

Southern Nuclear Operating Company

NL-24-0226

Enclosure 5

Vogtle Electric Generating Plant (VEGP) Units 3 and 4

V34 ILT-6 SRO Test (Non-Proprietary)

(This enclosure consists of 114 pages including this cover page)

EXAMINATION

ILT6 NRC Written (SRO)

1

ID: 13381

Points: 1.00

Given:

- A large break LOCA has occurred

At time 1000:00

- E-0 (Reactor Trip or Safeguards Actuation) Step 2, "Check Reactor Trip," is in progress
- IRNI instruments indicate 4% and slowly lowering

Which of the following completes the statements below?

Based on the conditions at **1000:00**, FR-S.1 (Response to Nuclear Power Generation - ATWS) ___(1)___ required to be entered.

In accordance with E-0, a significantly voided Reactor core may cause IRNI fluctuations which ___(2)___ an indication of the Reactor failing to shutdown.

	(1)	(2)
A.	is	is
B.	is	is NOT
C.	is NOT	is
D.	is NOT	is NOT

EXAMINATION

ILT6 NRC Written (SRO)

2

ID: 13382

Points: 1.00

Given:

- The crew has transitioned from E-0 (Reactor Trip or Safeguards Actuation) to ES-0.1 (Reactor Trip Response)
- RCS Tavg is 560°F

At time 1000:00

- PZR NR level is 25% and lowering 0.8% per minute

At time 1003:00

- Automatic CVS Makeup is in progress

At time 1005:00

- PZR NR level is 20% and lowering 0.5% per minute

At time 1015:00

- PZR NR level is 15% and lowering 0.5% per minute

At time 1025:00

- PZR NR level is 10% and lowering 0.5% per minute

In accordance with ES-0.1 and NMP-AP-005-004, which of the following choices below identifies the EARLIEST time a MANUAL Safeguards actuation is required?

NOTE:

NMP-AP-005-004 (Transient Response Procedure User's Guide)

- A. 1000:00
- B. 1005:00
- C. 1015:00
- D. 1025:00

EXAMINATION

ILT6 NRC Written (SRO)

3

ID: 13388

Points: 1.00

Given:

- ADS Stage 1-3 Actuation is actuated from the PDSP
- ES-1.3 (ADS Stage 1-3 Actuation Response) Step 9, "Check If 4th Stage ADS Should Be Actuated," is in progress

At time 1000:00

- RCS WR Pressure is 1100 psig and slowly lowering at a constant rate
- Containment pressure is 5 psig and slowly rising at a constant rate
- Hot leg level is 22% and steady
- **BOTH** CMTs are operating
- CMT A Lower NR level is 55%
- CMT B Lower NR level is 72%

At **1000:00**, in accordance with ES-1.3, which of the following completes the statements below?

RCS-V241 (ADS Disch Drain AOV) is ___(1)___.

4th Stage ADS Actuation ___(2)___ required.

- | | (1) | (2) |
|----|--------|---------------|
| A. | open | is |
| B. | open | is NOT |
| C. | closed | is |
| D. | closed | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

4

ID: 13389

Points: 1.00

Given:

- A LOCA has occurred on DVI Line A
- ADS Stage 4 actuation has occurred
- ES-1.4 (ADS Stage 4 Actuation Response) Step 26, "Check Cask Loading Pit Available For Injection" is in progress

If the Cask Loading Pit (CLP) is available as an injection source to the RCS, which of the following completes the statements below?

ES-1.4 directs the crew to align ___(1)___ pumps to inject CLP inventory.

Based on the given location of the LOCA, forced injection of CLP inventory ___(2)___ occur before IRWST injection.

	(1)	(2)
A.	SFS	will
B.	SFS	will NOT
C.	RNS	will
D.	RNS	will NOT

EXAMINATION

ILT6 NRC Written (SRO)

5

ID: 13390

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- A loss of PMS Division A occurs
- AOP-402 (Malfunction of PMS) is entered

At time 1005:00

- A loss of PMS Division B occurs

At time 1010:00

- A loss of PMS Division C occurs

At time 1015:00

- A loss of PMS Division D occurs

In accordance with AOP-402, which of the following completes the statement below?

Of the given indicated times below, _____ is the EARLIEST time conditions are met that require performance of AOP-402 Attachment 2.

Note:

AOP-402 Attachment 2 (Plant Operation from MCR DAS Panel)

- A. 1000:00
- B. 1005:00
- C. 1010:00
- D. 1015:00

EXAMINATION

ILT6 NRC Written (SRO)

6

ID: 13391

Points: 1.00

Given:

- The Unit is at 7% Reactor Power
- AOP-114 (RCP Malfunctions), Step 10 "Check RCP Heat Exchangers - INTACT:" is being performed

At time 1000:00

- RCP 1A Return AOV (CCS-V256A) is open
- The crew has determined CCS-V256A must be closed
- RCP 1A Bearing Water Temp is 148°F and slowly rising

In accordance with AOP-114, which of the following completes the statements below?

The Reactor is required to be tripped ___(1)___ CCS-V256A is closed.

After the Reactor is tripped, ___(2)___ is (are) required to be tripped.

(1)

(2)

- | | | |
|----|--------|--------------------|
| A. | before | ALL RCPs |
| B. | before | ONLY RCP 1A |
| C. | after | ALL RCPs |
| D. | after | ONLY RCP 1A |

EXAMINATION

ILT6 NRC Written (SRO)

7

ID: 14489

Points: 1.00

Given:

- The Unit is at 75% Reactor Power
- It has been 200 days since 3R1

At time 1000:00

- PRHR HX Inlet Temp (PXS-TE063) is slowly rising

Which of the following completes the statement below?

A diverse indication that can be used to identify 100 gpm leakage past the valve seat of the PRHR Hx Outlet FCV (PXS-V108A) is _____.

- A. the Reactor will automatically trip
- B. RCS boron concentration will lower
- C. indicated PRHR HX Flow (PXS-FT049A) will rise
- D. indicated PRHR Return Temp (RCS-TE161) will rise

EXAMINATION

ILT6 NRC Written (SRO)

8

ID: 14490

Points: 1.00

Given:

- **BOTH** Trains of RNS are cooling the RCS

At time 1000:00

- AOP-115 (Loss of Normal Residual Heat Removal), Step 3 "Check RNS Pumps **NOT** Cavitating:" is being performed
- RNS flow is fluctuating
- RNS Pump A discharge pressure and current are erratic

In accordance with AOP-115, which of the following completes the statement below?

Of the four choices below, at **1000:00**, the **FIRST** required action is to _____.

- A. dispatch an operator to locally verify potential cavitation of RNS Pumps
- B. reduce total RNS flow rate
- C. stop RNS Pump A **ONLY**
- D. stop **BOTH** RNS Pumps

EXAMINATION

ILT6 NRC Written (SRO)

9

ID: 14491

Points: 1.00

Given:

- **ONLY** CCS Pump A is running

Based on the provided trend of CCS Surge Tank level, which of the following completes the statements below?

CCS Pump A will **FIRST** receive an automatic surge tank low level trip signal at time ____ (1) ____.

In accordance with AOP-702 (Loss of Component Cooling Water), after the automatic trip of CCS Pump A, the crew ____ (2) ____ required to place CCS Pump B in STOP/LOCK.

Note:

REFERENCES PROVIDED

	(1)	(2)
A.	1009:20	is NOT
B.	1009:20	is
C.	1009:40	is NOT
D.	1009:40	is

EXAMINATION

ILT6 NRC Written (SRO)

10

ID: 14492

Points: 1.00

Given:

- Safeguards has been actuated because of a 110 gpm leak on SG 1

At time 1000:00

- E-3 (Steam Generator Tube Rupture) Step 22, "Establish Maximum CVS Makeup" is in progress
- **BOTH** CVS Makeup Pumps are running

At time 1010:00

- CVS-V157 (Makeup FCV) can **NOT** be operated in AUTO
- PZR NR level is 12% and rising slowly at a constant rate

In accordance with E-3, which of the following completes the statements below?

At **1000:00**, the CVS-RMCS Makeup Flow SP is required to be set to (1) gpm.

At **1010:00**, CVS-V157 must be manually operated to prevent PZR NR level exceeding the **MAXIMUM** allowable level of (2) %.

	(1)	(2)
A.	135	15
B.	135	47
C.	175	15
D.	175	47

EXAMINATION

ILT6 NRC Written (SRO)

11

ID: 14493

Points: 1.00

Given:

- The Unit is in MODE 3 because SG 2 is faulted inside Containment
- E-0 (Reactor Trip or Safeguards Actuation) is being performed

At time 1000:00

- The crew transitions from E-0 to E-1 (Loss of Reactor or Secondary Coolant)

At time 1005:00

- E-1 Step 2, "Check SG Tubes Intact" is in progress

At **1006:00**, in accordance with E-1, which of the following completes the statements below?

___(1)___ rad levels on SGS-RY027B-CALC (SG 2 MSL N16 Leakage Detector) are used to evaluate if SG 2 tubes are intact.

IF SG 2 becomes ruptured, steps to minimize the spread of contamination throughout the secondary system ___(2)___ provided in E-1.

	(1)	(2)
A.	Post-trip	are
B.	Post-trip	are NOT
C.	Pre-trip	are
D.	Pre-trip	are NOT

EXAMINATION

ILT6 NRC Written (SRO)

12

ID: 14494

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- Load Dispatch directs the Unit to be taken offline within the next hour
- AOP-101 (Rapid Power Reduction) is being performed

At time 1050:00

- Turbine power is 150 MWe

At time 1100:00

- AOP-101 Step 26, "Determine Main Turbine Status" is in progress
- Turbine trip is actuated from the PDSP
- MTS-V001A (Main Stop 1) and MTS-V002A (Control 1) will **NOT** close

At **1101:00**, in accordance with AOP-101, which of the following completes the statements below?

Main Steamline Isolation ___(1)___ required to be actuated.

SG PORV setpoints are required to be adjusted to ___(2)___ psig.

- | | (1) | (2) |
|----|---------------|------|
| A. | is | 1085 |
| B. | is | 1160 |
| C. | is NOT | 1085 |
| D. | is NOT | 1160 |

EXAMINATION

ILT6 NRC Written (SRO)

13

ID: 14495

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- Hostile Forces have taken control of the MCR
- PLS Controls can **NOT** be established in the RSR

At time 1015:00

- AOP-602 (DAS Operations at Local Cabinets) Step 8.b "At least one SG WR LEVEL CH on each SG - LESS THAN 95%:" is **NOT** met

At time 1025:00

- ADS Stage 1 is actuated using AOP-602 Attachment 2 (Actuate ADS 1-3 From Switchgear)

At **1025:00**, which of the following completes the statement below?

In accordance with AOP-602 Attachment 2, ADS Stage 2 will be locally actuated with _____.

- A. no delay
- B. a 25 second delay
- C. a 60 second delay
- D. a 198 second delay

EXAMINATION

ILT6 NRC Written (SRO)

14

ID: 14496

Points: 1.00

Given:

- **BOTH** trains of RNS are aligned for RCS cooling

At time 1000:00

- FR-C.1 (Response to Inadequate Core Cooling) Step 26, "Control Intact SG Levels" is being performed
- PRHR is **NOT** available
- Containment pressure is 6.1 psig
- **BOTH** SG pressures are GREATER than 110 psig and rising
- SG 1 NR level is 30% and stable
- SG 2 NR level is 19% and rising slowly
- TOTAL feed flow to **BOTH** SG 1 and SG 2 is 440 gpm

Which of the following completes the statements below?

