concentration is below minimum specification and must be restored within 24 hours.

COMMENT

A. Correct - IAW TS 3.4.

B & D. Wrong- Boron concentration is within spec.

C. Wrong - 24 hour requirement applies to containment spray subsystem

Question #: 98 KA G2.3.8

Given the following plant conditions:

- Unit 1 is at 100% power.
- A WGDT contains 2% Hydrogen and 4% Oxygen
- B WGDT contains 10% Hydrogen and 2% Oxygen

Which ONE of the following correctly describes the action required per Technical Specifications, if any?

References

Choice_a:
A WGDTs concentration of Oxygen is too high. Reduce the Oxygen concentration to < 2%.

Choice_b:
B WGDTs hydrogen concentration is too high. Reduce the Hydrogen concentration to <4%.

Choice_c:

A & B WGDTs are within the Tech Spec limits. No action is required.

Choice_d:
Both A & B WGDT Oxygen to Hydrogen % volume concentrations are to high. The Oxygen and Hydrogen volumes in both WGDTs should be decreased to below 2% and 4% respectively.

COMMENT
A. Correct. With the concentration of oxygen in the waste gas holdup system greater than 2% by volume but less than or equal to 4% by volume, reduce the oxygen concentration to <2% within 48 hours.

B. Incorrect. With the Oxygen concentration at 2% or less there is no restriction on the Hydrogen limit.

C. Incorrect. Plausible, Tech Spec states: The concentration of oxygen in the waste gas holdup system shall be limited to less than or equal to 2% by volume whenever the hydrogen concentration could exceed 4% by volume. This could be misconstrued to imply this is correct.

D. Incorrect. Plausible if the candidate believes that the values have to be "less than the limit".

Question #: 99 KA G2.4.1

Given the following plant information:

•The Unit was at 100% power when a turbine trip and a loss of power to both 4KV emergency busses occurred.
•BOTH emergency diesel generators failed to start.
•Reactor power is currently 95% and stable.
•SG safety valves are open.

Which ONE of the following describes the EOP mitigation strategy for this event?

References

Choice_a:
Enter ECA-0.0, Loss Of All AC Power. At step 1, Transition to FR-S.1, Response To Nuclear Power Generation/ATWS, to initiate emergency boration.

Choice_b:
Enter E-0, Reactor Trip Or Safety Injection. At step 1, transition to FR-S.1, Response To Nuclear Power Generation/ATWS, to initiate emergency boration.

Choice_c:
Enter ECA-0.0, Loss Of All AC Power. Monitor the CSF Status Trees and upon restoration of power, transition to FR-S.1, Response To Nuclear Power Generation/ATWS.

Choice_d:
Enter E-0, Reactor Trip Or Safety Injection. Monitor CSF Status Trees and upon restoration of power, transition to FR-S.1, Response To Nuclear Power Generation/ATWS.

COMMENT
A. Incorrect. No power to implement FR-S.1.

B. Incorrect. No power available to initiate emergency boration.

C. Correct. FR's are monitored only until power is restored.

D. Incorrect. E-0 assumes at least one 4KV emergency bus has power and therefore does not provide direction to restore power..

Question #: 100 KA G2.4.28

Site security has reported a saboteur on site and subsequent sabotage of 1-CS-P-1A, "A" Containment Spray Pump. The saboteur did not have an opportunity to damage 1-CS-P-1B, "B" Containment Spray Pump, prior to his capture.

Which one of the following correctly describes (1) the Technical Specification LCO Clock and (2) the highest classification of this event?

(Reference Provided)

a. (1) 72-hour clock
(2) Site Area Emergency

b. (1) 24-hour clock
(2) Site Area Emergency

c. (1) 72-hour clock
(2) Alert

d. (1) 24-hour clock
(2) Alert

Answer (b)

Comments

a. Plausible if the candidate thinks the containment spray clock is 72-hours (IRS Pump Clock). A site area emergency is correct.

b. Correct.

c. Plausible if the candidate thinks the containment spray clock is 72-hours (IRS Pump Clock). Two indications on the Alert are met, but the site area emergency overrides this declaration.

d. Containment Spray TS is correct. Part 2 is plausible as two indications on the Alert are met, but the site area emergency overrides this declaration.