

ES-401

**Site Specific SRO Written Examination
Cover Sheet**

Form ES-401-8

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

Applicant Information

Name:

Date: **September 30, 2021**Facility/Unit **Catawba Nuclear Station**Region: I II III IV Reactor Type: W CE BW GE

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination, you must achieve a final grade of at least 80 percent overall, with 70 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80 percent to pass. You have 9 hours to complete the combined examination and 3 hours if you are only taking the SRO-only portion.

Applicant Certification

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

Applicant's Signature

Results

RO/SRO-Only/Total Examination Values 75 / 25 / 100 Points

Applicant's Score / / Points

Applicant's Grade / / Percent

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 1
(1 point)

Given the following Unit 1 initial conditions:

- Unit 1 was at 100% RTP
- Core age has reached 325 EFPD
- DRPI Data B power supply failure is being investigated by IAE
- A Turbine runback has occurred due to a trip of 1A CFPT on lowering vacuum

Subsequently:

- Unit 1 Reactor is manually tripped following the loss of 1B CFPT
- NC Temperature is 490 °F
- The CRS has transitioned to EP/1/A/5000/ES-0.1 (Reactor Trip Response) and reached step 8:

8. **Verify adequate shutdown margin as follows:**

In accordance with ES-0.1:

DRPI indication ____ (1) ____ require emergency boration.

NC Temperature ____ (2) ____ require emergency boration.

Which ONE of the following correctly completes the statement above?

REFERENCE PROVIDED

- A. 1. will
2. will
 - B. 1. will
2. will NOT
 - C. 1. will NOT
2. will
 - D. 1. will NOT
2. will NOT
-

Catawba Nuclear Station

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Question: 2
(1 point)

Given the following Unit 2 conditions:

- The unit is in Mode 3
- Pzr pressure is 1785 PSIG
- Pzr Relief Tank (PRT) pressure is 10 PSIG
- PRT temperature is 125°F
- A Pzr code safety valve is leaking by its seat

Which ONE of the following correctly identifies the approximate temperature that is indicated on the leaking safety valve discharge RTD?

REFERENCE PROVIDED

- A. 121 - 129°F
 - B. 210 - 218°F
 - C. 236 - 244°F
 - D. 282 - 290°F
-

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Question: 3
(1 point)

Given the following Unit 1 initial conditions:

- A small break LOCA has occurred
- EP/1/A/5000/E-1 (Loss of Reactor or Secondary Coolant) has been entered
- Neither train of ICCM is available

Subsequently:

- The crew has transitioned to EP/1/A/5000/ES-1.2 (Post LOCA Cooldown and Depressurization)
- S/G PORVs are being used for cooldown
- Current NC pressure is 665 psig
- Core exit thermocouple temperatures are 490°F
- T-Colds are 487.7°F

In accordance with E-1, the value of subcooling is _____(1)_____ .

Based on current conditions, steam header pressure is _____(2)_____ .

Which ONE of the following correctly completes the statements above?

REFERENCE PROVIDED

- A. 1. - 10° F
2. 608 psig
 - B. 1. - 10° F
2. 593 psig
 - C. 1. + 10° F
2. 608 psig
 - D. 1. + 10° F
2. 593 psig
-

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Question: 4
(1 point)

Given the following Unit 1 conditions:

- The crew has entered EP/1/A/5000/FR-P.1 (Response to Imminent Pressurized Thermal Shock) due to a RED path condition on the Reactor Coolant Integrity CSF Status Tree.

FR-P.1 utilizes the parameters of NC pressure and _____ to determine if a large break LOCA has occurred.

Which ONE of the following correctly completes the statement above?

- A. RVLIS level
 - B. S/G pressure
 - C. NC T-cold temperatures
 - D. ND flow rate to cold legs
-

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Question: 5
(1 point)

Given the following Unit 1 conditions:

- Unit is in Mode 3
- Rod control is capable of rod withdrawal
- NC loops 1A, 1B, and 1D are in operation
- The crew has entered AP/1/A/5500/008 (Malfunction of Reactor Coolant Pump)
- 1A NC Pump Lower Bearing temperature is currently 190°F and rising 5°F per minute

1A NC Pump Lower Bearing temperature will reach trip setpoint in _____(1)_____ .

Following the trip of 1A NCP, entry into the action statement of TS 3.4.5 (RCS Loops – MODE 3) _____(2)_____ required.

Which ONE of the following correctly completes the statements above?

- A. 1. 7 minutes
2. is
 - B. 1. 7 minutes
2. is NOT
 - C. 1. 1 minute
2. is
 - D. 1. 1 minute
2. is NOT
-

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Question: 6
(1 point)

Given the following conditions on Unit 1:

- The unit is at 100% RTP
- 1A NV pump has tripped
- Unit 1 letdown has isolated
- The crew has entered AP/1/A/5500/012 (Loss of Charging or Letdown)

Based on these conditions, all cooling to NC pump lower bearings
____(1)____ been lost.

Per AP/12, prior to initiating letdown flow, 1NV-148 (Letdn Press Control) will be
throttled to ____ (2) ____ demand.

Which ONE of the following correctly completes the statements above?

- A. 1. has
2. 45%
 - B. 1. has
2. 60%
 - C. 1. has NOT
2. 45%
 - D. 1. has NOT
2. 60%
-

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Question: 7
(1 point)

Given the following Unit 1 initial conditions:

- Refueling was in progress when a loss of ND occurred
- CRS has implemented AP/1/A/5500/019 (Loss of Residual Heat Removal System) Case III (Loss of ND With Large Vent Path Established)

Subsequently:

- The reason for the loss of ND has been corrected
- Crew is performing Enclosure 8 (Restoring an ND Train To Operation) to place 1A ND train in service

In accordance with Enclosure 8:

The MINIMUM KC flow established to the ND heat exchanger is _____(1)_____ GPM.

Prior to starting the 1A ND pump, 1ND-27 (ND Hx 1A Bypass Ctrl) is placed in the _____(2)_____ position.

Which ONE of the following correctly completes the statements above?

- A. 1. 5000
 2. CLOSED
 - B. 1. 5000
 2. OPEN
 - C. 1. 3000
 2. CLOSED
 - D. 1. 3000
 2. OPEN
-

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Question: 8
(1 point)

Given the following Unit 1 timeline:

1200

- The Unit is at 100% RTP
- 1B2 KC Pump is in service
- 1B KC flow is 5000 gpm and stable
- 1B KF is in service

1203

- 1KC-15 (1B2 KC Pump Disch) is inadvertently closed

1205

- 1KC-15 is reopened
- No additional KC pumps have been started

Following closure of 1KC-15, 1KC-156 (KF HX 1B Cool Wtr Otl) _____(1)_____ automatically change position.

Assuming no operator action, once 1KC-15 is reopened 1AD-9 F/6 "KC Train B Single Pump Runout" _____(2)_____ alarm.

Which ONE of the following correctly completes the statements above?

- A. 1. will
2. will
 - B. 1. will NOT
2. will
 - C. 1. will
2. will NOT
 - D. 1. will NOT
2. will NOT
-

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Question: 9
(1 point)

Given the following Unit 1 initial conditions:

- Unit is at 100% RTP with surveillance testing in progress
- Reactor Trip Breaker 'A' (RTA) and Bypass Breaker 'B' (BYB) are racked-in and closed

Subsequently:

- A complete loss of feedwater occurred
- All efforts to trip the reactor from the control room were unsuccessful
- Annunciator 1AD-1 A/5 (P-14, S/I OR RX TRIP CAUSES TURBINE TRIP) is LIT
- Operators entered EP/1/A/5000/FR-S.1 (Response to Nuclear Power Generation/ATWS)
- An AO was dispatched to locally trip the Reactor

Based on the given conditions, the Reactor Trip Breaker 'A' (RTA) _____(1)_____ failed to operate as designed.

If successful in opening all Reactor Trip and Bypass breakers, then per FR-S.1, the AO _____(2)_____ required to open the MG set breakers locally.

Which ONE of the following correctly completes the statements above?