At **1001:00**, in accordance with FR-C.1 Step 27, "Depressurize All Intact SGs to 110 PSIG", conditions are met to depressurize ___(1)___.

In accordance with FR-C.1, immediately following SG depressurization to less than 110 psig, ___(2)___ will be isolated.

(1)

(2)

- | | | |
|----|-------------------------------|--------------|
| A. | BOTH Steam Generators | accumulators |
| B. | BOTH Steam Generators | RNS pumps |
| C. | ONLY Steam Generator 1 | accumulators |
| D. | ONLY Steam Generator 1 | RNS pumps |

EXAMINATION

ILT6 NRC Written (SRO)

15

ID: 14497

Points: 1.00

Given:

- **ONLY** SG 1 is faulted inside Containment
- Containment pressure is 14.5 psig and stable

At time 1000:00

- ES-1.1 (Safeguards Termination) Step 13, "Start SFW Pump(s)" is in progress
- SGS-V255A (SG 1 SFCV) is closed
- SGS-V255B (SG 2 SFCV) is closed

At time 1010:00

- ES-1.1 Step 15, "Control Intact SG Levels" is in progress
- The following SG parameters are observed:

	Press	NR WL	WR WL
SG 1	360 psig	3%	40%
SG 2	860 psig	6%	65%

Which of the following completes the statements below?

At **1000:00**, Startup Feedwater Isolation will be RESET from ___(1)___ soft controls.

At **1010:00**, in accordance with ES-1.1 Step 15, SG 2 NR level is required to be adjusted to a MINIMUM of ___(2)___.

(1)

(2)

- | | | |
|----|------------------------------|-----|
| A. | Division A and C ONLY | 29% |
| B. | Division A and C ONLY | 49% |
| C. | Division B and D ONLY | 29% |
| D. | Division B and D ONLY | 49% |

EXAMINATION

ILT6 NRC Written (SRO)

16

ID: 14498

Points: 1.00

Given:

- The Unit is at 50% Reactor Power
- **ONLY** SWS Train A is in service

At time 1000:00

- SWS Pump A trips and can **NOT** be started
- SWS Pump A Disch Pressure - Low alarm comes in
- SWS Pump A Disch Flow - Low alarm comes in

Which of the following completes the statements below?

The SWS Pump A Disch ___(1)___ alarm will **DIRECTLY** generate an automatic start signal for SWS Pump B.

In accordance with AOP-704, if SWS Pump B can **NOT** be started, Reactor trip actuation ___(2)___ required.

NOTE:

AOP-704 (Loss of Service Water)

- | | (1) | (2) |
|----|----------|---------------|
| A. | Flow | is |
| B. | Flow | is NOT |
| C. | Pressure | is |
| D. | Pressure | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

17

ID: 14499

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- Instrument Air (IA) header pressure is 100 psig and lowering slowly at a constant rate
- AOP-703 (Loss of Instrument Air) Step 2 "Check PRHR and CMT Valves" is being performed
- PXS-V015A (CMT Outlet AOV) is open
- PXS-V015B (CMT Outlet AOV) is closed

At **1001:00**, which of the following completes the statements below?

In accordance with AOP-703, the crew is **FIRST** required to _____.

- A. close PXS-V015A
- B. close PXS-V002A (CMT Inlet MOV)
- C. trip the Reactor **AND** actuate Safeguards
- D. start one Service Air Compressor Package **AND** align to supply Instrument Air

EXAMINATION

ILT6 NRC Written (SRO)

18

ID: 14500

Points: 1.00

Given:

- RCS T_{AVG} is 120°F
- RNS Train A is aligned for shutdown cooling
- RNS Train B is **NOT** available
- Core offload is in progress

At time 1000:00

- RNS Pump A trips and can **NOT** be started

At time 1030:00

- SDP-2, Step 27 "Check Reactor Vessel Head - LOCATED ON REACTOR VESSEL FLANGE" is in progress

At time 1100:00

- SDP-2, Step 33 "Close IRWST Gutter Isol Valves" is in progress
- IRWST Gutter Isol (PXS-V130A) is open
- IRWST Gutter Isol (PXS-V130B) is closed

In accordance with SDP-2, which of the following completes the statements below?

At 1030:00, FHS-V001 (Fuel Xfr Tube Gate Valve) is required to ___(1)___.

At 1100:00, PRHR ___(2)___ required to be placed in service.

Note:

SDP-2 (Response to Loss of RNS During Shutdown)

- | | (1) | (2) |
|----|-------------|---------------|
| A. | remain open | is |
| B. | remain open | is NOT |
| C. | be closed | is |
| D. | be closed | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

19

ID: 14501

Points: 1.00

Given:

- The Unit is at 4% Reactor Power in Low Power Rod Control

At time 1000:00

- The crew is performing AOP-104 Attachment 1 (Rod Control System Malfunction) due to unexpected outward rod motion
- Rod control is placed in manual
- Rod motion has stopped

At **1000:00**, in accordance with AOP-104, which of the following completes the statements below?

The crew is required to trip the reactor if ___(1)___.

If the reactor is tripped, group bank demand position ___(2)___ automatically reset.

(1)

(2)

- | | | |
|----|--|-----------------|
| A. | an Urgent Rod Control alarm occurs | will |
| B. | an Urgent Rod Control alarm occurs | will NOT |
| C. | any control rod is misaligned by more than 12 steps from bank demand | will |
| D. | any control rod is misaligned by more than 12 steps from bank demand | will NOT |

EXAMINATION

ILT6 NRC Written (SRO)

20

ID: 14502

Points: 1.00

Given:

- Generator Power is at 100%

At time 1000:00

- FW Htr 1B Shell Lvl Median (HDS-LT020B-MED-FW Htr 1B Shell Lvl Median-HIGH2) alarm is in

At **1002:00**, which of the following completes the statements below?

With no operator actions, FW Htrs 1/2 Bypass MOV (CDS-V014) is ___(1)___.

In accordance with AOP-206 (Malfunction of Feedwater Heaters and Extraction Steam), Generator Power is required to be reduced to less than a **MAXIMUM** of ___(2)___%.

	(1)	(2)
A.	open	90
B.	open	70
C.	closed	90
D.	closed	70

EXAMINATION

ILT6 NRC Written (SRO)

21

ID: 14503

Points: 1.00

Given:

- The Unit is at 100% Reactor power
- The crew observes indications of a SG Tube Leak

At time 1000:00:

- The Turbine is tripped
- The crew is performing AOP-103 (Steam Generator Tube Leak) Step 14, "Minimize Hotwell Makeup and Reject" and observes the following:

a,c

In accordance with AOP-103, which of the following completes the statements below?

At **1000:00**, based on the observed CDS valve positions, the controller for CDS-V055/V060 is required to be placed in MANUAL at ___(1)___% Output value (OV).

IF CDS-V055 can **NOT** be closed after being placed in MANUAL, the crew ___(2)___ required to locally isolate and vent air to CDS-V055.

Note:

REFERENCES PROVIDED

CDS-V055 (Hotwell Normal Reject LCV)

CDS-V060 (Hotwell Normal Makeup LCV)

	(1)	(2)
A.	0	is
B.	0	is NOT
C.	50	is
D.	50	is NOT

EXAMINATION

ILT6 NRC Written (SRO)

22

ID: 14504

Points: 1.00

Given:

- Control has been transferred to the RSR
- The Unit is in MODE 3
- Safeguards Actuation is OFF
- The crew is performing AOP-601 (Evacuation of Control Room)

In accordance with AOP-601, which of the following completes the statement below?

Safeguards is required to be manually actuated if _____.

- A. Aux Spray AOV (CVS-V084) can **NOT** be used to control RCS pressure
- B. Steam Dumps are **NOT** available to dump steam
- C. RCPs must be tripped while performing AOP-601
- D. CVS can **NOT** be used to borate the RCS

EXAMINATION

ILT6 NRC Written (SRO)

23

ID: 14505

Points: 1.00

Given:

- The Unit is at 80% Reactor Power

At time 1000:00

- FWS-V037 (MFW High Lvl Dump/DST Recirc FCV) is seized open
- DST level is 57.0 inches and lowering 2 inches per minute at a constant rate

Which of the following completes the statements below?

At **1000:00**, entry conditions for AOP-202 (Condensate System Malfunctions) ___(1)___ met.

At **1005:00**, **with no operator action**, an AUTOMATIC turbine runback ___(2)___ occurred.

- | | (1) | (2) |
|----|----------------|----------------|
| A. | are | has |
| B. | are | has NOT |
| C. | are NOT | has |
| D. | are NOT | has NOT |

EXAMINATION

ILT6 NRC Written (SRO)

24

ID: 14506

Points: 1.00

Given:

- ES-1.2 (Post LOCA Cooldown and Depressurization) Step 14, "Check If Accumulators Should Be Isolated," is in progress

At time 1000:00

- CTMT pressure is 12 psig and steady
- RCS Pressure is 350 psig and lowering
- Loop 1 RCS Hot Leg temperature is 344 °F and slowly lowering
- Loop 2 RCS Hot Leg temperature is 360 °F and slowly lowering
- NR Pressurizer Level is 7% and slowly lowering
- Subcooling is 70 °F
- PXS-V027A/B (Accumulator Disch MOVs) are **BOTH** open

In accordance with ES-1.2, which of the following completes the statements below?

Based on indications at **1000:00**, accumulators ___(1)___ required to be isolated.

When required, accumulators ___(2)___ isolated to prevent the injection of nitrogen into the RCS.

- | | (1) | (2) |
|----|----------------|----------------|
| A. | are | are |
| B. | are | are NOT |
| C. | are NOT | are |
| D. | are NOT | are NOT |

EXAMINATION

ILT6 NRC Written (SRO)

25

ID: 14507

Points: 1.00

Given:

- The Unit is at 90% Reactor Power

At time 1000:00

- **BOTH** PRHR HX outlet FCV (PXS-V108A/B) indicate magenta on WPIS #5 Screen 60030 (Safety Functions MODE 1/2)
- The Crew enters AOP-401 (Malfunction of DDS)

At time 1005:00

- AOP-401 Step 7, "Check DDS Operating Normally" is in progress

Which of the following completes the statement below?

In accordance with AOP-401 and NMP-AP-005-004, the crew is required to ensure the valves are in the correct position by verifying _____.

Note:

NMP-AP-005-004 (Transient Response Procedure User's Guide)

- A. the Output Value (OV) on Ovation
- B. the Output Value (OV) on each PLS controller
- C. their actual position on Screen 12703 (PXS IRWST)
- D. their actual position on the PMS Component Status Screen

EXAMINATION

ILT6 NRC Written (SRO)

26

ID: 14508

Points: 1.00

Given:

- A 35 gpm leak develops on CVS piping between the outlet of the Letdown Heat Exchanger (CVS-ME-02) and the Demin Bypass AOV (CVS-V062)
- AOP-112 Attachment 1 (CVS Leakage Determination) is being performed

At time 1000:00

- CVS Purification has been isolated
- AOP-112 Attachment 1 Step 6 is being evaluated:

a,c

Which of the following completes the statements below?

This leak will FIRST be indicated by radiation detectors that monitor the ___(1)___ building.

At **1000:00**, AOP-112 Attachment 1 Step 6 ___(2)___ met.

