

Kewaunee May 2001 RO Written Examination

Record Exam	K/A #	Reference	Answer	
001	1	001A2.07	OP E-CRD-49C	B
002	2	001K5.85	Rx Data Manual 9.1.2, 9.2, 5.1.1.1	B
003	3	013K6.01	A-MI-87, XK100-150	A
004	4	015A1.03	RE-11, SP87-125	D
005	5	017K4.02	A-CRD-49B, Rx Data Man. RD-14.1	C
006	6	017K5.03	KNPP IPEOP Background Documents Vol. 1 E-1	D
007	7	022K3.01	USAR 6.3, System Description 18, M602	D
009	8	059A4.12	E-1625	A
010	9	059A4.08	System Description 05A, XK100-554	B
011	10	056K1.03	System Description 05A, Dwg. E-1624	C
012	11	061K4.06	E1602	D
013	12	061K6.02	M-205, SYS DESC CHAP 05B	A
014	13	068 2.4.50	A-RM-45	D
015	14	010K5.02	Steam tables	C
016	15	010K1.05	System Description 36	D
017	16	071A3.02	SYS DESC CHAP 32B, N-GWP-32B,	A
018	17	071K1.06	SYS DESC CHAP 32B, N-GWP-32B,	B
019	18	072K3.02	N-FH-53-CLD,	B
020	19	002K5.09	STEAM TABLES	C
021	20	011A4.01	1) XK100-155, XK100-154	B
022	21	012A2.05	TS Section 2.3	A
023	22	012K2.01	USAR 7.2	C
024	23	014A1.04	ARP 47042-Q; Kewaunee Core Control Theory	B
025	24	055 2.1.27	System Description 09	C
026	25	063K4.01	E3626	C
027	26	062A3.04	System Description 38, E233, 47102-D	C
028	27	075A2.03	System Description 04. E-AR-09, E-CW-04	C
029	28	079K1.01	E2097	A
030	29	086K6.04	System Description 08, E1619	C

Kewaunee May 2001 RO Written Examination

Record Exam	K/A #	Reference	Answer	
031	30	086A1.01	E1619	C
032	31	005K2.03	E417, E2890, XK100-18	B
033	32	005A1.02	E2036, XK100-18	B
034	33	026K2.01	E240, T.S. 3.3.c.1.A.1	D
035	34	029K3.01	E1609, M602	D
036	35	062A1.01	N-DGM-10A	C
037	36	073K3.01	A-RM-45, N-RBV-18B	A
038	37	073K4.01	A-RM-45	D
039	38	063A3.01	A-EDC-38, N-EDC-38, SysDes 38	C
040	39	007K3.01	E-3 Bckgrnd Doc Step 20, Caution 1,	C
041	40	034A4.02	E-2051-2, SP 48-287A-1	A
042	41	041K1.06	System Description 06	A
043	42	041K5.01	Steam Table, System Description 06	A
044	43	045K4.13	E2059, XK101-24,	A
045	44	076A2.01	E-SW-02	B
046	45	2.2.30	N-FH-53E, Technical Specifications 3.8.3	D
047	46	2.3.4	EP-AD-11	C
048	47	2.3.11	SP 32A-136, Offsite Dose Calculation Manual 3-2,	D
049	48	2.1.18	NAD 3.6	D
050	49	2.1.20	GNP 3.2.1	B
051	50	2.1.29	NAD 3.9	C
052	51	2.2.25	Tech. Spec. Figure 2.1-1	C
053	52	2.2.27	Tech. Spec. 3.8	A
054	53	2.3.9	ODCM 2.1, A-RM-45, N-RBV-18B	A
055	54	2.3.10	HP-4.01	B
056	55	2.4.27	E-FP-08	B
057	56	2.4.32	A-SER-52B	B
058	57	003A3.05	E2037	B
059	58	003 2.2.22	N-RC-36A	B

Kewaunee May 2001 RO Written Examination

Record Exam	K/A #	Reference	Answer
060	59	005AK1.01 Tech Spec 3.10-C.4, Rx Data Man. RD-14.1	C
061	60	015AK3.07 ES-0.2 Background Document	B
062	61	024AK1.01 RD 2.2.9	A
063	62	027AK3.03 E-0, E-0 Background Document	C
064	63	068AK2.01 E3175	B
065	64	069AK3.01 E-0	C
066	65	068AA1.27 E-0-06	A
067	66	074EK3.04 FR-C.1 Background Document	D
068	67	E06 2.4.48 FR-C.2 Background Document	D
069	68	E07EK1.2 ECA-3.1 Background Document, step 14	C
070	69	E08EK2.2 E1627	C
071	70	E10EA2.2 ES-0.2, ES-0.2 Background Document	D
072	71	E10EA1.1 E2039, ES-0.3 Background Document	C
073	72	E12EA1.3 ECA 2.1Background Document, M203, ECA-2.1	C
074	73	E12EK2.1 ECA 2.1, ECA 2.1 Background Document	A
075	74	003AK2.05 E-CRD-49C, System Description 049	D
076	75	003AK3.07 TS-2.1 Basis	A
077	76	008AA1.07 A-RC-36D	D
078	77	009EA1.10 Mitigating Reactor Core Damage Page 6-1	A
079	78	011EK1.01 FR-H.1Background Document, E-1Background	B
080	79	011EK2.02 USAR 6.2.2, 14.3.2, 14.3.4	D
081	80	025AK1.01 A-RHR-34	A
082	81	029EK1.03 FR-S.1 Background Document	C
083	82	029EK2.06 System Description 47, XK100-144	A
084	83	032AK1.01 System Description 48, page 3	A
085	84	033AK1.01 A-NI-48, System Description 48	B
086	85	E01 2.1.23 ES-0.0	A
087	86	E03EK2.1 System Description 33, E2032	D
088	87	E05EA2.1 E-0, E-0 QRF	B

Kewaunee May 2001 RO Written Examination

Record Exam	K/A #	Reference	Answer
089	88	E11EK2.2 ECA-1.1	B
090	89	E16EK3.3 FR-Z.3, FR-Z.3 Background Document	A
091	90	065AK3.03 XK100-10	A
092	91	E05EA1.1 FR-H.1 Background Document	D
093	92	036AK3.01 E-FH-53B	D
101	93	055EA1.05 USAR 8.2-6	C
102	94	E15EK2.2 FR-Z.2 Background Documents	A
103	95	004K2.04 System Description 35	D
104	96	004K2.05 E-CVC-35, E418	A
105	97	013A2.03 XK-100-154	B
106	98	015A1.06 Kewaunee Core Control Theory, System Desc	B
107	99	072 2.1.32 EPIP-AD-02, E2021	D
108	100	2.4.3 TS Table 3.5-6	D

QUESTION

The following Plant conditions exist:

- Reactor is critical at 10E-3% power.
- RCS Tave: 547° F and steady.
- PZR pressure: 2235 psig and steady.
- Control Bank D rods position: 100 steps.

Control Rods G-11 and G-3 (both in Bank D) drop. Which of the following will be the expected response?

Initially

- A. Tave will decrease and Steam pressure will remain the same and the operator should recover the dropped control rods per E-CRD-49C, Dropped Rod.
- B. Tave and Steam Pressure will both remain the same and the operator should trip the reactor based on TWO (2) dropped control rods per E-CRD-49C, Dropped Rod.
- C. Tave will decrease and Steam pressure will remain the same and the operator should trip the reactor based on low Tave per N-CRD-49B, Reactor Startup.
- D. Tave and Steam Pressure will both remain the same and the operator should shutdown the reactor for the TWO (2) dropped control rods as required by N-CRD-49B, Reactor Startup.

RO Exam Number
2

Record Number
002

QUESTION

The following Plant conditions exist:

- Burnup is 6000 MWD/MTU.
- The Reactor Tripped from 80% power after two (2) weeks of steady state operation.
 - An ECP is calculated for 7 hours after the Trip.
 - Critical Rod position is 100 steps on Control Bank D.
 - Boron is to remain constant for the Startup.

The Startup is delayed for 2 hours. How many steps will the Control Rods be from the calculated ECP?

- A. 0-4 steps withdrawn
- B. 8-12 steps inserted
- C. 8-12 steps withdrawn
- D. 14-18 step inserted

RO Exam Number
3

Record Number
003

QUESTION

Containment pressure instrument PT-945, Containment Pressure (Channel I), has failed downscale. All appropriate actions of A-MI-87, Bistable Tripping For Failed Reactor Protection or Safeguards Instrument Procedure, have been completed.

Subsequently PT-949, Containment Pressure (Channel II), fails upscale.

What is the expected response of the plant?

- A. Safety Injection will occur.
- B. Main Steam Isolation Train A will occur.
- C. Safety Injection and Main Steam Isolation Train A will occur.
- D. Safety Injection, Containment Spray, and Main Steam Isolation will occur.