- A. 1. shunt trip coil ONLY
 2. is NOT
 - B. 1. shunt trip AND undervoltage coils
 2. is NOT
 - C. 1. shunt trip coil ONLY
 2. is
 - D. 1. shunt trip AND undervoltage coils
 2. is
-

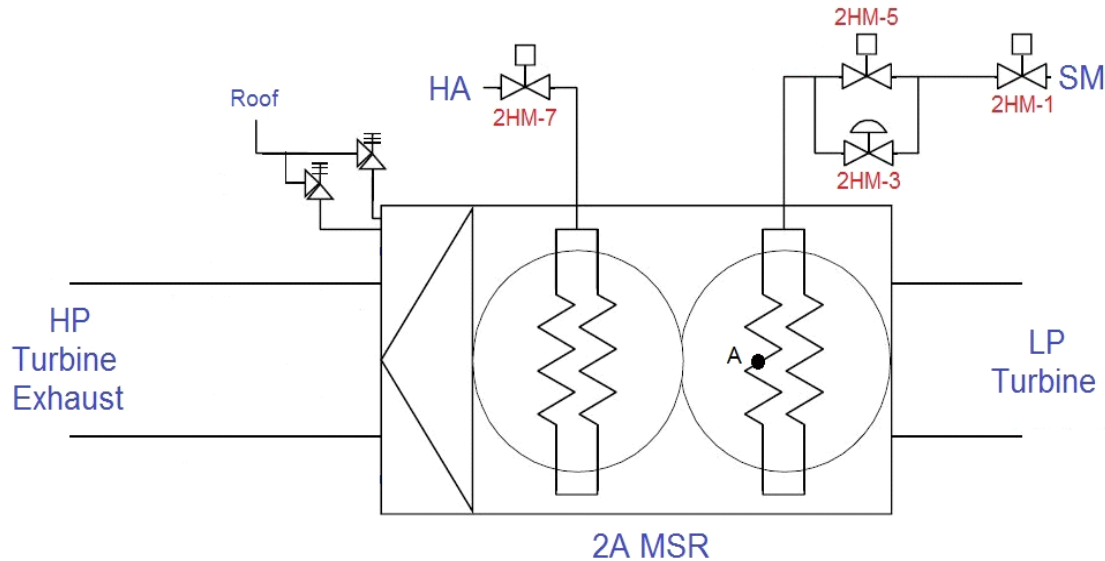
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Question: 10
(1 point)

Given the following Unit 2 conditions:

- The Unit is at 45% RTP
- The crew has entered AP/2/A/5500/028 (Secondary Steam Leak) due to a leak from the 2nd stage reheat steam tube bundle inside 2A MSR (location A)



The steam leak at location A, will cause Main Turbine Megawatts to ____ (1) ____ .

In order to isolate the leak, AP/28 will direct the crew to ____ (2) ____ .

Which ONE of the following correctly completes the statements above?

- A. 1. rise
2. trip the Main Turbine
- B. 1. rise
2. trip the Reactor and close MSIVs
- C. 1. lower
2. trip the Main Turbine
- D. 1. lower
2. trip the Reactor and close MSIVs

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Question: 11
(1 point)

Given the following Unit 2 conditions:

- A seismic event has resulted in the following:
 - 2A S/G has experienced a complete shear of the Main Steam line at the S/G outlet
 - 2D S/G has experienced a complete shear of the Main Feed line at the S/G inlet

Steam Generator _____(1)_____ will lower to 0% WR level FIRST.

Procedural guidance to isolate 2D S/G is contained in _____(2)_____.

Which ONE of the following correctly completes the statements above?

- A.
 - 1. 2A
 - 2. EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant)
 - B.
 - 1. 2A
 - 2. EP/2/A/5000/E-2 (Faulted Steam Generator Isolation)
 - C.
 - 1. 2D
 - 2. EP/2/A/5000/E-1 (Loss of Reactor or Secondary Coolant)
 - D.
 - 1. 2D
 - 2. EP/2/A/5000/E-2 (Faulted Steam Generator Isolation)
-

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Question: 12
(1 point)

Given the following Unit 2 conditions:

- A Loss of All Offsite Power has occurred
- Both Unit 2 D/Gs started and loaded their associated bus
- While monitoring D/G operating parameters, the local operator notes that D/G 2B "VOLTS" indicates 3925 V

In order to adjust 2B D/G Voltage, local controls will be operated on the 2B Diesel _____(1)_____ Control Panel .

Following this adjustment, 2B D/G 'AMPS' will be _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. Engine
2. lower
 - B. 1. Generator
2. lower
 - C. 1. Engine
2. higher
 - D. 1. Generator
2. higher
-

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Question: 13
(1 point)

Given the following initial conditions:

- 1B RN Pump in service
- 1B1 KC Pump in service
- 2A1 KC Pump in service

Subsequently:

- Both units enter AP/0/A/5500/030 (Plant Flooding), Enclosure 8 (Flooding From RN) following discovery of a large RN leak on the 1A Essential Header
- Per AP/30 guidance, the crew has isolated the 1A RN Essential Header (ONLY)

Based on current conditions:

Cooling water supply _____(1)_____ available to the 1A KD Heat Exchanger.

Mini-Flow protection _____(2)_____ available for the 1B RN Pump.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. is
 - B. 1. is
2. is NOT
 - C. 1. is NOT
2. is
 - D. 1. is NOT
2. is NOT
-

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Question: 14
(1 point)

Given the following Unit 1 initial conditions:

- The crew has entered AP/0/A/5500/022 (Loss of Instrument Air) following a complete loss of VI
- Both Reactors have been tripped

Subsequently:

- Unit 1 has entered EP/1/A/5000/FR-H.1 (Loss of Heat Sink)
- Feed and Bleed criteria has been met

In order to establish Feed and Bleed, motive force will be available to _____(1)_____ Pressurizer PORVs supplied by _____(2)_____ .

Which ONE of the following correctly completes the statement above?

- A. 1. two
2. cold leg accumulators
 - B. 1. two
2. individual air accumulators
 - C. 1. three
2. cold leg accumulators
 - D. 1. three
2. individual air accumulators
-

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Question: 15
(1 point)

Given the following Unit 1 initial conditions:

- The unit is at 100% RTP with Main Generator power factor at 0.99 lagging
- Unit 1 Voltage Regulator is in "Manual" per Engineering's request
- The "READY" status light for the Voltage Regulator Manual/Auto switch is DARK

Subsequently:

- Generator Voltage and MVARs begin fluctuating
- The CRS enters AP/1/A/5500/037 (Generator Voltage and Electric Grid Disturbances), Case I (Abnormal Generator or Grid Voltage)
 - The CRS has directed the OATC to operate the Voltage Regulator to maintain Generator MVARs within the Generator Capability Curve

With the Voltage Regulator in "Manual", operation of the Voltage Adjust RAISE/LOWER pushbutton _____(1)_____ adjust Reactive Power.

Placing the Voltage Regulator Manual/Auto switch in "Auto" (with the "READY" status light dark) _____(2)_____ transfer the Voltage Regulator to automatic control.

Which ONE of the following correctly completes the statements above?

- A. 1. will
2. will
 - B. 1. will
2. will NOT
 - C. 1. will NOT
2. will
 - D. 1. will NOT
2. will NOT
-

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Question: 16
(1 point)

Given the following initial conditions on Unit 1:

- A LOCA outside containment has occurred
- The crew suspects the leak is located in the 1B ND header
- EP/1/A/5000/ECA-1.2 (LOCA Outside Containment) has been entered

Subsequently:

- 1B ND header has been isolated. 30 seconds following header isolation, indications are as follows:
 - Unit 1 PZR level is 0%
 - Subcooling is -5°F and stable
 - NC Pressure is 1050 psig and slowly lowering
 - RVLIS level is 61.3% and slowly rising

In accordance with ECA-1.2:

The crew _____(1)_____ permitted to isolate 1B ND header prior to 1A ND header.

With given indications, _____(2)_____ will provide the best diagnostic of leak isolation.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. NC pressure
 - B. 1. is NOT
2. NC pressure
 - C. 1. is
2. RVLIS level
 - D. 1. is NOT
2. RVLIS level
-

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Question: 17
(1 point)

Given the following Unit 1 conditions:

- A Safety Injection due to Hi Containment Pressure has occurred
- Containment pressure peaked at 2.7 psig and is now slowly lowering
- The crew has implemented EP/1/A/5000/FR-H.1 (Response to Loss of Secondary Heat Sink)
- All attempts to restore CA flow have been unsuccessful

In accordance with FR-H.1:

The NEXT source of feed water attempted for restoration of flow to the S/Gs is through the CM/CF system using _____(1)_____.