NOTE:

REFERENCES PROVIDED

AOP-112 (Reactor Coolant Leak)

	(1)	(2)
A.	Auxiliary	is
B.	Auxiliary	is NOT
C.	Containment	is
D.	Containment	is NOT

EXAMINATION

ILT6 NRC Written (SRO)

27

ID: 5911

Points: 1.00

Given:

- The Unit is in MODE 5

At time 1000:00

- The crew is performing a controlled RCS draindown
- PZR NR level is 14%

At time 1010:00

- RCS Hot Leg level is 75% and lowering at 2% per minute
- Assume a constant rate of change for Hot Leg level

Which of the following completes the statements below?

At **1000:00**, P-12 is ___(1)___.

At **1020:00**, a CVS Letdown Isolation signal ___(2)___ been generated.

- | | (1) | (2) |
|----|-----|----------------|
| A. | ON | has |
| B. | ON | has NOT |
| C. | OFF | has |
| D. | OFF | has NOT |

EXAMINATION

ILT6 NRC Written (SRO)

28

ID: 14510

Points: 1.00

Given:

- The Unit was at 100% Reactor Power

At time 1000:00

- The crew is performing E-0 Step 23 "Implement 3-EOP-F-0 Critical Safety Function Status Trees"
- Plant Conditions are as follows:

a,c

At time 1005:00

- Based on the conditions at **1000:00**, the crew has made the **FIRST** transition out of E-0

Which of the following completes the statements below?

At **1000:00**, SG 1 ___(1)___ ruptured.

At **1010:00**, feed flow ___(2)___ required to be established to SG 1.

Note:

E-0 (Reactor Trip or Safeguards Actuation)

	(1)	(2)
A.	is	is
B.	is	is NOT
C.	is NOT	is
D.	is NOT	is NOT

EXAMINATION

ILT6 NRC Written (SRO)

29

ID: 14511

Points: 1.00

Given:

- Disch Hdr CIV MOV (RNS-V011) is seized closed
- IRWST requires cooling

Which of the following completes the statements below?

RNS ___(1)___ be used to cool the IRWST.

If needed, Disch Hdr Test Connection (RNS-V012) ___(2)___ be used for long-term post-accident makeup to Containment.

- | | (1) | (2) |
|----|----------------|----------------|
| A. | can | can |
| B. | can | can NOT |
| C. | can NOT | can |
| D. | can NOT | can NOT |

EXAMINATION

ILT6 NRC Written (SRO)

30

ID: 14512

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- Spurious automatic PRHR HX Actuation occurs

Which of the following completes the statements below?

At **1001:00**, P-3 is ___(1)___.

At **1010:00**, RCP 1A is ___(2)___.

	(1)	(2)
A.	ON	running
B.	ON	NOT running
C.	OFF	running
D.	OFF	NOT running

EXAMINATION

ILT6 NRC Written (SRO)

31

ID: 14513

Points: 1.00

Which of the following completes the statement below?

Accumulator B Disch MOV (PXS-V027B) is powered from _____.

- A. ECS-EC-132
- B. ECS-EC-232
- C. IDSA-DK-1
- D. IDSB-DK-1

EXAMINATION

ILT6 NRC Written (SRO)

32

ID: 14514

Points: 1.00

Which of the following completes the statement below?

In accordance with LCO 3.5.2 (CMTs - Operating), SR 3.5.2.4 requires the LOWEST allowed boron concentration in each CMT is _____ ppm.

- A. 3900
- B. 3400
- C. 2900
- D. 2600

EXAMINATION

ILT6 NRC Written (SRO)

33

ID: 15854

Points: 1.00

Given:

- **ONLY** SWS Train A is in service
- SWS blowdown is aligned to CWS
- The crew observes the following:

a,c

Which of the following completes the statements below?

SWS blowdown temperature is approximately ___(1)___.

Service Water BD FCV (SWS-V011) ___(2)___ automatically closed.

Note:

REFERENCES PROVIDED

SWS-TE005A (CCS HX A Inlet Temp)

SWS-TE007A (CCS HX A Outlet Temp)

	(1)	(2)
A.	70 °F	has
B.	70 °F	has NOT
C.	85 °F	has
D.	85 °F	has NOT

EXAMINATION

ILT6 NRC Written (SRO)

34

ID: 14517

Points: 1.00

Given:

- The Unit is in MODE 5
- **BOTH** trains of RNS are aligned for RCS cooling
- The RCS is in a water-solid condition
- RCPs are running at 50% speed

At time 1000:00

- Saturation conditions exist to draw a bubble in the Pressurizer
- RCS-PT140A-MED (RCS Wide Range Pressure) is 370 psig

At **1000:00**, which of the following completes the statements below?

RCS-TE186 (Pzr Vapor Temp) is reading ___(1)___ 430°F.

In accordance with RCS-SOP-001 (Reactor Coolant System), the temperature difference between Pressurizer temperature and hot leg temperature should be less than a MAXIMUM of ___(2)___ °F.

	(1)	(2)
A.	BELOW	100
B.	BELOW	320
C.	ABOVE	100
D.	ABOVE	320

EXAMINATION

ILT6 NRC Written (SRO)

35

ID: 15855

Points: 1.00

Given:

- The Unit is at 100% Reactor Power
- **ALL** Pressurizer Heaters are energized
- CL 1A/1B Pzr Spray FCVs (RCS-V110A/B) are **BOTH** 7% open and are operating as expected

At time 1000:00

- RCS-V110A has failed to 25% open and can **NOT** be operated in MANUAL
- The crew observes the following:

a,c

Which of the following completes the statements below?

Of the times listed below, LCO 3.4.1 (RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits) is **FIRST NOT** met at ___(1)___.

To prevent an automatic Reactor trip, operator action ___(2)___ required to isolate the CL 1A spray flowpath.

	(1)	(2)
A.	1020:00	is NOT
B.	1020:00	is
C.	1025:00	is NOT
D.	1025:00	is

EXAMINATION

ILT6 NRC Written (SRO)

36

ID: 14518

Points: 1.00

Given:

- Safeguards Actuation has occurred

At time 1000:00

- IRWST Lower NR Level indicates 27% and lowering at a constant rate of 0.5% per minute

If automatic ADS Stage 4 actuation is generated by PMS **at 1003:00** and IRWST level is still lowering, which of the following valves will FIRST reposition from closed to open?

- A. IRWST Inj Line A Squib Valve (PXS-V123A)
- B. Ctmt Recirc A Squib Valve (PXS-V120A)
- C. IRWST Inj Line A MOV (PXS-V121A)
- D. Ctmt Recirc A MOV (PXS-V117A)

EXAMINATION

ILT6 NRC Written (SRO)

37

ID: 15971

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- Power is lost to IDSC-EA-3

Which of the following completes the statements below?

AOP-402 (Malfunction of PMS) entry conditions ___(1)___ met.

___(2)___ of the Reactor Trip Breakers are open.

(1)

(2)

- | | | |
|----|----------------|-----------------|
| A. | are | ONLY one |
| B. | are | Two |
| C. | are NOT | ONLY one |
| D. | are NOT | Two |

EXAMINATION

ILT6 NRC Written (SRO)

38

ID: 14520

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- **BOTH** Reactor Trip Breakers (RTB) A01 and B01 spuriously open

At time 1001:00

- **BOTH** Reactor Trip Breakers (RTB) A02 and C02 spuriously open

Which of the following completes the statements below?

At **1000:00**, P-3 is ___(1)___.

At **1005:00**, P-4 is ___(2)___.

	(1)	(2)
A.	ON	ON
B.	ON	OFF
C.	OFF	ON
D.	OFF	OFF

EXAMINATION

ILT6 NRC Written (SRO)

39

ID: 14521

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- SG 2 PORV (SGS-V233B) partially opens
- Reactor Power is 100.8% and slowly rising
- Control Rods are withdrawing
- The crew is implementing AOP-201 (Uncontrolled Cooldown)
- The crew turns **ONLY** one SG Relief Isolation handswitch (PMS-HS201) to ACTUATE

In accordance with AOP-201, which of the following completes the statement below?

At **1003:00**, SGS-V233B ___(1)___ received a signal to close.

If the signal was generated, to reset PMS signal on SG 2 PORV Block CIV MOV (SGS-V027B), an operator is required to reset the isolation signals using PMS ___(2)___.

- | | | |
|----|----------------|---------------|
| A. | has | switches |
| B. | has | soft controls |
| C. | has NOT | switches |
| D. | has NOT | soft controls |

EXAMINATION

ILT6 NRC Written (SRO)

40

ID: 14522

Points: 1.00

Given:

- The crew is performing DAS-SOP-001 (Diverse Actuation System), Attachment 1 (Place DAS in Service)
- The OATC is verifying the following initial condition is met:
 - Wide range Steam Generator levels greater than DAS actuation value
- Wide Range SG level indications are as follows:
(assume **ALL** level instruments on individual SGs are equal)

a,c

Which of the following completes the statements below?

Of the times listed above, the EARLIEST indicated time at which SG water levels comply with the DAS-SOP-001, Attachment 1 initial condition requirement is _____.

- A. 1000:00
- B. 1015:00
- C. 1030:00
- D. 1045:00

EXAMINATION

ILT6 NRC Written (SRO)

41

ID: 14523

Points: 1.00

Given:

- The Unit is at 100% Reactor Power
- PCS-V002A/B/C are **ALL** closed

At time 1000:00

- PCS is manually actuated using DAS switches

At **1002:00**, which of the following completes the statement below?

_____ are open.

Note:

PCS-V001A/B (PCCWST Outlet AOVs)

PCS-V001C (PCCWST Outlet MOV)

PCS-V002A/B/C (PCCWST Outlet MOVs)

- A. **ONLY** PCS-V001A/B
- B. **ONLY** PCS-V001A/B/C
- C. **ONLY** PCS-V002A/B/C
- D. **ONLY** PCS-V002A/B/C **AND** PCS-V001C

EXAMINATION

ILT6 NRC Written (SRO)

42

ID: 15869

Points: 1.00

Given:

At time 1000:00

- The Turbine load is at 100% and steady state
- The following indications are observed:

a,c

At time 1100:00

- The Turbine load is stabilized at 70% after a downpower

At **1100:00**, following the downpower, which of the following completes the statements below?

MSS-PT009A (MSL Press) is ___(1)___ than it was at **1000:00**.

MSS-V016A (MSR A Main Steam Low Power PCV) ___(2)___ modulated from 100% OPEN.

Note:

REFERENCES PROVIDED

	(1)	(2)
A.	lower	has
B.	lower	has NOT
C.	higher	has
D.	higher	has NOT

EXAMINATION

ILT6 NRC Written (SRO)

43

ID: 14525

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- FWS-MP-01A (MFW Pump A) trips

Which of the following completes the statements below?

Immediately following MFW Pump A trip, SG NR water levels will initially ___(1)___ before restoring to program level.

At **1001:00**, MSL Auto Drain AOVs (MSS-V030A/B/C) ___(2)___ received a priority open command signal.

	(1)	(2)
A.	shrink	have
B.	shrink	have NOT
C.	swell	have
D.	swell	have NOT

EXAMINATION

ILT6 NRC Written (SRO)

44

ID: 14526

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- Lockout 86 Relay actuates on ECS-ES-1

At **1003:00**, which of the following completes the statements below?

ECS-ES-1 is ___(1)___.

If needed, ECS-EK-11 ___(2)___ be aligned to receive power from ECS-EK-21.