QUESTION

While at 100% power, a manual calorimetric is being performed. During the calorimetric, the feedwater temperature is mistakenly recorded 100 degrees lower than the actual temperature. The gain pot on the power range nuclear instruments are adjusted based on this manual calorimetric. SELECT the statement that describes HOW indicated power compares to actual power and if it is more or less conservative with respect to a trip setpoint.

- A. Actual power is HIGHER than indicated; LESS conservative.
- B. Actual power is LOWER than indicated; LESS conservative.
- C. Actual power is HIGHER than indicated; MORE conservative.
- D. Actual power is LOWER than indicated; MORE conservative.

QUESTION

The following Plant conditions exist:

- The Plant is at 52% and in progress of increasing load to 75% following a plant startup after a refueling shutdown.
- The load pickup to 52% has just been completed when TLA-1, Rod Supervision Alarm, actuates.
- IRPI and Honeywell PPCS indicate Control Rod G11 is at step 100 position, with the remainder of Bank D at 188 steps.
- Bank D Group step counter is at 175 steps
- I&C reports a 1.609 volt DC reading for Rod G11 Conditioning Module voltage.

What are THREE (3) other Control Room indicators or components that may be used to confirm if an actual Control Rod misalignment exists?

- A. Power range instrumentation, Delta-flux indicators and Tave.
- B. Incore moveable detectors (flux maps), Core exit thermocouples and sub-cooling monitor.
- C. Power range instrumentation, Delta-flux indicators and Core exit thermocouples.
- D. Incore moveable detectors (flux maps), Core exit thermocouples and Tave.

QUESTION

Following a Small Break LOCA, the following conditions are observed:

- Core Exit Thermocouple temperatures are approximately 618° F and stable.
- RCS Hot Leg Temperatures are approximately 550° F and stable.
- Pressurizer Pressure is 1085 psig.
- RCS Cold Leg Temperatures are approximately 330° F and lowering slowly.

What is the status of RCS inventory and core cooling?

The core is

- A. covered and being cooled by Natural Circulation.
- B. covered and being cooled by Reflux Boiling.
- C. partially uncovered and being cooled by Natural Circulation.
- D. partially uncovered and being cooled by Reflux Boiling.

QUESTION

The following Plant conditions exist:

- Reactor Trip/Safety Injection has occurred.
- Main Steam Line break in Containment.
- Containment pressure is 4.5 psig.
- Containment humidity is 100%.
- Both RXCPs are running.

Which ONE (1) of the following is the concern if the Containment Fan Coil Units Emergency Discharge Dampers RBV-150 A and B both failed to OPEN and remained in the CLOSED position?

- A. RXCP B overheating.
- B. Loss of cooling to Shroud Coolers if Natural Circulation Cooldown is required.
- C. Reverse airflow through the Containment Fan Coil Unit causing damage to the Containment Fan Coils Unit motors.
- D. Damage to the duct work could reduce Containment cooling due to the lack of air mixing in Containment.

QUESTION

Assume the plant is operating at normal 100% power with NO equipment out of service.

Which ONE (1) of the following indicates the effect that the initiation of ONLY Safety Injection TRAIN A signal will have on the Main Feedwater System?

- A. Both Feedwater Pumps TRIP
FW-12A ONLY [Main Feedwater Header Isolation Valves] CLOSE
FW-7A & FW-7B [Main Feedwater Regulating Valves] CLOSE
FW-10A & FW-10B [Main Feedwater Bypass Control Valves] CLOSE
- B. ONLY Feedwater Pump A TRIPS
FW-12A ONLY [Main Feedwater Header Isolation Valve] CLOSE
FW-7A & FW-7B [Main Feedwater Regulating Valves] CLOSE
FW-10A & FW-10B [Main Feedwater Bypass Control Valves] CLOSE
- C. Both Feedwater Pumps TRIP
FW-12A & FW-12B [Main Feedwater Header Isolation Valves] CLOSE
FW-7A ONLY [Main Feedwater Regulating Valve] CLOSE
FW-10A & FW-10B [Main Feedwater Bypass Control Valves] CLOSE
- D. ONLY Feedwater Pump A TRIPS
FW-12A & FW-12B [Main Feedwater Header Isolation Valve] CLOSE
FW-7A ONLY [Main Feedwater Regulating Valve] CLOSE
FW-10A ONLY [Main Feedwater Bypass Control Valve] CLOSE

RO Exam Number
9

Record Number
009

QUESTION

The plant is operating at 100% power. Turbine Impulse Pressure channel P-485 fails low. Which ONE (1) of the following describes how the feedwater system is affected by this failure?

- A. FW-7A/7B, Main FW Control Valves, continue to control S/G level at 44%.
- B. FW-7A/7B, Main FW Control Valves, position to control S/G level at 33% and manual action is required to restore S/G level to 44%.
- C. FW-7A/7B, Main FW Control Valves, position to control S/G level at 33% and S/G level returns to 44% after signal times out.
- D. FW-7A/7B, Main FW Control Valves, position to control S/G level at 44% and manual action is required to restore S/G level to 33%.

RO Exam Number
10

Record Number
011

QUESTION

KNPP is at 70% power with both Main Feed Pumps and both Condensate Pumps running. If Condensate Pump B trips, which ONE (1) of the following actions will occur?

- A. MFW Pump A trips and Turbine runback occurs
- B. MFW Pump B trips and Turbine runback occurs
- C. MFW Pump A trips and NO Turbine runback occurs
- D. MFW Pump B trips and NO Turbine runback occurs

RO Exam Number
11

Record Number
012

QUESTION

During the performance of SP-05B-104 Task 2, Motor Driven Auxiliary FW Pump and Valve Test-IST, the AFW Pump A has just been stopped at the DSP. The plant IMMEDIATELY experiences a Loss of Off-Site Power. How is the starting of AFW Pump A affected?

- A. AFW Pump A will start on Blackout sequence.
- B. AFW Pump A will start on Steam Generator low level only.
- C. AFW Pump A will NOT start due a load shed signal.
- D. AFW Pump A will NOT start due to the local/remote switch position.

RO Exam Number
12

Record Number
013

QUESTION

The following Plant conditions exist:

- The Plant has tripped from 100% power due to an inadvertent SI.
- IPEOP E-0, "Reactor Trip or Safety Injection", has been completed.
- The current procedure in effect is IPEOP ES-1.1, "SI Termination."
- The level in both Steam Generators is 3%.

At this time AFW Pump A trips on overcurrent. The CRS chooses to continue feeding both Steam generators. What Operator actions, if any, are necessary to provide both Steam Generators with Feedwater? (Assume NO procedure steps other than IPEOP steps have been performed.)

- A. NO action is required, both Steam Generators will continue to be fed from the AFW Pump B since the AFW cross-connect valves, AFW-10A and AFW-10B, are normally open.
- B. Both of the AFW cross-connect valves, AFW-10A and AFW-10B, must be opened since they will have been shut when the Turbine Driven AFW pump was stopped.
- C. The Turbine Driven AFW Pump must be started and the AFW cross-connect valve, AFW-10A, must be opened.
- D. The Turbine Driven AFW Pump must be started and the AFW cross-connect valve, AFW-10A, must be opened and the AFW cross-connect valve, AFW-10B, must be closed.

RO Exam Number
13

Record Number
014

QUESTION

The following Plant conditions exist:

- A release of CVC Monitor Tank B is in progress.
- Annunciator 47011-B, RADIATION INDICATION HIGH ALARM, has actuated.
- R-18, Waste Disposal Liquid Effluent Monitor, is alarming.

Which of the following states the required IMMEDIATE action, if any, after verifying the R-18 reading is above the alarm setpoint?

- A. NO action required, this is an expected alarm.
- B. Direct the Duty Chemist to sample CVC Monitor Tank B.
- C. Direct the Health Physics to survey the area around R-18 to verify the alarm.
- D. Verify the WD-19/CV-31138, WD to Circ Water valve, automatically closed.

RO Exam Number
14

Record Number
015

QUESTION

A normal plant startup is in progress with the following conditions:

- Pressurizer Pressure is at 1585 psig and slowly decreasing
- Pressurizer Level is at 30% and slowly decreasing
- PRT Pressure is 5 psig

Assume pressurizer steam quality is 100%

Which ONE (1) of the following is the CURRENT expected PORV tailpipe temperature if a Pressurizer PORV is leaking by?

- A. 605°F
- B. 547°F
- C. 245°F
- D. 228°F

QUESTION

The following Plant conditions exist:

- Reactor is at 100% power
- Annunciator 47043B, PRESSURIZER RELIEF TANK ABNORMAL, is actuated due to low PRT Level.
- PRT level indication is 69% and slowly decreasing.
- PRT temperature is 124° F

How will PRT pressure be affected if a PRZR PORV fails OPEN?

- A. PRT pressure will be lower due to the lowering liquid volume in the PRT.
- B. PRT pressure will only increase slightly due to compression of the gas volume.
- C. PRT pressure will remain constant due to the remaining water absorbing the steam.
- D. PRT pressure will increase to over-pressurization due to an insufficient water volume to cool the steam.