The crew will be required to establish bleed and feed when W/R level in at least 3 S/Gs is less than a MAXIMUM level of _____(2)_____.

Which ONE of the following correctly completes the statements above?

- A. 1. either Main Feed Water pump
2. 24%
 - B. 1. either Main Feed Water pump
2. 36%
 - C. 1. Hotwell and Booster pumps
2. 24%
 - D. 1. Hotwell and Booster pumps
2. 36%
-

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Question: 18
(1 point)

Given the following Unit 1 conditions:

- EP/1/A/5000/ECA-1.1 (Loss of Emergency Coolant Recirculation) is in progress
- NC Pressure is 1700 psig
- FWST level is trending down

_____(1)_____ are currently providing injection flow into the NC System.

Per ECA-1.1, as the FWST level lowers less than _____(2)_____ the operator will secure these pumps.

Which ONE of the following correctly completes the statements above?

- A. 1. NV AND NI Pumps
2. 20%
 - B. 1. NV AND NI Pumps
2. 5%
 - C. 1. ONLY NV Pumps
2. 20%
 - D. 1. ONLY NV Pumps
2. 5%
-

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Question: 19
(1 point)

Given the following Unit 1 initial conditions:

- Unit is in Mode 6 performing core loading
- Unit 1 TRN A SMM BORON DILUTION INTLKS switch is in the “Enable” position
- Unit 1 TRN B SMM BORON DILUTION INTLKS switch is in the “Defeat” position
- The VCT Outlet Valve Interlock Keyswitch is in the “Normal” position

Subsequently:

- The OATC has just reset Shutdown Margin Monitor setpoints on 1A and 1B trains
- An error has resulted in mispositioning of several fuel assemblies
 - This mispositioning has resulted in a critical array and rising count rate

1AD-2 E(F)/2 “Train A(B) Shutdown Margin Alarm” will actuate once count rate rises by a MINIMUM factor of _____(1)_____ .

Following alarm actuation, 1A and 1B NV Pump suction will be aligned to the _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. two
2. VCT
 - B. 1. two
2. FWST
 - C. 1. three
2. VCT
 - D. 1. three
2. FWST
-

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Question: 20
(1 point)

Given the following Unit 1 initial conditions:

- Unit is at 100% RTP
- Letdown flow is 85 gpm aligned through the 1NV-10A (Letdn Orif 1B Otlt Cont Isol)

Subsequently:

- 1A S/G develops a tube leak
- The crew has entered AP/1/A/5500/010 (Reactor Coolant Leak), Case I (Steam Generator Tube Leak)
- 1NV-294 (NV Pmps A&B Disch Flow Ctrl) has been fully opened
 - Pressurizer level continues to lower at 0.1% / minute
- The CRS desires letdown flow reduction to 45 gpm

Prior to this event, 1NV-849 (Letdn Flow Var Orif Ctrl) SLIM station was in _____(1)_____ .

Per AP/10, letdown flow reduction will be accomplished via the _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. manual
2. 45 gpm orifice
 - B. 1. manual
2. variable orifice
 - C. 1. automatic
2. 45 gpm orifice
 - D. 1. automatic
2. variable orifice
-

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Question: 21
(1 point)

Given the following conditions on Unit 1:

- Reactor power is currently 7%
- The crew has entered AP/1/A/5500/023 (Loss of Condenser Vacuum)
- In service CFPT vacuum, and Main Condenser vacuum, is currently 17" Hg and lowering

In accordance with AP/23, a reactor trip _____(1)_____ required.

Main Condenser steam dumps _____(2)_____ currently available.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. are
 - B. 1. is
2. are NOT
 - C. 1. is NOT
2. are
 - D. 1. is NOT
2. are NOT
-

Catawba Nuclear Station

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Question: 22
(1 point)

Given the following conditions:

- A planned Liquid Waste Release of Waste Monitor Tank (WMT) A was initiated at 1110

The following timeline of events then occurs:

- 1120** 1RAD-1, C/5 (EMF-49 LIQUID WASTE DISCH HI RAD) alarms
1130 The release is manually re-initiated without re-sampling
1145 1RAD-1, C/5 (EMF-49 LIQUID WASTE DISCH HI RAD) alarms
1155 The release is manually re-initiated without re-sampling
1215 1RAD-1, C/5 (EMF-49 LIQUID WASTE DISCH HI RAD) alarms

The release _____(1)_____ be manually re-initiated, without re-sampling, per OP/0/B/6500/113 (Operations Liquid Waste Release).

The release was automatically isolated by closure of _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. can
2. 1WL-X28
- B. 1. can
2. 1WL-124
- C. 1. can NOT
2. 1WL-X28
- D. 1. can NOT
2. 1WL-124
-

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Question: 23
(1 point)

Given the following Unit 1 initial condition:

- The crew has entered EP/1/A/5000/FR-Z.1 (Response to High Containment Pressure) due to a valid red path

In accordance with FR-Z.1, Enclosure 3 (Containment Isolation VX System Verification), the crew will verify Containment Air Return Fans are **operating** if the elapsed time since Phase B actuation is greater than ____ (1) ____ and **secured** if containment pressure lowers below ____ (2) ____ .

Which ONE of the following correctly completes the statement above?

- A. 1. 9 minutes
 2. 0.9 PSIG
 - B. 1. 9 minutes
 2. 0.3 PSIG
 - C. 1. 10 seconds
 2. 0.9 PSIG
 - D. 1. 10 seconds
 2. 0.3 PSIG
-

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Question: 24
(1 point)

Given the following Unit 1 initial conditions:

- A Loss of Off-Site Power (LOOP) has occurred
- Due to multiple equipment failures, the crew has implemented EP/1/A/5000/FR-C.1 (Response To Inadequate Core Cooling)
- Containment pressure has risen to 2.6 psig and stabilized
- ECCS steam pressure has been blocked in preparation for cooldown

Subsequently:

- Main steam pressure has lowered to 750 psig
- Operators are preparing to depressurize intact steam generators to 140 PSIG

Based on the conditions above:

Operation of S/G PORVs _____(1)_____ require depressing the SM PORV TRAIN A(B) RESET pushbutton.

In order to establish required cooldown rate, the OATC _____(2)_____ rotate all S/G PORV controllers to the full open position.

Which ONE of the following correctly completes the statements above?

- A. 1. will
2. will
 - B. 1. will
2. will NOT
 - C. 1. will NOT
2. will
 - D. 1. will NOT
2. will NOT
-

Catawba Nuclear Station

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Question: 25
(1 point)

Given the following Unit 1 conditions:

- A medium break LOCA has occurred
- EP/1/A/5000/E-1 (Loss of Reactor Coolant or Secondary Coolant) has been implemented and the crew is evaluating Safety Injection termination criteria
- The BOP reports the following data:
 - NC pressure is 1200 PSIG and STABLE
 - Containment pressure is 3.3 PSIG and trending down
 - NC subcooling is 2°F
 - Pressurizer level is 17% and STABLE

Based on S/I termination criteria of E-1:

NC Pressure requirement _____(1)_____ met.

Pressurizer level requirement _____(2)_____ met.

Which ONE of the following correctly completes the statement above?

- A. 1. is
2. is
 - B. 1. is NOT
2. is
 - C. 1. is
2. is NOT
 - D. 1. is NOT
2. is NOT
-

Catawba Nuclear Station

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Question: 26
(1 point)

Given the following Unit 1 initial conditions:

- The Unit is at 100% RTP

Subsequently:

1100 A LOCA occurs

1215 Containment sump level is 13 feet and slowly rising

If containment sump level is rising at a constant rate of 0.25 feet per minute, EP/1/A/5000/FR-Z.2 (Response to Containment Flooding) entry will be REQUIRED at ____ (1) ____ .

Valves, inside containment, NOT qualified for submergence will be isolated by an ____ (2) ____ signal.

Which ONE of the following correctly completes the statements above?