(1)

(2)

- | | | |
|----|--------------|----------------|
| A. | de-energized | can |
| B. | de-energized | can NOT |
| C. | energized | can |
| D. | energized | can NOT |

EXAMINATION

ILT6 NRC Written (SRO)

45

ID: 14527

Points: 1.00

Given:

- Division A 24 Hour Class 1E 250 Vdc Battery Bank is on a float charge
- VBS-MA-07A (A&C Battery Rm Exh Fan A) is in MANUAL and running
- VBS-MA-07C (A&C Battery Rm Exh Fan C) is in AUTO and **NOT** running
- An equalizing charge is scheduled for Division A 24 Hour Class 1E 250 Vdc Battery Bank to occur on the shift

Which of the following completes the statements below?

By design, to perform the equalizing charge, VBS-MA-07C ___(1)___ required to be running.

VBS maintains Division A Battery Room at a ___(2)___ pressure relative to adjacent rooms.

- | | (1) | (2) |
|----|---------------|----------|
| A. | is | negative |
| B. | is NOT | negative |
| C. | is | positive |
| D. | is NOT | positive |

EXAMINATION

ILT6 NRC Written (SRO)

46

ID: 14528

Points: 1.00

Given:

- ES-1 experienced a Loss of AC Power event while aligned to UAT 2A
- Standby Diesel Generator (DG) A is running and aligned to ES-1 providing electrical power

Which of the following completes the statements below?

An AUTOMATIC trip signal for the DG A engine ___(1)___ occur on a HIGH Intake Air Filter Differential Pressure (D/P) alarm.

The DG starting air system ___(2)___ be cross-connected to the DG combustion air system if needed to mitigate high D/P of the intake air filter.

- | | (1) | (2) |
|----|-----------------|----------------|
| A. | will | can |
| B. | will | can NOT |
| C. | will NOT | can |
| D. | will NOT | can NOT |

EXAMINATION

ILT6 NRC Written (SRO)

47

ID: 14529

Points: 1.00

Which of the following identifies the power supply to Service Water Cooling Tower Spray Header MOV B (SWS-V037B)?

- A. IDSB-DD-1
- B. IDSB-DK-1
- C. ECS-EC-122
- D. ECS-EC-222

EXAMINATION

ILT6 NRC Written (SRO)

48

ID: 14530

Points: 1.00

Given:

- CAS-MS-01A-TRBL-IA Compressor A Trouble alarm is in
- AOP-703 (Loss of Instrument Air) is in progress
- A System Operator (SO) has been dispatched to investigate the Compressor A Trouble alarm

At time 1000:00

- IA Header pressure is 118 psig and lowering at a constant rate of 0.5 psig/min
- AOP-703 Step 8, "Check IA Dryer Package For Running IA Compressor(s):"
- SO reports the pre-filter for IA Dryer Package A (CAS-MS-02A) is clogged
- Compressor A Trouble alarm remains in

In accordance with AOP-703, which of the following completes the statement below?

Based on the conditions at **1000:00**, of the choices below, the NEXT required action(s) is(are) to _____.

- swap towers for the malfunctioning IA Dryer Package
- place the standby IA Compressor Package (CAS-MS-01B) in service
- stop air driven pumps per Attachment 1 (Reduction of Service Air Loads)
- start at least one SA Compressor Package in service and cross-connect SA to IA

EXAMINATION

ILT6 NRC Written (SRO)

49

ID: 14531

Points: 1.00

Given:

- A plant cooldown is being performed
- **ALL** required blocks have been inserted for plant conditions
- RNS is in service with RNS purification aligned

At time 1000:00

- An automatic Safeguards Actuation occurs
- ADS Stage 4 Actuation has **NOT** occurred

At **1001:00**, which of the following completes the statements below?

An automatic RNS Isolation Actuation ___(1)___ occurred.

CVS Suct CIV AOV (RNS-V061) ___(2)___ closed from a PMS signal.

- | | (1) | (2) |
|----|----------------|----------------|
| A. | has | has |
| B. | has | has NOT |
| C. | has NOT | has |
| D. | has NOT | has NOT |

EXAMINATION

ILT6 NRC Written (SRO)

50

ID: 14532

Points: 1.00

Given:

- The Reactor automatically trips from 100% Reactor Power

At time 1000:00

- RCS T_{AVG} is 557°F and lowering 5°F/min at a constant rate

At **1015:00**, which of the following valves has received an automatic PMS Signal?

- SG 1 PORV (SGS-V233A)
- CVS Makeup CIV MOV (CVS-V090)
- SFS Suct Hdr CIV MOV (SFS-V034)
- MCR Supply Upstream Isol MOV (VBS-V186)

EXAMINATION

ILT6 NRC Written (SRO)

51

ID: 14533

Points: 1.00

Given:

- The Unit has tripped from 100% Reactor power
- RCPs are **NOT** running
- NR Pressurizer Level is 95%
- RCS Temperature is 425°F
- RCS Pressure is 650 psig
- SG1 water temperature is 430°F
- SG2 water temperature is 432°F

Which of the following completes the statement below?

Given the plant conditions and in accordance with APP-RCS-M3-001, the principal concern with starting the **FIRST** RCP is that it may result in _____.

Note:

APP-RCS-M3-001 (Reactor Coolant System, System Specification Document)

- A. thermal shock to the PZR spray nozzle
- B. a rapid rise in RCS pressure
- C. excessive SG heatup rates
- D. RCP cavitation

EXAMINATION

ILT6 NRC Written (SRO)

52

ID: 14534

Points: 1.00

Given:

- The Unit is in MODE 5
- **ALL** unborated water sources have been isolated
- **ALL** RCPs have been running at 50% speed the previous 12 hours
- **ALL** RCPs will be secured for testing
- One RCP will be started within 60 minutes from the start of testing

Which of the following completes the statements below?

LCO 3.4.8 (Minimum RCS Flow) ___(1)___ applicable.

In accordance with 3-RCS-SOP-001 ATTACHMENT 5 (STOP REACTOR COOLANT PUMPS), RCPs will be stopped using ___(2)___ control.

- | | (1) | (2) |
|----|---------------|------------|
| A. | is | ganged |
| B. | is NOT | ganged |
| C. | is | individual |
| D. | is NOT | individual |

EXAMINATION

ILT6 NRC Written (SRO)

53

ID: 14535

Points: 1.00

Given:

- IDSC-DS-1 has been deenergized

Which of the following completes the statements below?

Purification Stop MOV (CVS-V001) ___(1)___ be repositioned from the MCR.

Purification Stop MOV (CVS-V002) ___(2)___ be repositioned from the MCR.

(1)

(2)

- | | | |
|----|----------------|----------------|
| A. | can | can |
| B. | can | can NOT |
| C. | can NOT | can |
| D. | can NOT | can NOT |

EXAMINATION

ILT6 NRC Written (SRO)

54

ID: 15866

Points: 1.00

In accordance with 3-CVS-SOP-001 (Chemical and Volume Control System), which of the following completes the statement below?

When performing an automatic blended makeup to the RCS, the MINIMUM RMCS Makeup Flow SP should **NOT** be set lower than _____ gpm.

- A. 5
- B. 20
- C. 30
- D. 50

EXAMINATION

ILT6 NRC Written (SRO)

55

ID: 14537

Points: 1.00

Given:

- The Unit is in MODE 1

At time 1000:00

- **ALL** control rods are above rod insertion limits
- Margin to OTΔT trip setpoint is 0.6%

At **1000:00**, which of the following completes the statements below?

C-3 will block ___(1)___ withdrawal for AO control bank.

Turbine runback ___(2)___ actuated.

(1)

(2)

- | | | |
|----|-----------------------|----------------|
| A. | ONLY automatic | has |
| B. | ONLY automatic | has NOT |
| C. | manual and automatic | has |
| D. | manual and automatic | has NOT |

EXAMINATION

ILT6 NRC Written (SRO)

56

ID: 14538

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- PZR Lvl Reference Leg Temp B (RCS-TE193B) fails high

At **1001:00**, which of the following completes the statements below?

PZR Lvl (RCS-LT195B) indication ___(1)___ affected by this failure.

LCO 3.3.17 (Post Accident Monitoring (PAM) Instrumentation) ___(2)___ met.

(1)

(2)

- | | | |
|----|---------------|---------------|
| A. | is | is |
| B. | is | is NOT |
| C. | is NOT | is |
| D. | is NOT | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

57

ID: 14539

Points: 1.00

Given:

At time 1000:00

- The conditions shown in the provided REFERENCE exist

Which of the following completes the statements below?

At **1000:00**, when comparing the DNBR conditions for Rod C-10 and Rod M-5, the DNBR conditions for ___(1)___ are MOST LIMITING.

In accordance with PMS-SOP-001 (Protection and Safety Monitoring System), the principal design basis of the ___(2)___ automatic Reactor trip function is to provide protection against a potential DNB condition.

Note:

REFERENCES PROVIDED

Departure from Nucleate Boiling Ratio (DNBR)

Departure from Nucleate Boiling (DNB)

	(1)	(2)
A.	M-5	OTΔT
B.	C-10	OTΔT
C.	C-10	OPΔT
D.	M-5	OPΔT

EXAMINATION

ILT6 NRC Written (SRO)

58

ID: 14540

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- Black smoke is observed in the MCR
- AOP-902 (Fire Response Emergency) is entered

At time 1005:00

- MCR Isolation is actuated

Which of the following completes the statements below?

At **1010:00**, with no other operator actions taken, VES-QIY008A/B (VES Air Quantity) indications ___(1)___ lowering.

In accordance with VBS-SOP-001, when required to purge smoke from the MCR, using a MCR Ancillary Fan ___(2)___ the FIRST choice.

NOTE:

VBS-SOP-001 (Nuclear Island Nonradioactive Ventilation System)

	(1)	(2)
A.	are	is
B.	are	is NOT
C.	are NOT	is
D.	are NOT	is NOT

EXAMINATION

ILT6 NRC Written (SRO)

59

ID: 14541

Points: 1.00

Given:

- The Unit is at 100% Reactor Power
- SFP Lvl B (SFS-LT019B) has failed high
- SFS Train A is recirculating the IRWST

At time 1000:00

- SFP Lvl A&C (SFS-LT019A/C) are 24 feet and lowering at a constant rate of 0.1 feet every 5 minutes

At **1030:00**, with no additional operator actions, which of the following completes the statements below?

SFS CIV (SFS-V038) is ___(1)___.

SFS Pump A (SFS-MP-01A) is ___(2)___.

	(1)	(2)
A.	open	running
B.	open	stopped
C.	closed	running
D.	closed	stopped

EXAMINATION

ILT6 NRC Written (SRO)

60

ID: 14542

Points: 1.00

Given:

At time 1000:00

- The Unit is at 60% Reactor Power

At time 1005:00

- Main Condenser pressure is 5.0 in Hg and rising at a constant rate of 0.5 in Hg/min

Which of the following completes the statements below?

At **1000:00**, a turbine load rejection with a step change of AT LEAST ___(1)___ will cause C-7 actuation.

At **1015:00**, Steam Dumps ___(2)___ armed.

	(1)	(2)
A.	5%	are
B.	5%	are NOT
C.	10%	are
D.	10%	are NOT

EXAMINATION

ILT6 NRC Written (SRO)

61

ID: 14543

Points: 1.00

Given:

- A monitored release is in progress from WGS-V051 (WGS System Outlet PCV)
- WGS-V051 is in manual control

At time 1001:00

- The following WGS parameters are observed

a,c

At time 1005:00

- VAS Loss of Flow signals are received on VAS-FICA-012A/B and VAS-FICA-013A/B

Which of the following completes the statements below?