QUESTION

Degassing of the reactor coolant system is in progress. Gas Decay Tank A is on FILL and at 98 psig. Gas Decay Tank A is increasing at about 4 psig/hour. Gas Decay Tank B is selected for STANDBY. Four hours later, you note the following valve alignment:

- Gas Decay Tank A inlet valve WG-10A, Waste Gas to Gas Decay Tank A, is CLOSED
- Gas Decay Tank B inlet valve WG-10B, Waste Gas to Gas Decay Tank B, is OPEN
- Gas Decay Tank C inlet valve WG-10C, Waste Gas to Gas Decay Tank 1C, is CLOSED
- Gas Decay Tank D inlet valve WG-10D, Waste Gas to Gas Decay Tank 1D, is CLOSED

What caused the current valve alignment?

- A. Gas Decay Tank A pressure increased to 110 psig.
- B. Actuation of Zone Special Ventilation (Zone SV)
- C. The operating Waste Gas Compressor moisture separator pressure reached 110 psig.
- D. The gas analyzer detected > 2% oxygen in Gas Decay Tank A being filled.

RO Exam Number
17

Record Number
018

QUESTION

R-14, Aux Bldg Vent Exhaust Radiation Monitor, fails HIGH.

What effect does this failure have on the Waste Gas system?

- A. All Waste Gas Tank Outlet Valves to the cover gas header CLOSE if open and nitrogen becomes the cover gas supply.
- B. WG-36 is tripped CLOSED if a Gas Decay Tank discharge is in progress.
- C. Gas Decay Tank Gas Analyzer Supply Valves WG-200A, B, C, D CLOSE
- D. All Waste Gas Tank Valves (fill and cover gas supply) CLOSE, the Waste Gas compressors trip and Nitrogen becomes the Cover Gas supply.

RO Exam Number
18

Record Number
019

QUESTION

Inoperability of which ONE (1) of the area radiation monitors would prohibit refueling operations from occurring?

- A. R-1, Control Room Area Monitor.
- B. R-5, Fuel Handling Area Monitor.
- C. R-7, Incore Seal Table Area Monitor.
- D. R-10, New Fuel Pit Area Monitor.

QUESTION

The following Plant conditions exist:

- A small break LOCA has occurred.
- NO RxCPs are running.

The following RCS indications are available:

- Average of the 10 highest core exit thermocouples = 568°F
- Loop Temperatures: TH = 560°F (both loops)
TC = 522°F (both loops)
Tave = 541°F (both loops)
- Pressurizer Pressure instruments PT-429, PT-430, PT-431, and PT-449 indicate 1700 psig
- RCS wide-range pressure instruments PT-419 and PT-420 indicate 1231 psig

Operators are directed to determine the RCS subcooling margin due to unavailability of subcooling indication due to failed instruments. Based on these indications, the RCS is:

- A. Superheated by greater than 10°F.
- B. Superheated by less than 10°F.
- C. Subcooled by less than 10°F.
- D. Subcooled by greater than 10°F.

QUESTION

The following Plant conditions exist:

- Unit is at 90% power.
- Pressurizer level control is in the normal at power lineup (position 2-3).
- Pressurizer level transmitter LT-427 (Channel II) output signal fails off-scale low.

Which of the following describes the short-term plant response to this event?

- A. Charging pump speed increases, letdown isolates, and PZR heaters are tripped.
- B. Charging pump speed is NOT affected, letdown isolates, and PZR heaters are tripped.
- C. Charging pump speed increases, letdown is NOT affected, and PZR heaters are tripped.
- D. Charging pump speed increases, letdown isolates, and PZR heaters are NOT affected.

QUESTION

Which ONE (1) of the below events has the potential to generate an OT delta T runback?

- A. The controlling pressurizer pressure channel fails high.
- B. An RCS boron addition which changes temperature.
- C. Delta Flux increases from -2 to +6 as a result of a xenon transient.
- D. A group of pressurizer backup heaters is energized.

QUESTION

The plant is operating at 60% power with N-36 Out of Service. A loss of power occurs on Instrument Bus II (White Channel). Considering only the impact of the IR NIs, what impact this will have on the Reactor?

- A. It will NOT trip the Reactor because the affected NI channel is N-36 and it is in bypass.
- B. It will trip the Reactor because both control power and instrument power will be lost on the affected channel.
- C. It will NOT trip the Reactor regardless of which IR channel is affected because the IR trip was blocked above P-10.
- D. It will trip the Reactor because the affected channel is N-35 and it becomes deenergized.

QUESTION

The plant is operating at 100% power. All systems are in their normal alignment and in automatic rod control. One of the RCS Hot Leg RTDs fails high causing the rods to drive in. When the RO stops rod motion, the CONTROL BANK LOW LIMIT alarm is in. If NO other action is taken, what happens to the radial and axial flux?

- A. The radial flux profile near the top of the core remains the same; the axial flux is forced toward the bottom of the core.
- B. The radial flux profile near the top of the core changes; the axial flux is forced toward the bottom of the core.
- C. The radial flux profile near the top of the core remains the same; the axial flux is forced toward the top of the core.
- D. The radial flux profile near the top of the core changes; the axial flux is forced toward the top of the core.

RO Exam Number
24

Record Number
025

QUESTION

With a Condenser vacuum drawn, the Air Ejectors are isolated from the Condenser. How would Condenser vacuum be effected by this action?

- A. Immediate loss of Condenser vacuum because Air Removal is required for steam to condense.
- B. Immediate loss of Condenser vacuum due to non-condensable gases entry into the Condenser.
- C. Gradual loss of Condenser vacuum as non-condensable gases build up in the Condenser.
- D. NO loss of Condenser vacuum as the condensing of the turbine exhaust steam maintains the vacuum.

RO Exam Number
25

Record Number
026

QUESTION

Which ONE (1) of the following lists the power supplies to 118 vac Bus Inverter BRD-109 in the preferred sequence of connection if needed to supply the Inverter?

- A. Normal – MCC 46B, then BRC 102, then BRB 127
- B. Normal - MCC 62C, then BRD-104, then BRB-105
- C. Normal - MCC 62C, then BRD-103, then BRB-127
- D. Normal - MCC 52C, then BRA-104, then BRA-105

RO Exam Number
26

Record Number
027

QUESTION

The "Instrument Bus Inverter Trouble" alarms in the control room with the SER point indication BRA-111 as the cause. The Equipment Operator reports that on BRA-111 the "Alternate Source Supplying Load" light is lit. What is the condition of BRA-113 Instrument Bus?

- A. BRA-113 is without 120VAC power.
- B. BRA-113 is now supplied with 120VDC power.
- C. Power source is 120VAC via BRA-105.
- D. Power source is 125VDC cabinet BRA-104 via BRA-111.

RO Exam Number
27

Record Number
028

QUESTION

The following Plant conditions exist:

- Turbine load 200 MWe
- Plant control systems all in automatic
- Circulating Water (CW) Forebay level 50% and decreasing rapidly due to outsurge caused by seiche in progress
- Turbine back pressure 5.0" Hg Absolute and increasing rapidly.

The correct action(s) that the operators should take is/are ... (choose one)

- A. reduce Turbine load to 30% (165 Mwe) power and isolate one pair of Main Condenser Water Boxes in order to reduce CW flow requirements.
- B. stop ONE CW pump within 10 minutes in order to regain CW Forebay level.
- C. trip the Reactor/Turbine and enter E-0, "Reactor Trip or Safety Injection."
- D. ramp power down at a rate NOT to exceed 5% per minute and trip the Reactor at 15% power.

RO Exam Number
28

Record Number
029

QUESTION

SA-60/CV 31648, Station Air Crossover Pressure Control Valve, controls air to the Instrument Air System at _____ from the Station Air Header.

- A. 110 psi
- B. 100 psi
- C. 95 psi
- D. 90 psi

RO Exam Number
29

Record Number
030

QUESTION

A failure of which of the following detectors will result in an IMMEDIATE (i.e. NO time delay) discharge of its associated fire protection medium (i.e. water, halon, CO2)?

- A. ONE temperature switch/thermostat in Zone 103, Diesel Generator Room A.
- B. TWO ionization (smoke) detectors in Zone 602, the Aux. Bldg. Record Storage Room.
- C. ONE temperature rise (thermal pneumatic) detector in Zone 1203, Materials Work Storage.
- D. ONE photo-electric detector AND ONE ionization (smoke) detector in Zone 1103, QA/QC Vault.

QUESTION

Maintenance opens a hose station valve to flush the Fire Header.

The Fire Protection System pressure dropped to 107 psig and repressurizes to 170 psig. What is the status of the fire protection system at this time?

(Assume that the fire protection system was in a normal lineup prior to opening the hose station valve.)