- A. 1. 1225
2. ST
 - B. 1. 1245
2. ST
 - C. 1. 1225
2. SP
 - D. 1. 1245
2. SP
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 27
(1 point)

Given the following Unit 1 conditions:

- A LOCA has occurred
- Containment pressure peaked at 2.8 PSIG, and is now 2.2 PSIG and slowly lowering
- Crew has entered EP/1/A/5000/ES-1.2 (Post LOCA Cooldown and Depressurization) and is performing the initial cooldown

LOOP DATA		LOOP A	LOOP B	LOOP C	LOOP D
CURRENT T-COLD, BEST (DEG F)		546.0	546.4	546.1	546.1
ADMINISTRATIVE LIMIT (DEG F)		479.8	480.2	479.8	479.8
TECH SPEC LIMIT (DEG F)		459.8	460.2	459.8	459.8
T-COLD CURRENT MINUS 1 HR T-COLD MAXIMUM		-12.8	-13.6	-12.3	-12.1
15-MIN RATE (DEG F/HR)		-38	-38	-36	-36
5-MIN RATE (DEG F/HR)		-131	-134	-128	-127
1-MIN RATE (DEG F/HR)		-113	-107	-111	-102

In accordance with ES-1.2:

The **INITIAL** cooldown will be started using the ____ (1) ____.

With rates established, per the graphic above, the cooldown ____ (2) ____ continue at this time.

Which ONE of the following correctly completes the statements above?

- A. 1. S/G PORVs
2. can NOT
- B. 1. S/G PORVs
2. can
- C. 1. Condenser Steam Dumps
2. can NOT
- D. 1. Condenser Steam Dumps
2. can

Catawba Nuclear Station

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Question: 28
(1 point)

Given the following Unit 1 conditions:

- The Unit is at 100% RTP
- Total charging flow is currently 90 gpm
- 1NV-294 (NV Pmps A&B Disch Flow Ctrl) is in MANUAL
- 1NV-309 (Seal Water Injection Flow) is in AUTO

Assuming stable plant conditions, as 1NV-294 is throttled CLOSED, 1NV-309 will throttle in the _____(1)_____ direction in order to maintain _____(2)_____ seal injection flow.

Which ONE of the following correctly completes the statements above?

- A. 1. OPEN
2. 32 gpm
 - B. 1. CLOSED
2. 32 gpm
 - C. 1. OPEN
2. 40 gpm
 - D. 1. CLOSED
2. 40 gpm
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 29
(1 point)

Concerning operation of the Unit 1 Volume Control Tank (VCT):

A loss of power to 1LT-5761 (VCT Level CH 1) _____(1)_____ result in a DCS Alternate Action.

A loss of 1ERPA will result in a loss of _____(2)_____ makeup capability to the VCT.

Consider each statement separately

Which ONE of the following correctly completes the statements above?

- A. 1. will
2. auto ONLY
 - B. 1. will
2. auto AND manual
 - C. 1. will NOT
2. auto ONLY
 - D. 1. will NOT
2. auto AND manual
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 30
(1 point)

Given the following Unit 2 initial conditions:

- Unit is in Mode 4
- 2A ND train in service in RHR Mode
- 2B ND train remains in Injection Mode

Subsequently:

- Instrument Air is lost to 2ND-26 (ND Hx 2A Outlet Ctrl)

Assuming no operator action:

ND system flow _____(1)_____ automatically adjust to compensate for the change caused by this malfunction.

2A ND Heat Exchanger outlet temperature will _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. will
2. rise
 - B. 1. will NOT
2. rise
 - C. 1. will
2. lower
 - D. 1. will NOT
2. lower
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 31
(1 point)

Given the following Unit 2 conditions:

- Unit is at 75% RTP
- Several banks of FWST heaters have failed "ON"
- Current FWST temperature is 91°F
- FWST temperature is rising at a rate of 0.5°F/min

Based on the conditions above, FWST temperature will reach the T.S. 3.5.4 (Refueling Water Storage Tank (RWST)) limit in a MINIMUM of _____(1)_____ minutes.

Normally, Group 1 FWST heaters cycle automatically to maintain FWST temperature greater than T.S. 3.5.4 MINIMUM of _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. 10
2. 65°F
 - B. 1. 10
2. 70°F
 - C. 1. 18
2. 65°F
 - D. 1. 18
2. 70°F
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 32
(1 point)

Given the following Unit 1 timeline:

1000

- A load rejection resulted in a reactor trip from 100% RTP
- Following the trip, a Pressurizer Safety valve opens, and will NOT reseal
- The PRT rupture disks function as designed
- Containment pressure is 0.1 psig and rising at 0.03 psig every 5 minutes
- Lower Containment temperature is 110°F and rising at 2°F every 5 minutes

Assuming these conditions remain constant, and concerning only the application of LCOs 3.6.4 and 3.6.5

Plant conditions will FIRST require entry into LCO ____ (1) ____ .

At **1030**, conditions for entry into ____ (2) ____ will be met.

Which ONE of the following correctly completes the statements above?

LEGEND:

LCO 3.6.4 (Containment Pressure)

LCO 3.6.5 (Containment Air Temperature)

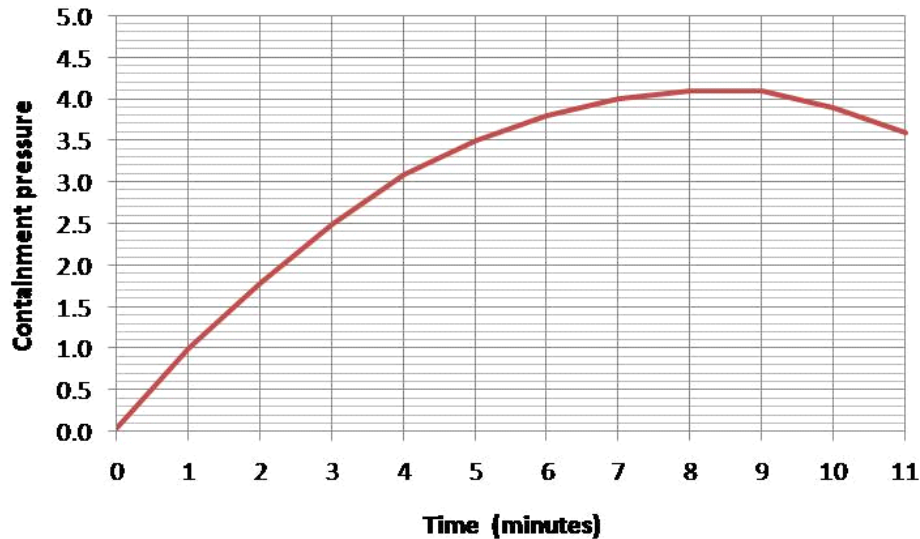
- A. 1. 3.6.4
2. 3.6.4 ONLY
- B. 1. 3.6.4
2. 3.6.4 AND 3.6.5
- C. 1. 3.6.5
2. 3.6.5 ONLY
- D. 1. 3.6.5
2. 3.6.4 AND 3.6.5
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 33
(1 point)

A LOCA has occurred on Unit 1 at Time = 0 minutes. Given the following containment pressure trend:



At Time = 3 minutes, the PRT _____(1)_____ be cooled using the NCDT Heat Exchanger.

At Time = 3 minutes, the PRT _____(2)_____ be cooled using spray flow from the RMWST.

Which ONE of the following correctly completes the statements above?

- A. 1. can
2. can
- B. 1. can
2. can NOT
- C. 1. can NOT
2. can
- D. 1. can NOT
2. can NOT

Catawba Nuclear Station

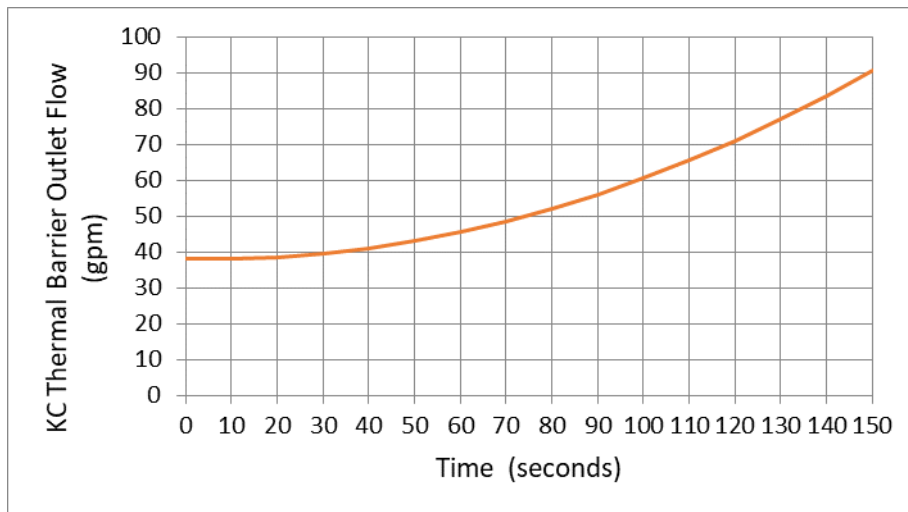
ILT 21 CNS SRO NRC Examination

Question: 34
(1 point)