The EARLIEST indicated time that WGS-V051 is fully closed is ___(1)___.

Based on the current plant conditions, WGS-V051 ___(2)___ be bypassed using PLS controls from the MCR.

Note:

REFERENCES PROVIDED

	(1)	(2)
A.	1003:00	can
B.	1003:00	can NOT
C.	1007:00	can
D.	1007:00	can NOT

EXAMINATION

ILT6 NRC Written (SRO)

62

ID: 14544

Points: 1.00

Given:

- The Unit is at 50% power after a load change
- An RCS dilution is in progress
- Automatic letdown is in progress

At time 1000:00

- PSS-RY050 (RCS Sample Process Rad) alarm is in
- Liquid Sample Line A CIV AOV (PSS-V011A) indicates OPEN
- AOP-113 Step 1 "Announce High RCS Activity Condition" is performed

In accordance with AOP-113 and considering **ONLY** the given responses below, the crew is NEXT required to _____.

Note:

AOP-113 (Reactor Coolant System High Activity)

- A. isolate letdown
- B. close PSS-V011A
- C. direct Chemistry to evaluate CVS Demin performance
- D. direct RP to perform surveys and establish temporary barriers

EXAMINATION

ILT6 NRC Written (SRO)

63

ID: 14545

Points: 1.00

Given:

- GOP-205 (Plant Cooldown Mode 3 to Mode 5) is in progress
- P-11 blocks have just been inserted

At time 1000:00

- Steam line pressure is 1005 psig
- A Steam Dump Control System malfunction results in Stage 1 Steam Dumps failing full open

At time 1001:00

- Steam line pressure is 880 psig

Which of the following completes the statements below?

At **1000:00**, turning a MINIMUM of ___(1)___ Steam Dump Mode Control switch(es) will close **ALL** Steam Dumps.

At **1001:00**, Steam Dumps ___(2)___ received an automatic signal to close.

- | | (1) | (2) |
|----|-----|-----------------|
| A. | one | have |
| B. | one | have NOT |
| C. | two | have |
| D. | two | have NOT |

EXAMINATION

ILT6 NRC Written (SRO)

64

ID: 14546

Points: 1.00

In accordance with RCS-OTS-11-001 (Chemistry Control Of the Reactor Coolant System), which of the following completes the statements below?

Chemists add ___(1)___ to the RCS in order to control RCS pH within limits in MODE 1.

___(2)___ is used to control RCS dissolved oxygen in MODE 1.

(1)

(2)

- | | | |
|----|-------------------|-----------|
| A. | lithium hydroxide | hydrogen |
| B. | lithium hydroxide | hydrazine |
| C. | zinc | hydrogen |
| D. | zinc | hydrazine |

EXAMINATION

ILT6 NRC Written (SRO)

65

ID: 15973

Points: 1.00

Given:

- The Unit is at 3396.2 MWt

In accordance with NMP-OS-001 (Reactivity Management Program), which of the following completes the statement below?

Considering only the actions listed below, the crew is required to reduce Reactor Power to prevent exceeding the rated thermal limit prior to _____.

- A. starting the Auxiliary Boiler
- B. raising CVS Letdown temperature
- C. securing the third running CDS Pump
- D. isolating Low Pressure Feedwater Heaters 3A and 4A

EXAMINATION

ILT6 NRC Written (SRO)

66

ID: 14548

Points: 1.00

Given:

- The Unit is in MODE 2

Which of the following completes the statements below?

In accordance with Safety Limit (SL) 2.1.2 (RCS Pressure SL), RCS pressure shall be maintained less than or equal to ___(1)___ psig.

In accordance with Safety Limit (SL) 2.2 (SL Violations), if SL 2.1.2 is violated, compliance must be restored within a MAXIMUM of ___(2)___.

	(1)	(2)
A.	2485.5	1 hour
B.	2733.5	1 hour
C.	2485.5	5 minutes
D.	2733.5	5 minutes

EXAMINATION

ILT6 NRC Written (SRO)

67

ID: 14549

Points: 1.00

Given:

- The Unit is at 50% Reactor Power

At time 1000:00

- The crew observes the following:

a,c

Which of the following completes the statements below?

CDS ___(1)___ have at least one alarm that is suppressed.

In accordance with B-ADM-OPS-002 (Alarm Response and Status Control), Disabled alarms ___(2)___ require a narrative log entry to be made in eSOMS.

Note:

REFERENCES PROVIDED

	(1)	(2)
A.	does	do
B.	does	do NOT
C.	does NOT	do
D.	does NOT	do NOT

EXAMINATION

ILT6 NRC Written (SRO)

68

ID: 14550

Points: 1.00

In accordance with NMP-HP-302 (Restricted Area Classification, Postings, and Access Control), which of the following completes the statements below?

The MINIMUM required radiation level for posting a Locked High Radiation Area (LHRA) ___(1)___ greater than or equal to 800 mR/hr at 30 cm.

The WCC SRO ___(2)___ maintain administrative control of LHRA barrier keys.

Note:

WCC (Work Control Center)

- | | (1) | (2) |
|----|---------------|-----------------|
| A. | is | does |
| B. | is | does NOT |
| C. | is NOT | does |
| D. | is NOT | does NOT |

EXAMINATION

ILT6 NRC Written (SRO)

69

ID: 14551

Points: 1.00

Given:

- Hot Work is in progress (welding inside Containment)

In accordance with NMP-ES-035-003 (Fleet Hot Work Instruction), which of the following completes the statements below?

Hot Work Permits are valid for a MAXIMUM of one ___(1)___ hour period.

The Hot Work Fire Watch is required to stay in the area for a MINIMUM of ___(2)___ minutes following completion of hot work activities.

	(1)	(2)
A.	12	30
B.	12	60
C.	24	30
D.	24	60

EXAMINATION

ILT6 NRC Written (SRO)

70

ID: 14552

Points: 1.00

Which of the following describes the reason for installing a neutron source in a reactor for an INITIAL fuel cycle?

- A. Provides additional excess reactivity to increase the length of the fuel cycle.
- B. Supplies the only shutdown source of neutrons available to begin a reactor startup.
- C. Ensures shutdown neutron level is large enough to be detected by Intermediate Range nuclear instrumentation.
- D. Provides additional reactivity to limit how positive the moderator temperature coefficient (MTC) is at the beginning of core life

EXAMINATION

ILT6 NRC Written (SRO)

71

ID: 14553

Points: 1.00

Given:

- The Unit was operated for 30 days at a constant 100% Reactor Power before the crew was required to perform a MANUAL Reactor trip

Which of the following completes the statements below?

The magnitude of peak Xenon concentration post-trip would be __ (1) __ if the Unit was operated for 30 days at a constant 50% Reactor Power.

The Reactor can be considered effectively Xenon-free at a MINIMUM time of __ (2) __ since the Reactor trip.

	(1)	(2)
A.	smaller	24 hours
B.	smaller	72 hours
C.	approximately the same	24 hours
D.	approximately the same	72 hours

EXAMINATION

ILT6 NRC Written (SRO)

72

ID: 14554

Points: 1.00

Given:

- A dilution to criticality is being performed after 3R1

At time 1000:00

- The Reactor is critical below the point of adding heat (POAH)
- Source Range startup rate is (+) 0.500 dpm and constant

With no additional operator action, which of the following will decrease FIRST when the Reactor reaches the POAH?

- A. Reactor coolant temperature
- B. Pressurizer level
- C. Reactor power
- D. Startup rate

EXAMINATION

ILT6 NRC Written (SRO)

73

ID: 14555

Points: 1.00

Which of the following is the approximate STEAM quality of a steam-water mixture of 468°F with an enthalpy of 1,000 Btu/lbm?

- A. 24%
- B. 27%
- C. 73%
- D. 76%

EXAMINATION

ILT6 NRC Written (SRO)

74

ID: 14556

Points: 1.00

Given:

- No MFW Pumps are running

Which one of the following contains two reasons for starting Main Feedwater Pump A (FWS-MP-02A) with the discharge piping full of water and MFW Pump A Disch MOV (FWS-V004A) closed?

- Prevent pump runout and prevent motor overspeed
- Prevent pump runout and ensure lubrication of pump seals
- Prevent water hammer and prevent excessive starting current
- Prevent water hammer and ensure adequate pump recirculation flow

EXAMINATION

ILT6 NRC Written (SRO)

75

ID: 14557

Points: 1.00

Given:

Refer to the drawing of a fuel rod and coolant flow channel in the provided REFERENCE.

Which of the following completes the statements below?

At 100% Reactor Power, when drawing the radial fuel temperature profile, the biggest temperature drop will occur from ___(1)___.

The transfer of heat from T_3 to T_4 is primarily accomplished via ___(2)___ mode of heat transfer.

Note:

REFERENCES PROVIDED

- | | (1) | (2) |
|----|----------------|------------|
| A. | $T_{CL} - T_2$ | conduction |
| B. | $T_{CL} - T_2$ | radiative |
| C. | $T_3 - T_4$ | conduction |
| D. | $T_3 - T_4$ | radiative |

EXAMINATION

ILT6 NRC Written (SRO)

76

ID: 15822

Points: 1.00

Given:

- The Unit is at 90% Reactor Power

At time 1000:00

- Turb Bypass 6 (MSS-V006) fully opens due to a PLS malfunction
- The crew is performing AOP-201 (Uncontrolled Cooldown), Step 3 "Check Reactor Power - LESS THAN OR EQUAL TO 100% RTP"

At time 1600:00

- MSS-V006 has been repaired and re-tested
- MSS-V006 closure stroke times were within the required limits
- MSS-V006 open stroke times from PLS were outside design limits

Which of the following completes the statements below?

At **1000:00**, in accordance with AOP-201, the UO is required to evaluate Step 3 as ___(1)___.

Based on the conditions at **1600:00**, in accordance with LCO 3.7.2 (Main Steam Line Flow Path Isolation Valves), MSS-V006 is ___(2)___.

Note(s):

Answer the question regarding MSS-V006 **ONLY**

ALL other MSS/SGS valves are in their required positions

	(1)	(2)
A.	met	OPERABLE
B.	met	inoperable
C.	NOT met	OPERABLE
D.	NOT met	inoperable

EXAMINATION

ILT6 NRC Written (SRO)

77

ID: 15823

Points: 1.00

Given:

- ES-0.2 (Natural Circulation Cooldown) is being used for RCS cooldown and depressurization

At time 1000:00

- RNS has been in service for 27 hours
- **ALL** RCS temperatures are less than 200°F
- RCS Pressure is 400 psig and stable
- **ONLY** CRDM Cooling Fan A (RXS-MA-01A) is available and running
- The crew is performing ES-0.2 Step 46, "Check If RCS Depressurization Is Permitted"

In accordance with ES-0.2, which of the following completes the statements below?

Conditions ___(1)___ met to immediately depressurize the RCS.

The reason for checking if RCS depressurization is permitted in ES-0.2 Step 46 is to ensure that ___(2)___.