	Jockey Pump	A Fire Pump	B Fire Pump
A.	Running	Stopped	Running
B.	Running	Running	Stopped
C.	Stopped	Running	Stopped
D.	Stopped	Stopped	Running

QUESTION

The following plant conditions exist:

- A plant cooldown to cold shutdown is in progress.
- The RCS is at 425 deg. F. and 900 psig.
- A fire occurs in MCC-62B and is extinguished.
- MCC-62B is damaged and CANNOT be re-energized.

How do these conditions effect the plant reaching cold shutdown?

- A. Since the required Motor Valves are powered from MCC-62A, reaching cold shutdown is unaffected.
- B. Only RHR Train A Loop Suctions are available due to the loss of power to RHR-1B, Loop B Hot Leg To Residual Heat Removal Pump, and RHR-2B, Loop B Hot Leg To Residual Heat Removal Pump.
- C. Neither train of RHR can be established since RHR-11, Residual Heat Removal To Loop B Cold Leg Isol., and LD-60, Residual Heat Exchanger To Letdown Line, lose power.
- D. Flow can only be established through RHR Pump A and Train B of Component Cooling is unavailable due to the loss of power to CC-6B, Component Cooling Heat Exchanger B Outlet.

QUESTION

The following Plant conditions exist:

- Plant cooldown to COLD SHUTDOWN is in progress.
- RHR aligned for cooldown.
- RCS pressure is 400 psig.
- RCS Wide Range temperature, Hot Leg, is 350° F
- Flow Controller RHR-101 is in AUTOMATIC - 10% open.
- Local RHR Heat Exchanger outlet temperature is 300° F

The RHR return header flow transmitter (FT-626) fails low. What is the Plant response to this event?

- A. RHR Heat Exchanger Bypass Valve (RHR-101) position will change to full close to maintain RHR desired system flow rate and RCS cooldown rate will increase.
- B. RHR Heat Exchanger Bypass Valve (RHR-101) will position to full open to maintain RHR desired system flow rate and RCS cooldown rate will decrease.
- C. RHR Heat Exchanger Flow Control Valves (RHR-8A/8B) will automatically close to prevent exceeding RCS cooldown rate of 100° F per hour.
- D. RHR Return Header Isolation Valve (RHR-11) will automatically open to maintain RHR Pump discharge pressure and flow constant to the Reactor Vessel.

QUESTION

The following Plant conditions exist:

- Plant is at 100% power.
- ICS Pump A is OUT-OF-SERVICE for maintenance.
- Plant Electricians request Bus 1-61 be removed from service for maintenance.

The Electricians' request is denied. What is the basis for the denial?

- A. All vital 480V AC Buses shall be energized when the Plant is critical.
- B. All vital 4160V AC Buses shall be energized when the Plant is critical.
- C. It is an error since Bus 1-61 is the power supply for ICS Pump A and would NOT violate Technical Specifications
- D. De-energizing Bus 1-61 will result in both Containment Spray Trains being INOPERABLE and violate Technical Specifications.

QUESTION

The following plant conditions exist:

- Shield Building Annulus To Containment DP Switch (16427) fails in the >0.3 PSID direction.
- Containment pressure is 1 psig.

What effect would these conditions have on the Containment Vent and Purge system?

VB-10A, Power Operated Contmt Vacuum Breaker A, would OPEN and the operator would ...

- A. manually close VB-10A.
- B. manually close VB-10A only after Containment Pressure has equalized with the Annulus
- C. NOT be able to CLOSE VB-10A and Containment Pressure would equalize with the Annulus
- D. NOT be able to CLOSE VB-10A and Containment Pressure would NOT equalize with the Annulus

RO Exam Number
35

Record Number
036

QUESTION

The DG A is running following a recovery for a loss of all AC power. The NCO reports current DG A load is 3100 KW.

What is the MINIMUM amount of load that would have to be shed from the DG A to be below the 7 day/year limit for operation?

- A. 500 KW
- B. 240 KW
- C. 150 KW
- D. 50 KW

RO Exam Number
36

Record Number
037

QUESTION

The plant is at 100% power performing a 2" vent of Containment using Train B when R-21 FAILS HIGH. How is the 2" vent of Containment affected?

- A. LOCA-100B/CV-31725, Post LOCA Hydrogen to Recombiner B and LOCA-201B/CV-31727, Post LOCA Hydrogen Recombiner to Contmt go CLOSED.
- B. Only LOCA-100B/CV-31725, Post LOCA Hydrogen to Recombiner B goes CLOSED.
- C. Only LOCA-201B/CV-31727, Post LOCA Hydrogen Recombiner to Contmt goes CLOSED
- D. 2" vent of Containment continues until MANUAL Action is taken.

QUESTION

Which of the following is a complete list of the radiation monitors that detect and mitigate, on High alarm, a radioactive release from the Aux building by stopping the Aux Building Supply and Exhaust fans and starting a Zone SV (Special Vent) exhaust fan?

- A. R-13 & R-14 Aux Bldg. Vent Monitors, R-35 Aux Bldg. Vent Low range and R-36 Aux Bldg. Vent High Range.
- B. R-13 & R-14 Aux Bldg. Vent Monitors, R-35 Aux Bldg. Vent Low range, R-36 Aux Bldg. Vent High Range and R-22 RHR Pit Exhaust Air Monitoring subsystem.
- C. R-13 & R-14 Aux Bldg. Vent Monitors and R-22 RHR Pit Exhaust Air Monitoring subsystem.
- D. R-13 & R-14 Aux Bldg. Vent Monitors.

QUESTION

The following Plant conditions exist:

- The DC Supply and Distribution System is configured for normal operation and is operating properly.
- Annunciator BRB-102 FEEDER BKR UNDERVOLTAGE (47102-B) alarms.

Assuming the system performed as designed, which ONE (1) of the following describes the actions the local operator is directed to perform to allow future faulted circuits on BRB-102 FEEDER BKR UNDERVOLTAGE (47102-B) to annunciate?

- A. Identifies the tripped circuit by the red circuit status light being ON while the toggle switch is in OFF position and places the toggle switch to the ON position.
- B. Identifies the tripped circuit by the red circuit status light being OFF with the toggle switch in the OFF position and places the toggle switch to the ON position.
- C. Identifies the tripped circuit breaker by breaker position and by the red circuit status light being OFF with the toggle switch in ON position and places the toggle switch to the OFF position.
- D. Identifies the tripped circuit breaker by breaker position and by the red circuit status light being OFF with the toggle switch in ON position places the toggle switch first to OFF position and back to ON.

RO Exam Number
39

Record Number
040

QUESTION

A Steam Generator Tube Rupture (SGTR) has occurred in conjunction with a loss of offsite power. Performing which of the following actions in E-3, "Steam Generator Tube Rupture", could cause an increase in radiation level and humidity in the Containment.

- A. Isolating the ruptured Steam Generator.
- B. Cooling down the Reactor Coolant System.
- C. Depressurizing the Reactor Coolant System.
- D. Establishing Charging flow.

RO Exam Number
40

Record Number
041

QUESTION

Given the following indications:

- N-31 is reading 25 CPS
- N-32 is reading 30 CPS
- Audible count is selected to N-32

Which of the following conditions would result in an AUTOMATIC Containment Evacuation Alarm during core alterations?

- A. The reading on N-31 increases to 100 CPS.
- B. N-32 fails low.
- C. Source Range High Flux at Shutdown alarm is blocked on N-31.
- D. The Remote Speaker is turned off.

RO Exam Number
41

Record Number
042

QUESTION

In which ONE (1) of the following sets of conditions can a Condenser Cooldown Dump Valve be opened after the Main Steam Dump Interlock Selector Switches have been placed in BYPASS INTLK and returned to the Mid-position?

- A. Condenser pressure is 4.5" HgA
Tave is 530° F
1 Circ Water Pump is running
- B. Condenser pressure is 13.5" HgA
Tave is 550° F
NO Circ Water Pumps are running
- C. Condenser pressure is 22.5" HgA
Tave is 550° F
1 Circ Water Pump is running
- D. Condenser pressure is 8.0" HgA
Tave is 550° F
NO Circ Water Pumps are running

RO Exam Number
42

Record Number
043

QUESTION

The normal Main steam temperature and pressure at NO Load Tave is:

- A. 547° F 1005 psig
- B. 547° F 1050 psig
- C. 552° F 1005 psig
- D. 552° F 1050 psig

RO Exam Number
43

Record Number
044

QUESTION

The following plant conditions exist:

- The plant is at 30% power during a post refueling startup.
- SP 54-063, "Turbine Trip Mechanism Test," is in progress.

With the Overspeed Mechanism Test lever at the Governor End Pedestal being held in the "TEST" position, which ONE (1) of the following would still result in a Turbine trip?

- A. MSIV A closing
- B. Mechanical Overspeed.
- C. Low bearing oil pressure.
- D. Low vacuum.