Unit 1 is in Mode 3 when the following alarm is received:

- 1AD-6, E/1 (NCP A Thermal Barrier KC Outlet Hi/Lo Flow)

The flow trend is given below:



- (1) At what time on the above graph did 1KC-394A (NC Pump 1A Therm Bar Otlt) automatically close?
- (2) If the NCP 1A thermal barrier cannot be isolated from the KC System by any means, how is over pressurization of the KC surge tanks prevented?
 - A.
 1. 100 seconds
 2. The KC surge tanks vent line is large enough to prevent over pressurization.
 - B.
 1. 130 seconds
 2. The KC surge tanks vent line is large enough to prevent over pressurization.
 - C.
 1. 100 seconds
 2. The KC surge tanks relief valve to the KC drain sump is large enough to prevent over pressurization.
 - D.
 1. 130 seconds
 2. The KC surge tanks relief valve to the KC drain sump is large enough to prevent over pressurization.

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 35
(1 point)

Given the following Unit 1 conditions:

- The crew has entered AP/1/A/5500/017 (Loss of Control Room) due to a Security Event
- Transfer to the SSF has been completed

Based on the conditions above, NC System Pressure control will be accomplished via use of PZR Heater Group _____(1)_____ which will be powered from _____(2)_____.

Which ONE of the following correctly completes the statement above?

- A. 1. A
2. 1LXH
 - B. 1. A
2. SMXG
 - C. 1. D
2. 1LXH
 - D. 1. D
2. SMXG
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 36
(1 point)

Given the following Unit 1 conditions:

- Unit is at 100% RTP
- A slight cooldown of the NC system causes the "C" PZR heaters to be full "on"
- A malfunction of two PZR pressure transmitters causes an Alternate Action to occur on the Pressurizer Pressure Control System

Assuming NO operator actions:

The PZR Pressure Master will be in _____(1)_____ control AND "C" Heaters _____(2)_____ be energized.

Which ONE of the following correctly completes the statement above?

- A. 1. Manual
2. will
 - B. 1. Manual
2. will NOT
 - C. 1. Automatic
2. will
 - D. 1. Automatic
2. will NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 37
(1 point)

Given the following Unit 1 conditions:

- Reactor startup is in progress
- The permissive P-6 status light on 1SI-18 has just LIT
- Reactor power is rising

In accordance with PT/0/A/4150/019 (1/M Approach to Criticality), the operator will manually block the _____(1)_____ high flux reactor trip. Following this, the reactor trip setpoint for high flux is _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. Source Range
2. 10%
 - B. 1. Source Range
2. 25%
 - C. 1. Intermediate Range
2. 10%
 - D. 1. Intermediate Range
2. 25%
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 38
(1 point)

Given the following initial conditions:

- Both units are at 100% RTP

Subsequently:

- An inadvertent 1A Train Safety Injection occurs

As a result of this event and assuming no operator actions:

The 1B Aux Building Unfiltered Exhaust Fan (ABUFXF) _____(1)_____ secured.

The 2A Aux Building Unfiltered Exhaust Fan (ABUFXF) _____(2)_____ secured.

Which ONE of the following correctly completes the statements above?

- A. 1. is
 2. is
 - B. 1. is
 2. is NOT
 - C. 1. is NOT
 2. is
 - D. 1. is NOT
 2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 39
(1 point)

Concerning operation of the Containment Ventilation Units:

Under normal conditions, Containment Ventilation Units are cooled by the _____(1)_____ system.

Containment Ventilation cooling water supply is isolated by a _____(2)_____ signal.

Which ONE of the following correctly completes the statements above?

- A. 1. YV
2. Phase A
 - B. 1. YV
2. Phase B
 - C. 1. RN
2. Phase A
 - D. 1. RN
2. Phase B
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 40
(1 point)

Given the following Unit 1 conditions:

- Operators are performing Aux Safeguards testing
- A spurious automatic signal caused 1NF-233B (Containment Return Isolation) to inadvertently close during the testing

1NF-233B was closed by an inadvertent ____ (1) ____ signal.

The glycol expansion tank ____ (2) ____ overflow inside containment.

Which ONE of the following correctly completes the statements above?

- A. 1. S_T
2. will NOT
- B. 1. S_P
2. will NOT
- C. 1. S_T
2. will
- D. 1. S_P
2. will
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 41
(1 point)

Given the following Unit 1 conditions:

- Unit is in Mode 4
- It has been determined that eight Ice Condenser Intermediate Deck doors will not open due to excessive ice buildup

Based on the conditions listed above, peak pressure following a LOCA will be reached _____(1)_____ than normal.

Tech Spec 3.6.13 (Ice Condenser Doors) _____(2)_____ applicable.

Which ONE of the following correctly completes the statements above?

- A. 1. sooner
2. is
 - B. 1. later
2. is
 - C. 1. sooner
2. is NOT
 - D. 1. later
2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 42
(1 point)

Given the following Unit 1 conditions:

- The crew is performing EP/1/A/5000/ES-1.3 (Transfer To Cold Leg Recirculation)
- Containment Spray (NS) has been aligned for recirculation
- Containment pressure is 3.2 PSIG and rising slowly

ES-1.3 will require starting _____(1)_____ NS pump(s).

Based on the conditions above, if a loss of NS flow occurs, a Containment ORANGE path _____(2)_____ occur.

Which ONE of the following correctly completes the statements above?

- A. 1. both
2. will
 - B. 1. ONLY one
2. will
 - C. 1. both
2. will NOT
 - D. 1. ONLY one
2. will NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 43
(1 point)

Given the following Unit 1 timeline:

- 0800** Reactor trip and Safety Injection initiated due to large break LOCA
0845 Crew enters EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation)
- Containment pressure is currently 3.0 psig and **rising** at 0.8 psig / min
 - Crew is unable to align either Containment Spray pump for recirculation per Enclosure 2 (Aligning NS for Recirculation)

In accordance with EP/1/A/5000/FR-Z.1 (Response to High Containment Pressure), the earliest time that the crew will align ND Spray is _____ .

Which ONE of the following correctly completes the statement above?

- A. 0845
 - B. 0850
 - C. 0900
 - D. 0930
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 44
(1 point)

Given the following Unit 1 initial conditions:

- The Unit is at 63% RTP following a refueling outage
- AP/1/A/5500/028 (Secondary Steam Leak) has been entered following the discovery of a leak on the Unit 1 Main Turbine Crossover line

Subsequently:

- The Unit 1 Main Turbine is tripped to isolate the leak

At this time, _____(1)_____ steam dumps will operate to control main steam pressure at approximately _____(2)_____ psig.

Which ONE of the following correctly completes the statement above?

- A. 1. ONLY condenser
2. 1085
 - B. 1. ONLY condenser
2. 1115
 - C. 1. condenser AND atmospheric
2. 1085
 - D. 1. condenser AND atmospheric
2. 1115
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 45
(1 point)

Given the following Unit 1 conditions:

- Following a refueling outage, the operating crew began a power escalation
- Due to chemistry concerns, the unit has been placed in hold at 65%
- A tube leak has developed in 1A S/G

In accordance with CSD-CP-CNS-0020 (CNS Primary to Secondary Leak Rate Monitoring Program), leak rate monitoring will be based on readings obtained from _____ .

Which ONE of the following correctly completes the statement above?

COMPONENT LEGEND:

1EMF-29 (Steam Line 1A)

1EMF-33 (Condenser Air Ejector Exhaust)

1EMF-71 (S/G A Leakage)

- A. 1EMF-29 ONLY
 - B. 1EMF-71 ONLY
 - C. 1EMF-33 AND 1EMF-29
 - D. 1EMF-33 AND 1EMF-71
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 46
(1 point)

Given the following Unit 1 conditions:

- The Unit is at 12% RTP and rising

DCS will maintain S/G Level Control for each S/G in the LO Power mode until a MAXIMUM Selected CF Flow of _____(1)_____ is reached on each S/G.