- | | (1) | (2) |
|----|----------------|--|
| A. | are | upper head void formation is prevented |
| B. | are | thermal stresses between cold leg nozzles and DVI nozzles are not exceeded |
| C. | are NOT | upper head void formation is prevented |
| D. | are NOT | thermal stresses between cold leg nozzles and DVI nozzles are not exceeded |

EXAMINATION

ILT6 NRC Written (SRO)

78

ID: 15824

Points: 1.00

Given:

- FR-S.1 (Response to Nuclear Power Generation - ATWS) is entered

At time 1000:00

- The crew is performing FR-S.1 Step 9 "Check BOTH Nuclear Island Switchgear Busses - ENERGIZED"
- IRNI power indicates 16.7%
- Startup Rate is (+) 0.105 dpm
- CETs are 750°F
- **BOTH** ECS-ES-1 and ECS-ES-2 are **NOT** energized

At time 1020:00

- The crew is performing FR-S.1 Step 23 "Check Reactor Subcritical"
- IRNI power indicates 4.7%
- Startup Rate is (-) 0.100 dpm
- CETs are 950°F

In accordance with FR-S.1, which of the following completes the statements below?

At **1000:00**, the crew ___(1)___ required to restore power per AOP-302 (Loss of AC Power) concurrent with FR-S.1.

At **1020:00**, the crew is required to ___(2)___.

- | | (1) | (2) |
|----|---------------|---|
| A. | is NOT | consider Step 23 met and immediately continue to Step 24 |
| B. | is NOT | consider Step 23 NOT met and wait in Step 23 RNO to allow the RCS to continue to heat up |
| C. | is | consider Step 23 met and immediately continue to Step 24 |
| D. | is | consider Step 23 NOT met and wait in Step 23 RNO to allow the RCS to continue to heat up |

EXAMINATION

ILT6 NRC Written (SRO)

79

ID: 15831

Points: 1.00

Given:

- The Unit is in MODE 5
- An inadvertent loss of ECS-EC-221 (Aux Bldg 480 VAC MCC 221) power supply causes IDSD-DC-1-TRBL (IDSD Battery Charger Trouble) alarm to come in
- The IDSD battery charger power supply issue requires the spare IDS Battery Charger and Battery to be aligned to PMS Division D

At time 1000:00

- It is discovered that SR 3.8.1.1 has **NOT** been performed in 9 days
- A risk evaluation has been initiated

a,c

At time 1200:00

- A risk evaluation has been completed
- The spare IDS Battery Charger and Battery are aligned to and powering Division D

In accordance with Technical Specifications, which of the following completes the statements below?

In order to allow performance of SR 3.8.1.1, the requirement to declare the LCO not met may be delayed, from the time of discovery, up to a MAXIMUM of ___(1)___.

At **1215:00**, in accordance with LCO 3.8.2 (DC Sources – Shutdown), IDS Division D is ___(2)___.

Note:

REFERENCES PROVIDED

	(1)	(2)
A.	7 days	OPERABLE
B.	24 hours	OPERABLE
C.	7 days	inoperable
D.	24 hours	Inoperable

EXAMINATION

ILT6 NRC Written (SRO)

80

ID: 15832

Points: 1.00

Given:

- The Unit has tripped from 100% Reactor Power

At time 1000:00

- A transition to ES-0.1 (Reactor Trip Response) occurs

At time 1030:00

- FR-H.1 (Response to Loss of Heat Sink) Step 19, "Restore RCS Temperature Control Using Intact SG(s)" is being performed
- PRHR Hx Outlet AOVs (PXS-V108A/B) can **NOT** be opened
- The following parameters are observed:
 - SG 1 NR level is 18% and rising
 - SG 2 NR level is 19% and stable
 - SFW to SG 1 **ONLY** is 390 gpm
 - Containment Pressure is 0.1 psig
 - 5th hottest CET is 640°F and stable

At **1030:00**, which of the following completes the statements below?

In accordance with NMP-EP-141-004 (Vogtle 3&4 Emergency Action Levels and Basis), the conditions ___(1)___ represent a Potential Loss of the RCS Barrier.

The Shift Supervisor is required to ___(2)___.

(1)

(2)

- | | | |
|----|---------------|--|
| A. | do | remain in FR-H.1 |
| B. | do | return to procedure and step in effect |
| C. | do NOT | remain in FR-H.1 |
| D. | do NOT | return to procedure and step in effect |

EXAMINATION

ILT6 NRC Written (SRO)

81

ID: 15825

Points: 1.00

Given:

- The Unit is in MODE 5 being prepared for 3R3
- CMT actuation signal blocks have been inserted
- SDF-0 (Shutdown Critical Safety Function Status Tree) monitoring is in progress

At time 1000:00

- RCS Hot Leg level is 56.5% and lowering slowly

At **1000:00**, which of the following completes the statements below?

The RCS pressure boundary is considered ___(1)___.

SDP-1 (Response to Loss of RCS Inventory During Shutdown) ___(2)___ required to be performed.

- | | (1) | (2) |
|----|--------|---------------|
| A. | open | is |
| B. | open | is NOT |
| C. | closed | is |
| D. | closed | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

82

ID: 15826

Points: 1.00

Given:

- Containment pressure is 5.7 psig

At time 1000:00

- FR-C.2 (Response to Degraded Core Cooling) is entered

At time 1020:00

- The crew is performing FR-C.2, Step 18 "Check Core Cooling"
- Core Exit T/Cs are 858 °F and stable
- RCS hot leg levels are 66% and slowly rising

Which of the following completes the statements below?

Between **1000:00 AND 1020:00**, FR-C.2 ___(1)___ required Containment Recirculation Actuation.

At **1021:00**, in accordance with FR-C.2, a transition to E-1 ___(2)___ required.

Note:

E-1 (Loss of Reactor or Secondary Coolant)

- | | (1) | (2) |
|----|----------------|---------------|
| A. | has | is |
| B. | has | is NOT |
| C. | has NOT | is |
| D. | has NOT | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

83

ID: 15827

Points: 1.00

Given:

- The Unit is at 100% Reactor Power

At time 1000:00

- Main Generator Load (MTS-LOAD-PCT) is 30% due to an unexpected loss of Turbine load
- The crew is performing AOP-207, Step 10 "Check Any Turbine Bypass Control Valve - OPEN:"
- Turb Bypass 5 (MSS-V005) is 35% OPEN and closing at a constant rate
- Tav_g-T_{ref} deviation is (+) 2°F and lowering at a constant rate
- M Bank Rods are automatically stepping in at 9 steps per minute

At time 1010:00

- The crew is evaluating AOP-207, Step 13 "Check Control Rods - DROPPED BY RPR SYSTEM"
- Rods are ABOVE their Rod Insertion Limits (RIL)

Which of the following completes the statements below?

At **1000:00**, in accordance with AOP-207, the crew ___(1)___ required to place the steam dump pressure controller in MANUAL.

At **1010:00**, the crew is required to use steps in ___(2)___ dilute the RCS.

Note:

CVS-SOP-001 (Chemical and Volume Control System)

AOP-207 (Loss of Turbine)

- | | (1) | (2) |
|----|---------------|-------------|
| A. | is NOT | CVS-SOP-001 |
| B. | is NOT | AOP-207 |
| C. | is | CVS-SOP-001 |
| D. | is | AOP-207 |

EXAMINATION

ILT6 NRC Written (SRO)

84

ID: 15833

Points: 1.00

Given:

- While in MODE 1, a beyond design basis steamline break occurred inside containment
- Containment pressure is 44 psig and rising slowly
- Crew successfully restores **ONLY** one PCS flow path **within 10 minutes from steamline break**
- F-0 (Critical Safety Function Status Trees) is in progress
- The indications in the provided REFERENCE are available to the crew

Which of the following completes the statements below?

FR-P.1 (Response to Imminent Pressurized Thermal Shock Conditions) entry conditions ___(1)___ met.

The Shift Manager is required to classify a(n) ___(2)___.

Notes:

REFERENCES PROVIDED

(Emergency Director discretion is **NOT** authorized)

(1)

(2)

- | | | |
|----|----------------|---------------------|
| A. | are NOT | Site Area Emergency |
| B. | are NOT | Alert |
| C. | are | Site Area Emergency |
| D. | are | Alert |

EXAMINATION

ILT6 NRC Written (SRO)

85

ID: 15834

Points: 1.00

Given:

- The Unit is at 100% Reactor Power
- 250 VDC MCC Under Voltage (IDSC-DK-1-UV) alarm comes in
- No other alarms exist for IDSC

At time 1000:00

- The crew is evaluating AOP-303 Step 2.c RNO "Refer to Technical Specifications"

Which of the following Technical Specifications, if any, are **NOT** met?

Note:

LCO 3.8.1 (DC Sources - Operating)

LCO 3.8.3 (Inverters - Operating)

LCO 3.8.5 (Distribution Systems - Operating)

- A. LCO 3.8.1 is **NOT** met, LCO 3.8.3 and LCO 3.8.5 are **BOTH** met
- B. LCO 3.8.3 is **NOT** met, LCO 3.8.1 and LCO 3.8.5 are **BOTH** met
- C. LCO 3.8.5 is **NOT** met, LCO 3.8.1 and LCO 3.8.3 are **BOTH** met
- D. LCO 3.8.1, LCO 3.8.3, and LCO 3.8.5 are **ALL** met

EXAMINATION

ILT6 NRC Written (SRO)

86

ID: 15835

Points: 1.00

Given:

- The Unit is at 86% Reactor Power

At time 1000:00

- PRHR Actuation Partial Trip alarm is in for **ONLY** PMS Division C
- Feedback for **BOTH** PXS-V108A and PXS-V108B has caused the Partial Trip alarm for Division C

Which of the following completes the statements below?

The Reactor ___(1)___ automatically trip.

LCO 3.3.1 (Reactor Trip Instrumentation) ___(2)___ met.

- | | (1) | (2) |
|----|----------------|---------------|
| A. | did NOT | is |
| B. | did NOT | is NOT |
| C. | did | is NOT |
| D. | did | is |

EXAMINATION

ILT6 NRC Written (SRO)

87

ID: 15836

Points: 1.00

Given:

At time 1000:00

- Automatic ADS Stages 1-3 actuation occurred
- Division A 1st Stage ADS Actuation is ON
- The crew is performing ES-1.3 Step 2, "Check 1st Stage ADS Actuation - ANY DIVISION ON"
- 1st Stage ADS A MOV (RCS-V001A) indicates closed

At time 1020:00

- The crew is performing ES-1.3 Step 39, "Check If 4th Stage ADS Should Be Actuated"
- 4th Stage ADS Actuation criteria is satisfied
- FR-H.1 (Response to Loss of Heat Sink) entry conditions are met on a RED path
- This is the FIRST instance of Heat Sink turning RED
- **ALL** other CSFSTs are **NOT** RED

In accordance with ES-1.3, which of the following completes the statements below?

At **1000:00**, the crew is required to attempt to open RCS-V001A from ___(1)___.

At **1020:00**, the Shift Supervisor is required to direct a transition to ___(2)___.

Note:

ES-1.3 (ADS Stage 1-3 Actuation Response)

ES-1.4 (ADS Stage 4 Actuation Response)

	(1)	(2)
A.	DAS	ES-1.4
B.	DAS	FR-H.1
C.	PMS	ES-1.4
D.	PMS	FR-H.1

EXAMINATION

ILT6 NRC Written (SRO)

88

ID: 15828

Points: 1.00

Given:

- The crew is performing ES-0.1 (Reactor Trip Response)

At time 1000:00

- The crew manually actuates Safeguards
- PRHR Actuation failure alarm is in

At time 1005:00

- The crew returns to E-0 (Reactor Trip or Safeguards Actuation)

At time 1010:00

- RED path Heat Sink is indicated on WPIS 5
- MANUAL PRHR Actuation did **NOT** work

Which of the following completes the statements below?

At **1005:00**, when returning to E-0, the crew is required to Go To E-0 ___(1)___.