RO Exam Number
44

Record Number
045

QUESTION

The following Plant conditions exist:

- Annunciator 47051P, SW HEADER PRESSURE LOW, SER 125, SW Header B LESS THAN 72 psig, actuates.
- Operator identifies 1A Auxiliary Bldg Service Water Header pressure is at 90 psig and 1B header at 55 psig.
- SW-4B, SW Header B to Turbine Bldg Hdr, is open.

What Operator action should be taken first?

- A. Close SW-10B, Aux. Bldg. Header B Isolation.
- B. Shift Turbine Building header to Train A.
- C. Trip the Reactor and Turbine.
- D. Initiate SW isolation for Turbine Building.

QUESTION

The following Plant conditions exist:

- The plant is in REFUELING
- Fuel shuffle is complete
- Preparations are completed to initiate draining of the Reactor Cavity

What is the responsibility of the NCO concerning the Source Range instrumentation?

The operator must verify

- A. TWO channels are OPERABLE and each is visually monitored during the draining operation.
- B. TWO channels are OPERABLE and the audio count can be monitored in Containment.
- C. at least ONE channel is OPERABLE and the audio count can be monitored both in the Control Room and in Containment.
- D. at least ONE channel is OPERABLE and it is visually monitored during the draining operation.

RO Exam Number
46

Record Number
047

QUESTION

The following Plant conditions exist:

- A LOCA outside Containment has occurred 15 minutes ago at 0130
- The Shift Manager has declared a SITE EMERGENCY
- The faulted line was manually isolated locally, however the NAO performing the task was injured and CANNOT leave the area on his own
- Initial dose estimates for the area are 90 R/hr primarily due to gamma radiation

If the EPA guideline (Emergency) limits are NOT exceeded voluntarily, what is the maximum stay time allowed to rescue the NAO?

- A. 3-4 minutes
- B. 6-7 minutes
- C. 16-17 minutes
- D. Rescue would NOT be allowed.

RO Exam Number
47

Record Number
048

QUESTION

The following Plant conditions exist:

- Discharge is in progress from Waste Condensate Tanks.
- R-18, Waste Discharge Liquid radiation monitor, fails off-scale high.

Which of the following actions is NOT required prior to reinitiating the release?

Technically qualified members of the Facility Staff must...

- A. complete TWO independent verifications of the discharge line valving.
- B. perform TWO independent verifications of the release rate calculations.
- C. analyze TWO independent samples from the tanks for gamma and tritium.
- D. establish TWO independent locations for taking grab samples during the release.

RO Exam Number
48

Record Number
049

QUESTION

Which of the following is ONE (1) of the requirements for maintaining the Reactor and Control Room Log?

- A. The Shift Manager shall initial all late entries.
- B. At the end of each shift the Control Room Supervisor shall review and sign the Reactor and Control Room Log.
- C. shall include the time in core life, i.e. MWD/MTU.
- D. All entries shall be in non-smearable black ink.

RO Exam Number
49

Record Number
050

QUESTION

While performing N-HD-11, “Heater and Moisture Separator Drain and Bleed Steam System”, to start a second Heater Drain Pump, the procedure directs the operator to “VERIFY that the Heater Drain Pump Demand is at MINIMUM” before the pump is started.

What action should the NCO take if the Demand is reading 20% when he is performing the step?

- A. Leave the speed as found and start the pump.
- B. Adjust the speed to minimum and then start the pump.
- C. Do a temporary change to the procedure to add a step to reduce the speed to minimum and then start the pump.
- D. Contact the Control Room Supervisor and the Superintendent – Plant Operations and if they concur, adjust the speed to minimum and then start the pump.

RO Exam Number
50

Record Number
051

QUESTION

Which ONE (1) of the following circumstances would require an Independent Verification?

- A. A CVCS valve needs to be throttled 25% open.
- B. An RCS valve within a locked high radiation area must be opened.
- C. An AFW valve needs to be shut when the TD AFW pump is returned to service.
- D. The Containment isolation valves are being returned to their normal position after the ILRT during a refueling outage.

RO Exam Number
51

Record Number
052

QUESTION

The following Plant conditions exist:

- Reactor power is 1320 MWt.
- RCS pressure is in the normal operating band.

Which ONE (1) of the following RCS average temperatures would FIRST result in exceeding a safety limit?

- A. 594° F
- B. 616° F
- C. 627° F
- D. 636° F

RO Exam Number
52

Record Number
053

QUESTION

Which of the following conditions would require the suspension of all core alterations per Technical Specifications during refueling operations?

- A. The primary coolant system boron had an inadvertent dilution to 1900 ppm.
- B. One of the personnel airlock doors is broken and CANNOT be closed.
- C. The Shift Manager leaving the Control Room for the Morning Meeting.
- D. A review of the RO log indicates that RHR Pumps have been secured for 30 minutes.

RO Exam Number
53

Record Number
054

QUESTION

The following Plant conditions exist:

- Plant is in Cold Shutdown with RCS temperature at 140° F
- RHR is in service
- Refueling preparations are in progress
- Containment integrity is NOT required
- Containment purge is in progress using the 36" RBV valves.
- R-11 is out of service for filter drive motor replacement
- R-12 has just failed low

Which ONE (1) of the following describes the plant/operator response to this failure?

- A. NO effect, remove R-12 from service, and continue purge.
- B. NO effect, remove R-12 from service, and stop purge until R-12 returned to service.
- C. Containment Vent Isolation occurs stopping the purge, Shift R-21 to vent stack, and restart purge.
- D. Containment Vent Isolation occurs stopping the purge, purge can be restarted when R-11 or R-12 is returned to service.

RO Exam Number
54

Record Number
055

QUESTION

Which of the following would violate the principle of ALARA?

- A. Identify the hot spots in the area beforehand.
- B. Do a dry run at the job site.
- C. Identify areas where portable shielding should be installed.
- D. Flush a pipe in the job area.

RO Exam Number
55

Record Number
056

QUESTION

The following Plant conditions exist:

- A small fire occurs in the control room
- The fire is quickly brought under control
- The plant is stable
- The main control room is habitable
- Fire damage is limited to the Moveable In-core Detector System

Which ONE (1) of the following procedures will be the plant CONTROLLING PROCEDURE?

- A. Fire Plan Procedures
- B. E-FP-08, Emergency Operating Procedure – Fire
- C. E-06, Fire in Alternate Fire Zone
- D. E-07, Fire in Dedicated Fire Zone

RO Exam Number
56

Record Number
057

QUESTION

How would the NCO determine that annunciator power was lost due to a problem with the power supply?

- A. Check the operating status of the Plant Computer.
- B. The Annunciators fail to light when TEST pushbutton is depressed.
- C. Receive report that 125V DC Bus voltage is 115 volts.
- D. LOSS OF ANNUNCIATOR POWER annunciator is in alarm.

RO Exam Number
57

Record Number
058

QUESTION

Which ONE (1) of the following is indication that the Reactor Coolant Pump interlock with its Oil Lift Pump is satisfied?

- A. The Oil Lift Pump breaker is CLOSED providing the RED Oil Lift Pump light.
- B. Oil Lift pressure is greater than 600 psig providing the RED Oil Lift Pump light.
- C. The Oil Lift Pump has been timed ON for 2 minutes providing the RED Oil Lift Pump light.
- D. The Oil Lift Pump has been timed ON for 2 minutes AND Oil Lift pressure is 600 psig providing the RED Oil Lift Pump light.

RO Exam Number
58

Record Number
059

QUESTION

Which ONE (1) of the following statements describes the conditions that must be met prior to starting a reactor coolant pump (RXCP) with any of the loop cold leg temperatures less than 200° F?

The secondary water temperature of each Steam Generator must be ...

- A. <75° F above each of the RCS cold leg temperatures.
- B. <100° F above each of the RCS cold leg temperatures.
- C. <125° F above each of the RCS cold leg temperatures.
- D. <150° F above each of the RCS cold leg temperatures

RO Exam Number
59

Record Number
060

QUESTION

The following Plant conditions exist:

- Control Rod G11 indication is at 195 step with the remainder of Bank D at 205 steps.
- Bank D Group step counter is at 205 steps
- I&C reports a 2.966 volt DC reading for Rod G11 Conditioning Module voltage.
- "UPPER QUADRANT POWER TILT RATIO HIGH" is in alarm
- The Plant is operating at 87%

If the indicated quadrant tilt is determined to be 1.10, what actions are required?

- A. Eliminate the tilt OR restrict maximum power level to 2% for every percent of indicated power tilt ratio greater than 1.0.
- B. Eliminate the tilt within 24 hours or reduce power to 50% or lower.
- C. The Reactor shall immediately be brought to less than or equal to 5% power.
- D. Within 30 minutes correct the tilt or reduce the reactor power to less than or equal to 50%.
- E.