With DCS in the LO Power mode, the CF Control Valves will start to OPEN when the CF Control Bypass Valves demand signal reaches a MINIMUM of _____(2)_____.

Which ONE of the following correctly completes the statements above?

- A. 1. 17%
2. 55%
 - B. 1. 17%
2. 65%
 - C. 1. 20%
2. 55%
 - D. 1. 20%
2. 65%
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 47
(1 point)

Given the following Unit 1 conditions:

- The unit was at 100% RTP when a reactor trip occurred
- Reactor Trip Breaker 1B failed to open
- All S/G Narrow Range levels are OFF-Scale LOW

In order to meet secondary heat sink requirements CA flow must be greater than a MINIMUM value of _____(1)_____ GPM

With regard to core age, more decay heat will be generated following a reactor trip at the _____(2)_____ of core life.

Which ONE of the following correctly completes the statements above?

- A. 1. 1000
2. beginning
 - B. 1. 1000
2. end
 - C. 1. 450
2. beginning
 - D. 1. 450
2. end
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 48
(1 point)

Given the following Unit 1 conditions:

- Unit is at 100% RTP
- 1B Transformer Loss of Cooler Power results in a Zone B Lockout

The 1B NCP supply breaker is located on the _____(1)_____ side of 1TB Switchgear.

Following the Zone B Lockout, the 1B NCP _____(2)_____ continue to operate.

Which ONE of the following correctly completes the statements above?

- A. 1. long
2. will
 - B. 1. long
2. will NOT
 - C. 1. short
2. will
 - D. 1. short
2. will NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 49
(1 point)

Given the following Unit 1 conditions:

- 1KXIB has experienced a complete loss of DC input voltage
- Stable power is restored two (2) minutes later

Based on the conditions above,

An indication used to determine that the backup power supply has been aligned is the _____(1)_____ light LIT.

When 1KXIB loss of voltage condition clears, the normal power supply _____(2)_____ be automatically realigned.

Which ONE of the following correctly completes the statements above?

- A. 1. 1KXMB “In Sync”
 2. will NOT

 - B. 1. 1KXMB “In Sync”
 2. will

 - C. 1. 1KXAB “Alternate AC Source Supplying Load”
 2. will NOT

 - D. 1. 1KXAB “Alternate AC Source Supplying Load”
 2. will
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 50
(1 point)

Concerning operation of the Emergency Diesel Generators:

In accordance with OP/1/A/6350/002 (Diesel Generator Operation), an inspection for water accumulation in the 1A D/G is performed by opening _____(1)_____. This inspection is performed _____(2)_____ D/G operational testing.

Which ONE of the following correctly completes the statements above?

- A. 1. Cylinder indicator cocks 1L – 8L and 1R – 8R
 2. prior to
 - B. 1. Cylinder indicator cocks 1L – 8L and 1R – 8R
 2. following
 - C. 1. 1ZD-1 (1A D/G Eng Crankcase Vent Drip Leg Drain)
 2. prior to
 - D. 1. 1ZD-1 (1A D/G Eng Crankcase Vent Drip Leg Drain)
 2. following
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 51
(1 point)

Given the following Unit 2 initial conditions:

- Unit was operating at 100% RTP
- A containment air release (VQ) was in progress

Subsequently:

- A LOCA occurs
- “B” Train safety injection failed to actuate and was performed manually when it was recognized by the crew
- The following indications are noted for:
 - Containment pressure
 - 2EMF-36 (Unit Vent Gas Monitor)
 - 2EMF-39 (Containment Gas Monitor)
 - E/S Load Sequencers status lights

Time	0200	0201	0202	0203
Containment pressure (psig)	0.5	1.1	1.4	1.8
2EMF-36 Trip 2 Light	LIT	LIT	LIT	LIT
2EMF-39 Trip 2 Light	DARK	LIT	LIT	LIT
E/S LOAD SEQ ACTUATED TRAIN “A” status light	DARK	DARK	LIT	LIT
E/S LOAD SEQ ACTUATED TRAIN “B” status light	DARK	DARK	DARK	LIT

Based on the above indications and conditions, what is the earliest time that an operator can be assured that 2VQ-3B (VQ Fan Suct From Cont Isol) has received a close signal?

- A. 0200
 - B. 0201
 - C. 0202
 - D. 0203
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 52
(1 point)

Given the following Unit 1 conditions:

- A Large Break LOCA has occurred
- The crew is performing EP/1/A/5000/ES-1.3 (Transfer To Cold Leg Recirculation)
- The BOP is instructed to align NS for recirc per Enclosure 2 (Aligning NS for Recirculation)

RN flow through the NS Heat Exchanger will be aligned when/if Containment pressure reaches a MINIMUM of _____(1)_____ .

Once aligned, a CAUTION in ES-1.3 states that RN flow shall not exceed a MAXIMUM of _____(2)_____ to prevent damage to the NS Heat Exchanger tubes.

Which ONE of the following correctly completes the statements above?

- A. 1. 1 psig
 2. 5700 GPM
 - B. 1. 1 psig
 2. 4650 GPM
 - C. 1. 3 psig
 2. 5700 GPM
 - D. 1. 3 psig
 2. 4650 GPM
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 53
(1 point)

Given the following conditions:

- Unit 1 is in Mode 5
- Unit 2 is at 100% RTP
- 1A train of ND is in service
- Both units enter AP/0/A/5500/022 (Loss of Instrument Air) following a VI pipe rupture

Per AP/22:

Once positioned per procedure, 1NI-173A (ND Hdr 1A To Cold Legs C&D) will be throttled _____(1)_____ if NC temperature begins to rise.

Unit 2 Reactor Trip will be required at a MAXIMUM lowering VI pressure of _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. OPEN
2. 55 psig
 - B. 1. CLOSED
2. 55 psig
 - C. 1. OPEN
2. 76 psig
 - D. 1. CLOSED
2. 76 psig
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 54
(1 point)

Given the following Unit 1 conditions:

- Unit is at 100% RTP
- A steam break occurred on the Main Steam Equalization Header
- Train 1B Safety Injection failed to automatically actuate

Assuming no operator action:

Phase A (St) isolation has been initiated on train ____ (1) ____.

Phase B (Sp) isolation ____ (2) ____ been initiated.

Which one of the following correctly completes the statements above?

- A. 1. 1A ONLY
 2. has

 - B. 1. 1A ONLY
 2. has NOT

 - C. 1. 1A AND 1B
 2. has

 - D. 1. 1A AND 1B
 2. has NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 55
(1 point)

Given the following Unit 1 conditions:

- A rapid downpower is in progress due to a secondary steam leak inside Containment
- 1A, 1B, and 1D Lower Containment Vent Units (LCVU) are in operation
- Current Unit 1 Containment pressure is 0.58 psig and rising slowly

Assuming no operator action,

1RN-473 (LCVU A Full Flow Valve) _____(1)_____ currently open.

1A LCVU _____(2)_____ operating in "Hi Speed".

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. is
- B. 1. is
2. is NOT
- C. 1. is NOT
2. is
- D. 1. is NOT
2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 56
(1 point)

Concerning Reactor Trip Breaker 1B:

The Undervoltage coil receives power auctioneered from _____(1)_____ and 1ERPD and is _____(2)_____ to actuate.

Which ONE of the following correctly completes the statement above?

- A. 1. 1ERP
2. energized
 - B. 1. 1ERP
2. de-energized
 - C. 1. 1ERP
2. energized
 - D. 1. 1ERP
2. de-energized
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 57
(1 point)

Concerning the Pressurizer Cold Cal Channel:

The Pressurizer level "Cold Calibrated" Channel is calibrated for _____(1)_____. This channel _____(2)_____ a required safety related indication.

Which ONE of the following correctly completes the statements above?

- A. 1. 100°F
2. is
 - B. 1. 100°F
2. is NOT
 - C. 1. 120°F
2. is
 - D. 1. 120°F
2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 58
(1 point)

Given the following Unit 1 initial conditions:

- Unit is at 12% RTP following startup
- Required actions for being greater than P-10 have been taken

Subsequently:

- 1ERPA de-energizes

As a result of this failure:

Power Range detector N-41 will lose ____ (1) ____.

The crew will FIRST enter ____ (2) ____.

Which ONE of the following correctly completes the statements above?