At **1010:00**, if manual PRHR actuation is unsuccessful, the EARLIEST time that the SS is required to direct transition to FR-H.1 (Response to Loss of Heat Sink) is ___(2)___.

(1)

(2)

- | | | |
|----|--|--|
| A. | Step 1 "Actuate Reactor Trip" | immediately |
| B. | Step 1 "Actuate Reactor Trip" | at E-0 Step 23 "Implement 3-EOP-F-0 Critical Safety Function Status Trees" |
| C. | Step 5 "Implement NMP-EP-141 Event Classification" | immediately |
| D. | Step 5 "Implement NMP-EP-141 Event Classification" | at E-0 Step 23 "Implement 3-EOP-F-0 Critical Safety Function Status Trees" |

EXAMINATION

ILT6 NRC Written (SRO)

89

ID: 15837

Points: 1.00

Given:

- A 150 gpm RCS leak occurs
- E-0 (Reactor Trip or Safeguards Actuation) Step 6.a "Check CMT Actuation - ON" is in progress
- The crew observes the following indications:

a,c

- CMT A inlet and outlet valves are open
- CMT B inlet valve is open
- CMT B outlet valves are closed and will **NOT** open

Which of the following completes the statements below?

In accordance with E-0, DAS CMT actuation ___(1)___ required.

___(2)___ will direct evaluation if Reactor Coolant Pumps should be started.

Note:

REFERENCES PROVIDED

ES-1.1 (Safeguards Termination)

ES-1.2 (Post LOCA Cooldown & Depressurization)

	(1)	(2)
A.	is	ES-1.1
B.	is	ES-1.2
C.	is NOT	ES-1.1
D.	is NOT	ES-1.2

EXAMINATION

ILT6 NRC Written (SRO)

90

ID: 15838

Points: 1.00

Given:

- The Unit is in MODE 6 for 3R3
- **ALL** UATs are de-energized
- **BOTH** RNS Trains are in operation for RCS cooling
- **BOTH** SFS Trains are in operation for SFP cooling
- 63 fuel assemblies have been moved from the Reactor Vessel to the SFP
- GCC informs the site of an emergent issue that will impact the 230Kv feedline to the 4A RAT

At time 1000:00

- An Outage Safety Assessment has classified the GCC activity as Orange (Moderate Risk)

In accordance with NMP-OM-002 (Shutdown Risk Management), which of the following completes the statements below?

At **1001:00**, the LOWEST level(s) of authority required for work authorization is ____ (1) ____.

During the 3R3 outage, the Outage Safety Assessment ____ (2) ____ required to be performed each shift.

(1)

(2)

- | | | |
|----|---------------------------------------|---------------|
| A. | Plant Manager and Operations Director | is |
| B. | Plant Manager and Operations Director | is NOT |
| C. | Operations Director ONLY | is |
| D. | Operations Director ONLY | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

91

ID: 15839

Points: 1.00

Given:

- The Unit is at 100% Reactor Power
- M&SD Bank Control is in AUTO
- AO Bank Control is in AUTO

At time 1000:00

- AO Bank rods are moving in AUTO as expected
- PLS-JD-RPI101 (DRPI Ctmt Cab) fails

At **1000:00**, which of the following completes the statements below?

The accuracy of rod position indication is ___(1)___ steps.

Given the current conditions, in accordance with LCO 3.1.7, DRPI ___(2)___ indicating half accuracy.

Note:

PLS-JD-RPI101 is Data Cabinet A
LCO 3.1.7 (Rod Position Indication)

- | | (1) | (2) |
|----|---------------------|---------------|
| A. | (+) 8 / (-) 8 steps | is NOT |
| B. | (+) 8 / (-) 8 steps | is |
| C. | (+) 8 / (-) 7 steps | is NOT |
| D. | (+) 8 / (-) 7 steps | is |

EXAMINATION

ILT6 NRC Written (SRO)

92

ID: 15829

Points: 1.00

Given:

- Fuel assembly AC19 is being transferred from the Spent Fuel Pool (SFP) to the Core

At time 1000:00

- AC19 will **NOT** fully lower into the core due to binding

At time 1030:00

- AC19 is placed back into the upender

At time 1045:00

- The WEC refueling team recommends returning AC19 to the SFP for damaged fuel assembly storage

Which of the following completes the statements below?

At **1000:00**, a slack cable condition ___(1)___ prevent the Refueling Mast from lowering.

At **1045:00**, Reactor Engineering approval ___(2)___ required to move AC19 to the SFP.

- | | (1) | (2) |
|----|-----------------|---------------|
| A. | will | is |
| B. | will | is NOT |
| C. | will NOT | is |
| D. | will NOT | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

93

ID: 15840

Points: 1.00

Given:

- The crew is performing GOP-306 Step 8 "Enter Mode 1 and raise Reactor power to approximately 15% as follows:" using Low Power Rod Control

At time 1000:00

- Blocks for **BOTH** PR High Flux (Low Setpoint) Trip **AND** IR High Flux Trip have just been inserted

At time 1001:00

- The following indications are observed:

a,c

Which of the following completes the statements below?

At **1002:00**, **Assuming NO Operator Actions**, Reactor Power ___(1)___ continue to rise towards 15% power.

At **1601:00**, in accordance with the provided Technical Specifications, the Unit ___(2)___ required to be in MODE 3.

Note:

REFERENCES PROVIDED

	(1)	(2)
A.	will	is
B.	will	is NOT
C.	will NOT	is
D.	will NOT	is NOT

EXAMINATION

ILT6 NRC Written (SRO)

94

ID: 15857

Points: 1.00

Given:

- A Standing Order has been initiated that includes directions to manipulate plant equipment that are **NOT** currently in any approved procedure

In accordance with NMP-OS-007-003 (Plant Operating Orders), which of the following completes the statements below?

The Shift Manager ___(1)___ approve a standing order that includes directions that will temporarily deviate from the intent of existing plant procedures.

The Shift Operations Manager SHALL appoint an individual to audit all current approved standing orders ___(2)___.

	(1)	(2)
A.	can	weekly
B.	can	monthly
C.	can NOT	weekly
D.	can NOT	monthly

EXAMINATION

ILT6 NRC Written (SRO)

95

ID: 15830

Points: 1.00

Given:

- Core offload is in progress during 3R1

Which of the following completes the statement below?

In accordance with the bases for LCO 3.9.4 (Refueling Cavity Water Level), maintaining greater than or equal to 23 feet of water above the top of the reactor flange satisfies ___(1)___ to ensure ___(2)___ due to iodine fission product activity remain(s) within the appropriate limits.

Note:

10 CFR 20 (Standards for Protection Against Radiation)

10 CFR 50 (Domestic Licensing of Production and Utilization Facilities)

(1)

(2)

- | | | |
|----|-----------|--|
| A. | 10 CFR 20 | total exposure to fuel handling workers during core off-load with design basis fuel failures |
| B. | 10 CFR 50 | total exposure to fuel handling workers during core off-load with design basis fuel failures |
| C. | 10 CFR 20 | offsite doses during a fuel handling accident |
| D. | 10 CFR 50 | offsite doses during a fuel handling accident |

EXAMINATION

ILT6 NRC Written (SRO)

96

ID: 15853

Points: 1.00

In accordance with NMP-AD-006 (Infrequently Performed Tests and Evolutions (IPTE)), which of the following completes the statements below?

Containment entry when Reactor power is greater than 10% ___(1)___ require an IPTE brief.

Anytime an IPTE brief is performed, a separate pre-job brief ___(2)___ required to be performed.

- | | (1) | (2) |
|----|-----------------|---------------|
| A. | does NOT | is |
| B. | does NOT | is NOT |
| C. | does | is |
| D. | does | is NOT |

EXAMINATION

ILT6 NRC Written (SRO)

97

ID: 15852

Points: 1.00

Given:

- A safety-related Motor-Operated Valve (MOV) is being tagged out as an isolation boundary
 - The MOV is a normally Open valve
 - The MOV receives a confirmatory signal to initiate Opening on High Containment pressure to perform its function
 - The MOV power supply breaker was Opened and tagged out
 - The MOV was manually Closed (locally at the valve) and tagged out
- The maintenance was completed and the tagout was subsequently cleared
- The following conditions currently exist:
 - The MOV is Closed
 - The MOV power supply breaker is Closed
 - The valve indicates green on the Ovation Display
 - Operations Management has requested an Engineering evaluation, but this evaluation is still in progress and has **NOT** been completed

In accordance with NMP-OS-007-001 (Conduct of Operations Standards and Expectations) and NMP-AD-003 (Equipment Clearance and Tagging), which of the following completes the statement below?

Based on the current conditions, the MOV is _____.

- A. OPERABLE because SR 3.0.1 states that SSCs are to be considered OPERABLE between the specified Surveillance frequency intervals
- B. **NOT** OPERABLE. In order to restore OPERABILITY the MOV must be manually unseated and stroked using the motor operator but manual valve cycling is **NOT** required
- C. **NOT** OPERABLE. In order to restore OPERABILITY the MOV must be stroked using the motor operator, but manual valve cycling is required
- D. OPERABLE because administrative procedures governing the Operability Determination process allow for a reasonable expectation of operability while an Engineering evaluation is being performed

EXAMINATION

ILT6 NRC Written (SRO)

98

ID: 15845

Points: 1.00

Given:

- The Shift Manager has declared a General Emergency
- An authorization to exceed 10CFR20 exposure limits will be needed to perform a lifesaving **RESCUE** of an injured operator
- Volunteers are available to perform the lifesaving rescue
- The Radiation Protection Manager has arrived in the TSC
- The OSC and TSC facilities have **NOT** been activated

In accordance with NMP-EP-144-F02 (Emergency Exposure Authorization), which of the following completes the statements below?

The Emergency Director ___(1)___ delegate approval to exceed 10CFR20 radiation exposure limits for lifesaving **RESCUE**.

Of the provided dose rate limits below, the HIGHEST dose that can be authorized for the lifesaving **RESCUE** is ___(2)___.

	(1)	(2)
A.	can NOT	25 REM
B.	can NOT	10 REM
C.	can	25 REM
D.	can	10 REM

EXAMINATION

ILT6 NRC Written (SRO)

99

ID: 15846

Points: 1.00

In accordance with NMP-EP-143 (Facility Activation), which of the following identifies the LOWEST level condition which requires activation of the Operations Support Center (OSC)?

- A. **ANY** Notification of Unusual Event
- B. **ANY** Alert
- C. **ANY** Site Area Emergency
- D. **ANY** classification if Protective Actions (PARs) are required

EXAMINATION

ILT6 NRC Written (SRO)

100

ID: 15851

Points: 1.00

Given:

At time 1000:00

- The Emergency Director declares a General Emergency

In accordance with NMP-EP-142 (Emergency Notifications) and its associated forms, which of the following completes the statements below?

The cellular telephone system ___(1)___ permitted to be used as a backup to the Emergency Notification System (ENS).

The NRC must be notified of the event no later than ___(2)___.