RO Exam Number
60

Record Number
061

QUESTION

The basis for maintaining S/G levels at 33% during a Natural Circulation Cooldown is to:

- A. Prevent thermal shock to the S/G tube bundle
- B. Provide a stable heat sink for decay heat removal
- C. Conserve inventory in the condensate storage tanks during the cooldown
- D. Maintain the cooldown rate in the RCS cold legs to less than 25 degrees per hour

RO Exam Number
61

Record Number
062

QUESTION

The following Plant conditions exist::

- The Plant is at 100% steady state power.
- Current RCS boron concentration is 1049 ppm.
- Due to an urgent failure, control rods are currently inoperable.

The following events occur:

- RCS has been inadvertently diluted with 480 gallons of Makeup water.
- Subsequently, emergency boration is established at 80 gpm .

Which ONE (1) of the following is closest to the needed duration of emergency boration to return Tave to its original value?

- A. 1/2 minute
- B. 2 minutes
- C. 4 minutes
- D. 8 minutes

QUESTION

The following Plant conditions exist:

- Plant is operating at 35% power.
- Ramping up to 100%.
- PS-1A/CV-31112, Loop A PRZR Spray Valve, is stuck OPEN.
- PRZR pressure is decreasing.
- PRZR Heaters are verified as energized.

An Operator takes manual control of valve PS-1A/CV-31112, Loop A PRZR Spray Valve, and is unable to close it. What action(s) shall be taken to terminate the pressure reduction caused by the spray valve failure?

- A. Trip the Reactor, trip Reactor Coolant Pump A and Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- B. Initiate Safety Injection, trip Reactor Coolant Pump A and Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- C. Trip the Reactor, trip Reactor Coolant Pump A and implement IPEOP E-0, "Reactor Trip or Safety Injection".
- D. Trip the Reactor, trip Reactor Coolant Pump B and implement IPEOP E-0, "Reactor Trip or Safety Injection".

QUESTION

Which ONE (1) of the following has its status indication on the Dedicated Shutdown Panel?

- A. Containment pressure
- B. Containment Fan Coil Unit 1A
- C. Main Turbine Trip
- D. Containment spray pump B

RO Exam Number
64

Record Number
065

QUESTION

The following Plant conditions exist:

- Reactor Trip and Safety Injection actuates.

The Operators determine that window box “SEAL WATER LEAKOFF CVC-211” is NOT LIT. All other required lights are LIT.

What Operator action, if any, shall be taken to close the CVC-211, RXCP Seal Return Isolation valve?

- A. Manually depress the Safety Injection Initiation Push Buttons for both trains.
- B. Manually depress the Containment Isolation Push Buttons for both trains.
- C. Manually close CVC-211, RXCP Seal Return Isolation Valve.
- D. NO action required if CVC-212, RXCP Seal Return Isolation Valve, is closed.

RO Exam Number
65

Record Number
066

QUESTION

An Alternate Shutdown is in progress due to a fire in the Cable Spreading Room. An immediate Control Room evacuation was required and entry into E-0-06, “Fire in Alternate Fire Zone”.

During the performance of E-0-06, the performance of which of the following would stop the Feedwater and Condensate pumps?

- A. De-energizing buses 1 and 2 by the Control Operator B; Buses 3 and 4 by the CRS.
- B. Manually tripping Main FW and Condensate pumps prior to evacuating the Control Room.
- C. Energizing the 4160v and 480v Dedicated Shutdown Electrical system causing a load shed.
- D. NO Action is taken for Non-Vital electrical power because the loss of off-site power is assumed.

QUESTION

The following Plant conditions exist:

- The plant was operating at 100% power.
- A small break LOCA occurred.
- FR-C.1, "Response to Inadequate Core Cooling", is in progress.
- The crew was unable to start any SI pump.
- RHR pump A is NOT running.
- RHR pump B is running with zero flow.
- PRZR level is off-scale low.
- RVLIS is indicating 0%.
- RXCP "A" is running.
- SI Accumulators have been isolated.

The crew is preparing to depressurize the SGs to atmospheric pressure. Select the statement that explains what should be done concerning RXCP "A" at this point in the procedure.

- A. Leave the RXCP running regardless of plant conditions.
- B. Leave the RXCP running until the SGs have been depressurized to atmospheric.
- C. Trip the RXCP only if a high temperature alarm occurs on the pump.
- D. Trip the RXCP due to the anticipated loss of #1 seal requirements.

QUESTION

The crew is performing FR-C.2, "Response To Degraded Core Cooling", in response to an orange condition on Core Cooling. They are depressurizing the RCS to 210 psig when the STA informs the CRS that there is a red path condition on Integrity.

Which of the following actions should be done and for what reason in response to this information?

- A. Continue in FR-C.2, "Response To Degraded Core Cooling", because Core Cooling is a higher priority than Integrity.
- B. Immediately transition to FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition", because a red path overrides an orange path.
- C. Transition to FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition", when the RCS is at 210 psig because it is important to complete this particular step before the transition is made.
- D. Continue in FR-C.2, "Response To Degraded Core Cooling", because the RCS depressurization intentionally caused the red path on Integrity and it would be counter-productive to perform FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition".

QUESTION

Given that a loss of reactor coolant has occurred. What advantage is there to performing a saturated recovery as opposed to performing a subcooled recovery?

- A. It is easier to monitor RCS inventory with a saturated recovery.
- B. Pressure control is easier with a saturated recovery.
- C. RCS leakage is reduced with a saturated recovery.
- D. A saturated recovery provides greater margin to core uncover than a subcooled recovery does.

QUESTION

The following Plant conditions exist:

Steam Generator A is FAULTED and FR-P.1, "Response to Imminent Pressurized Thermal Shock Condition", has been entered.

- A soak is required by FR-P.1
- All plant equipment was in a normal lineup and operable prior to the event.

Which of the following failures, if they occurred, would have a negative impact of the RCS soak?
(Assume NO operator action)

- A. PT-419, RCS Pressure Wide Range, fails off scale HIGH.
- B. PT-449, Pressurizer Pressure, fails off scale LOW.
- C. S/G B Outlet Pressure Switch (PS-16113) failure to HIGH pressure position.
- D. AFW Pump A TRIP on low discharge pressure.

QUESTION

The following Plant conditions exist:

- A natural circulation cooldown is in progress per ES-0.2, "NATURAL CIRCULATION COOLDOWN".
- The operator has established a stable 25° F / hour cooldown rate.
- It is estimated that average AFW flow rate for the cooldown will be 200 gpm.
- It is estimated that average AFW flow rate to maintain Hot Shutdown for 24 hours would be 100 gpm.
- CSTs currently have 50,000 gallons available and Makeup water is limited to a total of 60 gallons per minute.
- Current RCS temperature is 547° F.

Which ONE (1) of the following describes the appropriate procedural actions?

- A. Stop the cooldown and remain in ES-0.2 until CST level is recovered.
- B. Increase the cooldown rate and remain in ES-0.2 until Cold Shutdown is reached.
- C. Transition to ES-1.3, TRANSFER TO CONTAINMENT SUMP RECIRCULATION, when CST is <4% level.
- D. Transition to ES-0.3, NATURAL CIRCULATION COOLDOWN WITH STEAM VOID IN VESSEL and increase the cooldown rate.

RO Exam Number
71

Record Number
072

QUESTION

The following Plant conditions exist:

- A natural circulation cooldown is in progress per ES-0.3, Natural Circulation Cooldown With Steam Void In Vessel
- A steam bubble exists in the head region.
- Prior to the event the plant was in a normal at power lineup.
- LT-427, PRZR Level (Channel II), failed low TWO (2) minutes ago.

PRZR level would ...

- A. increase due to the loss of PRZR Heaters and Letdown.
- B. remain the same due to the continued Charging flow and loss of Letdown.
- C. decrease due to the collapsing steam bubble.
- D. remain the same due to LT-428 being the controlling channel.

RO Exam Number
72

Record Number
073

QUESTION

The following Plant conditions exist:

- The Plant was operating at 100% power.
- An earthquake resulted in a rupture of the Main Steam Header A.
- The operating crew was unable to close either MSIV and transitioned to ECA-2.1, "UNCONTROLLED DEPRESSURIZATION OF ALL STEAM GENERATORS".

The Auxiliary Operator reports MS-1A was closed locally.

The RO observes S/G A and S/G B pressures are NOT increasing.

Based on the above information, the operating crew should:

- A. Transition to E-2, "FAULTED STEAM GENERATOR ISOLATION".
- B. Transition to E-3, "STEAM GENERATOR TUBE RUPTURE".
- C. Remain in ECA-2.1, "UNCONTROLLED DEPRESSURIZATION OF BOTH STEAM GENERATORS".
- D. Transition to ES-1.1, "SI TERMINATION".

RO Exam Number
73

Record Number
074

QUESTION

The following Plant conditions exist:

- Operators are performing ECA 2.1, "Uncontrolled Depressurization of All Steam Generators."
- Cooldown rate is 125 degrees per hour.
- Narrow range Steam Generator levels are off scale LOW.
- AFW flow on A and B Steam Generators indicates 100 gpm each.

Which of the following is the appropriate action to take?