- A.
 1. control power ONLY
 2. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
 - B.
 1. control power ONLY
 2. AP/1/A/5500/016 (Malfunction of Nuclear Instrumentation)
 - C.
 1. control and instrument power
 2. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
 - D.
 1. control and instrument power
 2. AP/1/A/5500/016 (Malfunction of Nuclear Instrumentation)
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 59
(1 point)

Given the following Unit 1 conditions:

- A Shift Maintenance Technician performing Reactor Building rounds reports that the Ice Condenser Inlet Door Positioning Monitor System panel has no indicating lights lit

Which one of the following is the minimum action required to maintain compliance with SLC 16.6-3 Inlet Door Position Monitoring System?

- A. Immediately verify the ice bed temperature is less than or equal to 27 °F
 - B. Immediately verify the Ice Bed Temperature Monitoring System is Functional
 - C. Within 1 hour verify the ice bed temperature is less than or equal to 27 °F
 - D. Within 1 hour verify the Ice Bed Temperature Monitoring System is Functional
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 60
(1 point)

Given the following Unit 1 conditions:

- A Design Basis Large Break LOCA has occurred combined with a loss of core cooling event
- Reactor Engineering calculates cladding temperature to be approximately 2400 °F

Based on given conditions, the largest contributor to hydrogen buildup in containment is _____(1)_____ .

Per OP/1/A/6450/010 (Containment Hydrogen Control Systems) Technical Support Center (TSC) approval will be required, to place Hydrogen Recombiners in service, if Hydrogen concentration exceeds a MINIMUM of _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. Zirc-Water reaction in core region
 2. 4%
 - B. 1. Zirc-Water reaction in core region
 2. 6%
 - C. 1. Dissolved hydrogen in the NC System
 2. 4%
 - D. 1. Dissolved hydrogen in the NC System
 2. 6%
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 61
(1 point)

Given the following Unit 1 timeline:

1000

- The Unit has experienced a runback, from 100% power, following a trip of 1A CFPT

1003

- Main Turbine target load has been reached
- 1AD-2 A/9 (Control Rod Bank Lo Limit) illuminates

1005

- 1AD-2 B/9 (Control Rod Bank Lo-Lo Limit) illuminates
- Steam Dumps have closed
- Temperature Error meter indicates (+) 1.8° F

Entry into the Action Statement of Tech Spec 3.1.6 (Control Bank Insertion Limits) is FIRST required at _____(1)_____ .

In accordance with the conditions provided at **1005**, OMP 1-7 (Emergency / Abnormal Procedure Implementation Guidelines) _____(2)_____ state that control rods should be placed in MANUAL.

Which ONE of the following correctly completes the statements above?

- A. 1. 1003
2. does
 - B. 1. 1003
2. does NOT
 - C. 1. 1005
2. does
 - D. 1. 1005
2. does NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 62
(1 point)

Given the following Unit 1 conditions:

- The Unit 1 is at 100% RTP
- Main Condenser Vacuum is lowering due to CSAE malfunction
- The crew has entered AP/1/A/5500/023 (Loss of Condenser Vacuum)

In accordance with AP/23:

A turbine load reduction _____(1)_____ be effective.

As vacuum lowers, the OATC will trip the reactor once it is imminent that vacuum, in any main condenser, will reach a MAXIMUM value of _____(2)_____.

Which ONE of the following correctly completes the statements above?

- A. 1. will
2. 24.3 in Hg
 - B. 1. will
2. 22 in Hg
 - C. 1. will NOT
2. 24.3 in Hg
 - D. 1. will NOT
2. 22 in Hg
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 63
(1 point)

Concerning area monitors 1EMF-18 and 1EMF-19 (Reactor Coolant Filter A and B):

1EMF-18 and 1EMF-19 _____(1)_____ required by Tech Specs, and
_____(2)_____ listed as symptoms for entry into AP/1/A/5500/018 (High
Activity in Reactor Coolant).

Which ONE of the following correctly completes the statement above?

- A. 1. are
2. are
 - B. 1. are
2. are NOT
 - C. 1. are NOT
2. are
 - D. 1. are NOT
2. are NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 64
(1 point)

Given the following initial conditions:

- Units 1 & 2 are at 100% RTP
- 1A RN pump is in service

Subsequently:

- The following Unit 1 annunciators are lit
 - 1AD-12 B/2 "RN PIT A Screen Hi D/P"
 - 1AD-12 B/1 "RN Pump Intake Pit A Level – LO"
 - 1AD-12 E/2 "RN Pit A Swap to SNSWP"

Based on this event:

_____ (1) _____ will automatically close.

1B RN Pump _____ (2) _____ automatically start.

Which ONE of the following correctly completes the statements above?

- A. 1. 1RN-47A (RN Supply X-Over Isol)
2. will
 - B. 1. 1RN-47A (RN Supply X-Over Isol)
2. will NOT
 - C. 1. 1RN-48B (RN Supply X-Over Isol)
2. will
 - D. 1. 1RN-48B (RN Supply X-Over Isol)
2. will NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 65
(1 point)

Given the following Unit 1 conditions:

- The Fire Protection (RF) system heat sensitive element located at Unit 1 Main Turbine Bearing #8 has failed open

As a result of this malfunction, RF discharge flow to the Main Turbine Bearing #8 _____(1)_____ initiate.

The purpose of the Main Turbine portion of the Fire Protection system is to engulf turbine bearings with a large quantity of _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. will
2. water
 - B. 1. will
2. foam extinguishing agent
 - C. 1. will NOT
2. water
 - D. 1. will NOT
2. foam extinguishing agent
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 66
(1 point)

Given the following conditions:

- A clarification related to EAL classification needs to be communicated to all licensed SROs via Standing Instruction and has been prepared by a member of the Emergency Planning group

In accordance with AD-OP-ALL-0111 (Operations Communications):

This Standing Instruction _____(1)_____ be approved by another member of the Emergency Planning group..

Non-impacted operators (i.e. AOs) _____(2)_____ be exempted from documented review of this Standing Instruction

Which ONE of the following correctly completes the statements above?

- A. 1. can
2. can
 - B. 1. can NOT
2. can
 - C. 1. can
2. can NOT
 - D. 1. can NOT
2. can NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 67
(1 point)

Given the following conditions:

- Unit 1 has suffered a loss of Main Feed Pump runback from 100% RTP
 - Control rods failed to automatically insert on the runback
- Unit 2 is currently raising power to 100% RTP following Control Valve Movement Testing
 - An ILT student is manipulating control rods under the instruction of the OATC

In accordance with AD-OP-ALL-0203 (Reactivity Management):

An additional Reactor Operator _____(1)_____ required to peer check the Unit 1 OATC manually operating failed control rods.

An additional Reactor Operator _____(2)_____ required to peer check control rod manipulations performed by the ILT student.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. is
 - B. 1. is
2. is NOT
 - C. 1. is NOT
2. is
 - D. 1. is NOT
2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 68
(1 point)

Given the following Unit 1 conditions:

- A Unit startup is in progress in accordance with OP/1/A/6100/001 (Controlling Procedure for Unit Startup)
- Auxiliary Steam (AS) from Unit 2 is being used for turbine warming
- NC system pressure is 2235 psig
- Steam dumps are controlling NC Tavg at 557°F
- The crew is preparing to restore AS to a normal alignment by closing 1AS-4, (Main Steam to AS HDR CTRL Bypass)

Operation of 1AS-4 is performed _____(1)_____ the Control Room.

In accordance with AD-OP-ALL-0203, (Reactivity Management), the Unit startup will require a dedicated _____(2)_____ with no concurrent duties.

Which ONE of the following correctly completes the statements above?

- A. 1. outside
2. RO AND SRO
 - B. 1. inside
2. RO AND SRO
 - C. 1. outside
2. RO ONLY
 - D. 1. inside
2. RO ONLY
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 69
(1 point)

Concerning Tech Spec 2.1.1 (Reactor Core SLs):

The peak centerline fuel temperature shall be maintained less than _____(1)_____ .

This limit _____(2)_____ change over core life.

Which ONE of the following correctly completes the statements above?

- A. 1. 2200°F
2. does
 - B. 1. 2200°F
2. does NOT
 - C. 1. 5080°F
2. does
 - D. 1. 5080°F
2. does NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 70
(1 point)

Given the following Unit 2 conditions:

- Maintenance is performing a calibration of Pressurizer Pressure Channel 1
- A technician has requested the Unit 2 BOP delete an OAC alarm per the associated IP procedure

In accordance with AD-OP-ALL-1000 (Conduct of Operations):

The deleted OAC alarm ____ (1) ____ required to be logged in eSOMS.