	(1)	(2)
A.	is	1015:00
B.	is	1100:00
C.	is NOT	1015:00
D.	is NOT	1100:00

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Page 6:	Q075 (QID 14557) Reference Pic
Page 7:	Q084 (QID 15833) Reference Pic
Page 8:	Q093 LCO 3.3.3 RTS IR Instrumentation
Page 11:	Q093 LCO 3.3.17 PAM Instrumentation

(Proctor Provided)

EAL Classification Matrix (Hot and Cold Conditions)

EQUATIONS

$$\dot{Q} = \dot{m}c_p\Delta T$$

$$N = S/(1 - K_{eff})$$

$$\dot{Q} = \dot{m}\Delta h$$

$$CR_1(1 - K_{eff_1}) = CR_2(1 - K_{eff_2})$$

$$\dot{Q} = UA\Delta T$$

$$1/M = CR_1/CR_x$$

$$\dot{Q} \propto \dot{m}_{Nat}^3 \text{ Circ}$$

$$A = \pi r^2$$

$$\Delta T \propto \dot{m}_{Nat}^2 \text{ Circ}$$

$$F = PA$$

$$K_{eff} = 1/(1 - \rho)$$

$$\dot{m} = \rho A \bar{v}$$

$$\rho = (K_{eff} - 1)/K_{eff}$$

$$\dot{W}_{Pump} = \dot{m}\Delta P v$$

$$SUR = 26.06/\tau$$

$$P = I^2 R$$

$$\tau = \frac{\bar{\beta}_{eff} - \rho}{\lambda_{eff} \rho}$$

$$P = IE$$

$$\rho = \frac{\ell^*}{\tau} + \frac{\bar{\beta}_{eff}}{1 + \lambda_{eff} \tau}$$

$$P_A = \sqrt{3}IE$$

$$P_T = \sqrt{3}IEpf$$

$$\ell^* = 1.0 \times 10^{-4} \text{ sec}$$

$$P_R = \sqrt{3}IE\sin\theta$$

$$\lambda_{eff} = 0.1 \text{ sec}^{-1} \text{ (for } \rho > 0)$$

$$\text{Thermal Efficiency} = \text{Net Work Out/Energy In}$$

$$DRW \propto \varphi_{tip}^2 / \varphi_{avg}^2$$

$$\frac{g(z_2 - z_1)}{g_c} + \frac{(\bar{v}_2^2 - \bar{v}_1^2)}{2g_c} + v(P_2 - P_1) + (u_2 - u_1) + (q - w) = 0$$

$$P = P_0 e^{t/\tau}$$

$$g = 32.2 \text{ ft/sec}^2$$

$$P = P_0 10^{SUR(t)}$$

$$g_c = 32.2 \text{ lbf-ft/lbf-sec}^2$$

$$A = A_0 e^{-\lambda t}$$

CONVERSIONS

$$1 \text{ MW} = 3.41 \times 10^6 \text{ Btu/hr} \quad ^\circ\text{C} = (5/9)(^\circ\text{F} - 32)$$

$$1 \text{ ft}^3_{\text{water}} = 7.48 \text{ gal}$$

$$1 \text{ hp} = 2.54 \times 10^3 \text{ Btu/hr} \quad ^\circ\text{F} = (9/5)(^\circ\text{C}) + 32$$

$$1 \text{ gal}_{\text{water}} = 8.35 \text{ lbf}$$

$$1 \text{ Btu} = 778 \text{ ft-lbf}$$

$$1 \text{ kg} = 2.21 \text{ lbf}$$

$$1 \text{ Curie} = 3.7 \times 10^{10} \text{ dps}$$

NL-24-0226
Enclosure 5
V34 ILT-6 SRO Test (Non-Proprietary)

Westinghouse Non-Proprietary Class 3
V34 ILT-6 SRO Test

SVP_SV0_240429
Attachment 6
Page 105 of 113

a,c

Q67 (QID 14549) REFERENCE

Page 5

a,c

a,c

Q84 (QID 15833) REFERENCE

Page 7

3.3 INSTRUMENTATION

3.3.3 Reactor Trip System (RTS) Intermediate Range Instrumentation

LCO 3.3.3 Four channels of RTS Intermediate Range Neutron Flux – High instrumentation shall be OPERABLE.

APPLICABILITY: MODE 1 with Power Range Neutron Flux below the P-10 interlock, MODE 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One channel inoperable with THERMAL POWER \geq P-6.	A.1 Place one inoperable channel in bypass or trip.	2 hours
	<u>OR</u>	
	A.2 Reduce THERMAL POWER to $<$ P-6.	2 hours
	<u>OR</u>	
	A.3 Increase THERMAL POWER to $>$ P-10.	2 hours
B. Two channels inoperable with THERMAL POWER \geq P-6.	B.1.1 Place one inoperable channel in bypass.	2 hours
	<u>AND</u>	
	B.1.2 Place one inoperable channel in trip.	2 hours
	<u>OR</u>	
	B.2 Reduce THERMAL POWER to $<$ P-6.	2 hours
	<u>OR</u>	
	B.3 Increase THERMAL POWER to $>$ P-10.	2 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or two channels inoperable with THERMAL POWER < P-6.	C.1 Restore three of four channels to OPERABLE status.	Prior to increasing THERMAL POWER to > P-6
D. Three or more channels inoperable.	D.1 Suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
	D.2 Reduce THERMAL POWER to < P-6.	2 hours
	<u>AND</u>	
	D.3 Be in MODE 3.	7 hours

Technical Specifications

**RTS Intermediate Range
 Instrumentation
 3.3.3**

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.3.3.1 ----- <p style="text-align: center;">- NOTE -</p> Not required to be met in MODE 1. ----- Perform CHANNEL CHECK.	12 hours
SR 3.3.3.2 ----- <p style="text-align: center;">- NOTE -</p> Neutron detectors are excluded from CHANNEL CALIBRATION. ----- Perform CHANNEL CALIBRATION in accordance with Setpoint Program.	24 months
SR 3.3.3.3 ----- <p style="text-align: center;">- NOTE -</p> Neutron detectors are excluded from response time testing. ----- Verify RTS RESPONSE TIME is within limits.	24 months on a STAGGERED TEST BASIS

3.3 INSTRUMENTATION

3.3.17 Post Accident Monitoring (PAM) Instrumentation

LCO 3.3.17 The PAM instrumentation for each Function in Table 3.3.17-1 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

- NOTES -

1. LCO 3.0.4 is not applicable.
2. Separate Condition entry is allowed for each Function.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more Functions with one required channel inoperable.	A.1 Restore required channel to OPERABLE status.	30 days
B. Required Action and associated Completion Time of Condition A not met.	B.1 Initiate action in accordance with Specification 5.6.5.	Immediately
C. One or more Functions with two required channels inoperable.	C.1 Restore one channel to OPERABLE status.	7 days
D. Required Action and associated Completion Time of Condition C not met.	D.1 Enter the Condition referenced in Table 3.3.17-1 for the channel.	Immediately
E. As required by Required Action D.1 and referenced in Table 3.3.17-1.	E.1 Be in MODE 3.	6 hours
	<u>AND</u> E.2 Be in MODE 4.	12 hours

Technical Specifications

**PAM Instrumentation
 3.3.17**

SURVEILLANCE REQUIREMENTS

- NOTE -

Refer to Table 3.3.17-1 to determine which SRs apply for each PAM Function.

SURVEILLANCE		FREQUENCY
SR 3.3.17.1	<p>- NOTE - Not required to be met for Neutron Flux (Intermediate Range) in MODE 1.</p> <p>Perform CHANNEL CHECK for each required instrumentation channel that is normally energized.</p>	31 days
SR 3.3.17.2	<p>- NOTE - Neutron detectors are excluded from CHANNEL CALIBRATION.</p> <p>Perform CHANNEL CALIBRATION.</p>	24 months

Technical Specifications

**PAM Instrumentation
 3.3.17**

**Table 3.3.17-1 (page 1 of 1)
 Post-Accident Monitoring Instrumentation**

FUNCTION	REQUIRED CHANNELS	CONDITION REFERENCED FROM REQUIRED ACTION D.1	SURVEILLANCE REQUIREMENTS
1. Neutron Flux (Intermediate Range)	2	E	SR 3.3.17.1 SR 3.3.17.2
2. Reactor Coolant System (RCS) Hot Leg Temperature (Wide Range)	2	E	SR 3.3.17.2
3. RCS Cold Leg Temperature (Wide Range)	2	E	SR 3.3.17.2
4. RCS Pressure (Wide Range)	2	E	SR 3.3.17.2
5. RCS Subcooling	2	E	SR 3.3.17.2
6. Containment Water Level	2	E	SR 3.3.17.2
7. Containment Pressure	2	E	SR 3.3.17.2
8. Containment Pressure (Extended Range)	2	E	SR 3.3.17.2
9. Containment Area Radiation (High Range)	2	E	SR 3.3.17.2
10. Pressurizer Level and Associated Reference Leg Temperature	2	E	SR 3.3.17.2
11. In-Containment Refueling Water Storage Tank (IRWST) Wide Range Water Level	2	E	SR 3.3.17.2
12. Passive Residual Heat Removal (PRHR) Heat Removal	2	E	SR 3.3.17.1 SR 3.3.17.2
13. Core Exit Temperature -- Quadrant 1	2 ^(a)	E	SR 3.3.17.2
14. Core Exit Temperature -- Quadrant 2	2 ^(a)	E	SR 3.3.17.2
15. Core Exit Temperature -- Quadrant 3	2 ^(a)	E	SR 3.3.17.2
16. Core Exit Temperature -- Quadrant 4	2 ^(a)	E	SR 3.3.17.2
17. Passive Containment Cooling System (PCS) Heat Removal	2	E	SR 3.3.17.1 SR 3.3.17.2
18. Penetration Flow Path Remotely Operated Containment Isolation Valve Position	2 per penetration flow path ^{(b)(c)(d)}	E	SR 3.3.17.1 SR 3.3.17.2
19. IRWST to Normal Residual Heat Removal System (RNS) Suction Valve Status	2	E	SR 3.3.17.1 SR 3.3.17.2
20. Pressurizer Pressure	2	E	SR 3.3.17.2

- (a) A channel consists of two thermocouples within a single division. Each quadrant contains two divisions. The minimum requirement is two OPERABLE thermocouples in each of the two divisions.
- (b) Not required for isolation valves whose associated penetration is isolated by at least one closed and deactivated automatic valve, closed manual valve, blind flange, or check valve with flow through the valve secured.
- (c) Only one position indication channel is required for penetration flow paths with only one installed control room indication channel.
- (d) Penetration Flow Path Remotely Operated Containment Isolation Valve Position applies to components that receive the ESF containment isolation signal (T signal).

VOGTLE Unit 3 & 4 (AP-1000) ILT-6 Written Examination Answer Key

With NRC Region II post-examination comment resolution, as of June 27, 2024

1. D	22.D
2. B	23.A
3. C	24.C
4. C	25.D
5. C	26.D
6. A	27.A
7. D	28.A
8. C	29.C
9. D	30.B
10. C	31. B
11. D	32. B
12. A	33. D
13. A	34. D
14. A	35. D
15. D	36. B (original answer changed to 'B'
16. C	per NRC R-II post-examination
17. C	comment resolution)
18. D	37. B
19. D	38. D
20. B	39. B
21. C	40. B

41. B

42. D

43. B

44. A

45. B

46. D

47. D

48. B

49. C

50. C

51. B

52. B

53. B

54. A

55. C

56. B

57. A

58. B

59. D

60. D

61. A

62. A

63. A

64. A

65. D

66. B

67. A

68. B

69. C

70. B

71. B

72. D

73. C

74. C

75. A

SRO-ONLY Questions (76-100):

76. A

77. C

78. C

79. A

80. A

81. A

82. C

83. B

84. D

85. C

86. B

87. A

88. C

89. A

90. A

91. D

92. A

93. B

94. D

95. D

96. A

97. B

98. A

99. B

100. B