- A. Adjust AFW flow to 60 gpm on each Steam Generator.
- B. Adjust AFW flow to 0 gpm on each Steam Generator.
- C. Do NOT adjust AFW flow to insure that heat sink criteria are maintained.
- D. Transition to E-2, "FAULTED STEAM GENERATOR ISOLATION".

RO Exam Number
74

Record Number
075

QUESTION

One (1) Shutdown Bank A rod has fallen into the core. A Dropped Rod Recovery is in progress per E-CRD-49C, "Dropped Rod". Rod recovery has commenced and an "Rod Control Urgent Failure" alarm is present.

Which of the following explains why the urgent failure alarm is received?

- A. There is NO master cyclor input for Shutdown Bank A.
- B. Shutdown Rods receive NO input from the bank overlap unit.
- C. Shutdown Rods have NO multiplexing thyristors.
- D. There are two groups of rods in Shutdown Bank A.

QUESTION

The plant is at 100% power when Rod K-9 drops into the core without generating a Negative Rate Trip.

Consider the changes in the following parameters:

	<u>BEFORE</u>	<u>AFTER</u>
N-41	100%	101%
N-42	100%	101%
N-43	100%	103%
N-44	100%	95%
Tave	559° F	559° F
RCS Pressure	2235 psig	2230 psig

What is the concern with these parameters?

- A. Due to the constant Tave, Hot Channel Factor in a channel may exceed Tech. Spec. Limits
- B. Due to the difference in power readings, the NIs will need to be adjusted.
- C. The shadow effect of K-9 may effect the Reactor Protection capabilities.
- D. These are expected parameters for a dropped rod and only the dropped rod is of concern

QUESTION

The following Plant conditions exist:

Pressurizer PORVs have OPENED and the accelerometers indicate PR-3A, Pressurizer Safety, has also OPENED due to a pressure transient.

- A Reactor TRIP has occurred.
- PRESSURIZER PORV DISCHARGE TEMP HIGH is in alarm
- PRESSURIZER SAFETY DISH TEMP HIGH is in alarm

Pressurizer level and pressure have been recovered.

Which of the below indications are used to determine that the Pressurizer Safeties and PORVs have CLOSED and are NOT leaking?

- A. The Red light closed indications on the PORVs are ON and accelerometers for PR-3A have cleared.
- B. The Green light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared and PORV Outlet TI-438 is holding stable at 300° F and Safety A Outlet TI-436 is stable at 289° F.
- C. The Red light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared and PORV Outlet TI-438 is at 250° F, and Safety A Outlet TI-436 is at 253° F.
- D. The Green light closed indications on the PORVs are ON, accelerometers for PR-3A have cleared, PORV Outlet TI-438 is less than 200° F, and Safety A Outlet TI-436 is less than 200° F.

QUESTION

The following Plant conditions exist:

- The plant was tripped from 100% power
- A small break LOCA has occurred after the trip
- One train of Safety Injection is available and has started

How would voiding in the core affect the SUBCRITICALLY Critical Safety Function indicator on the SAS Unit?

- A. Intermittently flash ORANGE
- B. Indicate solid YELLOW
- C. Intermittently flash RED
- D. Indicate solid ORANGE

QUESTION

Which ONE (1) of the following statements explains the importance of a secondary heat sink as it relates to a Loss of Coolant Accident?

- A. In response to a small break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase but it is NOT important during the reflux boiling phase.
- B. In response to a small break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase and during the reflux boiling phase.
- C. In response to a large break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase but it is NOT important during the reflux boiling phase.
- D. In response to a large break LOCA, a secondary heat sink is vital for RCS heat removal during the natural circulation phase and during the reflux boiling phase.

RO Exam Number
79

Record Number
080

QUESTION

A Large Break LOCA (DBA) has occurred approximately 2 minutes ago, which ONE (1) of the following describes the expected conditions of the pumps?

- A. SI and RHR pumps running and injecting into the RCS, ICS pumps OFF
- B. SI pumps running and injecting into the RCS, RHR pumps running, ICS pumps OFF
- C. SI pumps running and injecting into the RCS, RHR and ICS pumps running
- D. SI and RHR pumps running and injecting into the RCS, ICS pumps running

RO Exam Number
80

Record Number
081

QUESTION

The following Plant conditions exist:

- The plant is in cold shutdown (Shutdown for 3 days) with RHR cooling in progress.
- Pressurizer level is 30% with the RCS intact.
- Both S/G WR levels are 65%.
- The RCS is depressurized.
- Buses 1 and 2 are deenergized for maintenance.

RHR flow is lost and CANNOT be restored. Which ONE (1) of the following methods of cooling will be utilized to remove the core decay heat?

- A. Feed S/Gs with AFW and open SG PORV(s) to remove decay heat.
- B. Start a RXCP and open S/G PORV(s) to remove decay heat.
- C. Maximize charging flow to the RCS and use letdown to remove decay heat.
- D. Align an SI pump to inject into the vessel and open a PZR PORV for heat removal.

QUESTION

The following Plant conditions exist:

- The crew is initiating Emergency Boration in response to an ATWS.
- RCS pressure is 2335 psig.
- CVC-11, Charging Line Isolation, has failed CLOSED.

Which of the following actions would maximize negative reactivity and minimize the addition of positive reactivity being added to the RCS?

- A. Place Steam Dump Controller to Manual and open the steam dumps.
- B. Raise AFW flow to 500 gpm and fill all Steam Generators to 5% narrow range level.
- C. Verify Pressurizer PORV Block valve OPEN and VERIFY/OPEN a Pressurizer PORV.
- D. LOWER Charging flows to 40 gpm and RAISE Letdown flow to 80 gpm by placing TWO (2) Letdown Orifices in service.

QUESTION

The following Plant conditions exist:

- Reactor power is 100%
- Reactor Trip Breaker testing is being performed with Reactor Trip Bypass Breaker A (52/BYA) RACKED IN and CLOSED
- BOTH Reactor Trip Breakers (52/RTA and 52/RTB) are CLOSED
- Then the Electrician RACKS IN and CLOSES Reactor Trip Bypass Breaker B (52/BYB)
- Breakers 52/RTB and 52/BYA OPEN

Which of the following describes the response to this condition?

The reactor is...

- A. NOT tripped, and the NCO should manually trip the reactor.
- B. NOT tripped as this is the expected response when 52/BYB was closed.
- C. tripped and the NCO should direct the NAO to locally open both 52/RTB and 52/BYB.
- D. tripped and the NCO should manually trip the reactor as directed by E-0 "Reactor Trip Or Safety Injection".

QUESTION

Which ONE (1) of the following is the expected plant response to a failure of Instrument Bus I, BRA-113, if the reactor is operating at 10E3 cps?

- A. Immediate automatic reactor trip.
- B. NO immediate concern, dispatch electrician to investigate.
- C. A rod stop would occur and by-passing the affected NI channel would be required.
- D. Manual control of affected equipment would be required to prevent a reactor trip.

RO Exam Number
84

Record Number
085

QUESTION

The following Plant conditions exist:

- Plant Startup is in progress.
- Intermediate Range N-35 is OUT-OF-SERVICE.
- Reactor power is at 4%.
- The power supply for the N-36 detector failure occurs reducing detector voltage by 50%.

What Operator action shall be taken?

- A. Maintain present Plant conditions until one of the Intermediate Range Instruments is returned to service.
- B. Shutdown the Reactor per OP N-CRD-49C, "Reactor Shutdown", and maintain HOT SHUTDOWN conditions.
- C. Trip the Reactor and perform IPEOP E-0, "Reactor Trip or Safety Injection".
- D. Continue the Plant Startup and bypass N-36.

RO Exam Number
85

Record Number
086

QUESTION

During which ONE (1) of the following conditions is ES-0.0, "Rediagnosis," approved for use based on operator judgment?

- A. After transition to E-3, "Steam Generator Tube Rupture."
- B. During the performance of ES-0.2, "Natural Recirculation Cooldown," due to loss of offsite power when a twenty (20) gpm Steam Generator tube leak is detected.
- C. During the performance of E-1, "Loss of Reactor or Secondary Coolant," when a RED path is detected in Heat Sink.
- D. After transition to ES-0.1, "Reactor Trip Recovery," following an inadvertent reactor trip.

RO Exam Number
86

Record Number
087

QUESTION

Why is SI-5A/MV-32107, SI Pump A Suction Isolation valve, closed prior to opening RHR-299A/MV-32134, Residual Heat Exchanger Outlet to Safety Injection Pump A valve, during the recirculation phase of a LOCA?

- A. Reduces system pressure to the SI Pump suction header resulting in increased SI flow due to decreased RHR Pump NPSH requirement.
- B. Prevents tripping of the SI pumps on high discharge flow rate resulting from increased SI Pump recirculation flow.
- C. Protects the SI Pump discharge header from overpressurization if the RHR pump was aligned to the RCS hot leg.
- D. Prevents the RHR Pump from recirculating contaminated Sump water directly to the RWST.

Record Number

RO Exam Number
87

088

QUESTION

The plant is at 100% power with following equipment out of service:

- Turbine Drive AFW pump
- Safety Injection pump "A"

A small break LOCA occurs resulting in a reactor trip and safety injection. The crew is using E-0, Reactor Trip or Safety Injection, and the following conditions are noted.

- A bus lockout occurred on bus 6
- Flow from AFW pump "A" is 100 gpm and CANNOT be increased
- S/G NR Level is reading 0% on both S/G
- CNTMT pressure is 8 psig
- CETs are reading 690° F

To which ONE (1) of the following procedures should the crew transition when leaving E-0?

- A. E-1, Loss of Reactor or Secondary Coolant, to mitigate the LOCA.
- B. FR-H.1, Response to Loss of Secondary Heat Sink, to restore the heat sink.
- C. FR-C.2, Response to Degraded Core Cooling, to reestablish core cooling.
- D. ECA-0.0, Loss of All AC Power, to restore power to bus 6.

QUESTION

Following a LOCA the crew is using ECA-1.1, Loss of Emergency Coolant Recirculation, because both trains of recirculation have become unavailable. Safety Injection Pump B was stopped as required by the procedure. The crew is now evaluating the plant conditions to determine if SI flow can be terminated.

- The requirement to terminate SI is 80° F subcooling.
- The current subcooling is 68° F.

What action, if any, should be taken in response to this information?

- A. NO action should be taken until subcooling increases to 80° F at which point Safety Injection Pump A should be stopped.
- B. Locally throttle SI-7A, SI Pump Discharge Isolation Valve, to the flow rate determined to be adequate by using the table ECA-1.1-1, Required SI Flow Rate vs. Time After Trip.
- C. Manually shut SI-9A, SI to RCS Cold Legs until subcooling drops to 30° F then reopen SI-9A.
- D. Manually restart Safety Injection Pump B.

QUESTION

The following Plant conditions exist:

A LOCA has occurred

- The crew is performing cooldown as directed by ES-1.2 " Post LOCA Cooldown And Depressurization"
- ECCS Pumps are still operating in injection phase
- The ICS system has been stopped
- TWO Containment Cooling Fan Coil Units are running
- Containment pressure is stable at 2.2 psig
- The CRS transitions to FR-Z.3 "Response to High Containment Radiation Level" in response to a YELLOW path condition

What action does the CRS direct in FR-Z.3 in order to reduce Containment radiation levels?

- A. The idle Containment Cooling Fan Coil Units are started.
- B. A RHR Pump is started and aligned to supply the associated ICS header.
- C. An ICS Pump is started and its associated discharge isolation valves are opened.
- D. ONE train of venting and filtering Containment atmosphere through Shield Building Vent is initiated.

QUESTION

The Unit is at 100% with all systems in a normal at power lineup when IA-101, Instrument Air to Containment Isolation, is inadvertently CLOSED and NOT RE-OPENED. A small air leak exists in the air header. If air pressure is NOT restored to Containment, which of the following will cause a Reactor Trip? (Assume NO Operator Action)

- A. High pressurizer level caused by Letdown isolation
- B. Low S/G level caused by S/G Main Feed Reg. Valves closure
- C. Low Pressurizer pressure caused by PRZR PORVs opening
- D. Main Steam Isolation Valves coming off the open seat ($>4^\circ$.)

QUESTION

While executing bleed and feed steps of FR-H.1, the following plant conditions exist:

- S/G A is faulted with NO indicated level on Wide Range Yarway
- S/G B is intact and its Wide Range Yarway reads 7%
- RCS hot leg temperatures are currently 563° F in both loops and decreasing
- Turbine Driven AFW pump was just made available

Which ONE (1) of the following would be the correct actions to take to establish a secondary heat sink?

- A. Feed S/G A at less than 100 gpm concurrent with feed and bleed until RCS hot leg temperatures are less than 550° F, and then establish feed to S/G B at less than 100 gpm.
- B. Stop the bleed and feed, feed S/G B at less than 100 gpm until RCS hot leg temperatures are less than 550° F and then feed S/G B at maximum rate.
- C. Maintain bleed and feed until RCS hot leg temperatures are less than 550° F and then feed S/G B at maximum rate.
- D. Maintain bleed and feed and establish Feedwater flow to S/G B, then stop bleed and feed when S/G B narrow range level is greater than 4%.

RO Exam Number
92

Record Number
093

QUESTION

Which of the following would require the operator to MANUALLY initiate Containment Evacuation Alarm?

- A. N-31 counts increasing by one decade during core alterations.
- B. R-30, Rx Cavity C, in alarm.
- C. R-21, Containment Vent, failing HIGH.
- D. Loss of Refueling Cavity level control.

RO Exam Number
93

Record Number
101

QUESTION

You are currently in ECA-0.0 "Loss of All AC Power".

The battery would be considered completely discharged when it reaches which ONE (1) on the following?

- A. Battery bus voltage of 90 volts DC.
- B. Battery bus voltage of 100 volts DC.
- C. Battery bus voltage of 105 volts DC.
- D. Battery bus voltage of 110 volts DC.

QUESTION

There has been a major Service Water break in the Containment which has been secured but left two (2) feet of water as indicated by the Containment Wide Range Level Indicators on the Containment floor. Why would this existing water level be a concern?

- A. In the event of a steam line break and a LOCA in the Containment the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design flood level of the Containment thus possibly causing the loss of equipment needed during the accident.
- B. In the event of a Feedwater Line Break in the Containment the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design flood level of the Containment thus causing a higher than design peak Containment pressure during an accident.
- C. In the event of a steam line break in the Containment and associated Steam Generator tube rupture the resulting water level from all the possible sources used to mitigate the accident could exceed the maximum design level of the Containment thus causing a higher than design peak Containment pressure during an accident.
- D. The additional water is of NO concern because the water in Containment Sump B can be pump out with the RHR Pumps.

QUESTION

Which ONE (1) of the following correctly identifies the MCCs that supply power to the heaters in Boric Acid Storage Tanks (BAST) A and B?

- A. MCC 52A supplies the heaters in BAST A, MCC 62D supplies the heaters in BAST B.
- B. MCC 52B supplies the heaters in BAST A, MCC 62E supplies the heaters in BAST B.
- C. Both MCCs 52A and 62D supply heaters in BAST A and in BAST B.
- D. Both MCCs 52B and 62E supply heaters in BAST A and in BAST B.

RO Exam Number
96

Record Number
104

QUESTION

The plant is operating at 100% power with all systems in their normal lineup. A fire occurs in the vicinity of the BA Evaporator Control panel, which results in a loss of MCC 52E. The fire is quickly extinguished.

Which ONE (1) of the following explains an operational impact of this information?

- A. If Emergency Boration was required, the Immediate Actions could NOT be accomplished.
- B. If Main Feedwater Isolation was required, it would NOT occur automatically.
- C. PR-1A Pressurizer PORV Block valve could NOT be used to isolate a leaking PORV.
- D. If an SI occurs, the suction from the RWST to Safety Injection Pump A would be lost.

RO Exam Number
97

Record Number
105

QUESTION

The plant is operating at 100% power with all systems in their normal lineup. Which ONE (1) of the following could cause a reactor trip and Safety Injection actuation? Assume NO operator action.

- A. TE-401, Reactor Coolant Tave (Red Channel), fails LOW.
- B. PT-431, Pressurizer Pressure (Blue Channel), fails HIGH.
- C. TRIP of both Main Feed Pumps.
- D. Main Generator TRIP.

QUESTION

The reactor has been recently started up following a refueling outage. Which ONE (1) of the following power range indications should be expected during the power escalation?

- A. Indicated power will be higher than actual power if fouling on Main Turbine blades had been reduced during the outage.
- B. Actual power will be higher than indicated power because of the gain adjustments that would have been made prior to the refueling outage.
- C. Indicated power will be higher than actual power because of the closer coupling between the core and the power range detectors following the refueling outage.
- D. Actual power will be higher than indicated power because of the boron depletion that will have occurred during the refueling outage.

QUESTION

Which ONE (1) of the following radiation monitoring functions would be lost if R-40 and R-41 were out of service when a Loss of Reactor Coolant occurred in Containment?

- A. It would NOT be possible to use radiation monitors to detect fuel damage.
- B. It would NOT be possible to use radiation monitors to determine whether the RCS is intact inside Containment.
- C. RCS leak rate could NOT be calculated using the radiation monitoring method prescribed in Technical Specifications.
- D. It would NOT be possible to determine if the RCS pressure instruments had been adversely affected by Containment radiation.

QUESTION

Inoperability of which ONE (1) of the following instruments would require the reactor to be shut down based on NOT having adequate Accident Monitoring Instrumentation available?

- A. SG PORV valve position
- B. SI flow meter
- C. Source Range N-31 Indication
- D. Containment Hydrogen Monitor