An audit of deleted computer alarms is required ____ (2) ____ .

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. weekly
 - B. 1. is
2. monthly
 - C. 1. is NOT
2. weekly
 - D. 1. is NOT
2. monthly
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 71
(1 point)

Given the following:

- A General Emergency has been declared
- A mission to protect valuable property is required

In accordance with AD-EP-ALL-0205 (Emergency Exposure Controls):

The limit associated with this emergency exposure is _____(1)_____ and the worker _____(2)_____ required to be a volunteer.

Which ONE of the following correctly completes the statement above?

- A. 1. 5 Rem
2. is
 - B. 1. 5 Rem
2. is NOT
 - C. 1. 10 Rem
2. is
 - D. 1. 10 Rem
2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 72
(1 point)

Given the following Unit 1 conditions:

- An Operator is performing a valve lineup in the Unit 1 Auxiliary Building
- While working in the area, the Operator receives a Dose Rate alarm on his Electronic Dosimeter (ED)
- After a few seconds, the Dose Rate alarm automatically clears
- The possibility of a Dose Rate alarm was NOT discussed during the RP brief

In accordance with PD-RP-ALL-0001 (Radiation Worker Responsibilities):

the Operator _____(1)_____ .

if the Operator receives a Dose alarm, the alarm _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A.
 1. must stop work, exit the area, and notify RP immediately
 2. will not clear until the ED is reset
 - B.
 1. must stop work, exit the area, and notify RP immediately
 2. will automatically clear after 10 seconds
 - C.
 1. may continue to work unless two additional dose rate alarms are received
 2. will not clear until the ED is reset
 - D.
 1. may continue to work unless two additional dose rate alarms are received
 2. will automatically clear after 10 seconds
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 73
(1 point)

During an emergency event:

The MINIMUM level of emergency classification that ALWAYS requires activation of the OSC, TSC, and EOF is a ____ (1) ____.

The MINIMUM level of emergency classification that ALWAYS requires an evacuation of all non-essential personnel from the site is a ____ (2) ____.

Which ONE of the following correctly completes the statements above?

- A.
 - 1. Alert
 - 2. Site Area Emergency
 - B.
 - 1. Alert
 - 2. General Emergency
 - C.
 - 1. Unusual Event
 - 2. Site Area Emergency
 - D.
 - 1. Unusual Event
 - 2. General Emergency
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 74
(1 point)

Of the four (4) nuclear instruments listed in F-0, (Critical Safety Function Status Trees), for assessing the “Subcriticality” safety function, which ONE is a Post-Accident Monitoring (PAM) instrument required by LCO 3.3.3, “PAM (Post-Accident Monitoring) Instrumentation?”

- A. Source Range
 - B. Intermediate Range
 - C. Power Range
 - D. Wide Range
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 75
(1 point)

Given the following Unit 1 initial conditions:

- Unit is cooling down for a refueling outage
- NC Thots are at 365°F
- NC pressure is 400 psig
- All CLAs have been isolated

Subsequently:

- NC pressure and PZR level are steadily lowering
- Containment pressure is rising
- The crew enters AP/1/A/5500/027, (Shutdown LOCA) and maximizes charging and isolates letdown
- Pressurizer level and pressure continue to lower

In accordance with AP/27, the cooldown rate is required to be LESS THAN _____(1)_____ in one hour.

In accordance with OP/1/A/6200/004, (Residual Heat Removal System), ND can be placed in RHR Mode once NC Thots are less than a MAXIMUM temperature of _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. 100°F
2. 350°F
 - B. 1. 80°F
2. 350°F
 - C. 1. 100°F
2. 300°F
 - D. 1. 80°F
2. 300°F
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 76
(1 point)

Given the following Unit 2 conditions:

- Unit is at 100% RTP
- A DCS malfunction causes the Selected Pressurizer Pressure 1 input to the Pressurizer Master Controller to fail **HIGH**
- In accordance with AP/2/A/5500/011 (Pressurizer Pressure Anomalies) the BOP has manually closed 2NC-34A (PZR PORV) and 2NC-27 / 2NC-29 (Pressurizer Spray Valves)
- The Pressurizer Pressure Master Controller is in MANUAL

In accordance with **Tech Spec 3.4.11** (Pressurizer Power Operated Relief Valves):

2NC-34A is required to operable in MODES _____(1)_____

2NC-34A _____(2)_____ currently OPERABLE.

Which ONE of the following correctly completes the statements above?

- A. 1. 1 - 3
2. is
 - B. 1. 1 - 3
2. is NOT
 - C. 1. 1 - 4
2. is
 - D. 1. 1 - 4
2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 77
(1 point)

Given the following Unit 2 initial conditions:

- A SGTR has occurred on 2C S/G
- Prior to initiating NC system cooldown, all NC pumps were stopped due to loss of subcooling

Subsequently:

- NC system cooldown and depressurization is COMPLETE
- NC subcooling is 25°F
- The crew has reached the step in EP/2/A/5000/E-3 (Steam Generator Tube Rupture) to check NCP status

In accordance with the EOP background document for E-3, the principal reason for restarting an NC pump at this point in E-3 is to _____(1)_____ during the subsequent recovery.

In accordance with E-3, Enclosure 3 (NC Pump Start), the reason for checking Reactor Vessel Upper Range level prior to the NC pump start is to ensure sufficient inventory to _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. reduce S/G tube thermal stress
2. accommodate void collapse
 - B. 1. provide normal Pressurizer spray flow
2. accommodate void collapse
 - C. 1. reduce S/G tube thermal stress
2. provide adequate NC pump NPSH
 - D. 1. provide normal Pressurizer spray flow
2. provide adequate NC pump NPSH
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 78
(1 point)

Given the following Unit 1 conditions:

- The crew has entered EP/1/A/5000/ECA-0.0 (Loss of All AC Power) following a loss of offsite power
- Neither Diesel Generator started manually
- 1B D/G started upon Safety Injection initiation

Following the start of 1B D/G, the CRS will transition to _____(1)_____.

AP/07 Enclosure 5 (Aligning Alternate Power to 1ETA) _____(2)_____ be used for 1ETA alternate power alignment.

Which ONE of the following correctly completes the statements above?

- A. 1. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
2. will NOT
 - B. 1. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
2. will
 - C. 1. EP/1/A/5000/ES-1.1 (Safety Injection Termination)
2. will NOT
 - D. 1. EP/1/A/5000/ES-1.1 (Safety Injection Termination)
2. will
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 79
(1 point)

Given the following Unit 1 conditions:

- Unit is at 100% RTP
- 1ERPA has de-energized due to an inverter failure
- The crew is preparing to re-energize 1ERPA via 1VRD per AP/1/A/5500/029 (Loss of Vital or Aux Control Power)

The power supply transfer required to re-align 1ERPA to 1VRD will be performed via a(n) _____(1)_____ .

Once 1ERPA is aligned to 1VRD, the crew _____(2)_____ exit the action statement of Tech Spec 3.8.7 (Inverters – Operating).

Which ONE of the following correctly completes the statements above?

- A. 1. manual bypass switch
2. will
 - B. 1. manual bypass switch
2. will NOT
 - C. 1. automatic transfer switch
2. will
 - D. 1. automatic transfer switch
2. will NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 80
(1 point)

Given the following timeline:

1000

- Unit 1 is at 100% RTP
- Unit 2 is currently at 40% RTP and rising following refueling outage
 - 2ETA and 2ETB remain aligned to Unit 1
- Unit 1 suffers a Loss of Offsite Power (LOOP)
- 1A D/G is the ONLY D/G in operation

1230

- Crew disconnects Unit 2 Vital Batteries (per applicable procedure) due to decay of DC Bus voltage

As a result of these events:

At time 1015, the correct EAL classification will be ____ (1) ____.

At time 1245, the correct EAL classification will be ____ (2) ____.

Which ONE of the following correctly completes the statements above?

REFERENCE PROVIDED

- A. 1. ALERT
2. SITE AREA EMERGENCY
 - B. 1. ALERT
2. GENERAL EMERGENCY
 - C. 1. SITE AREA EMERGENCY
2. SITE AREA EMERGENCY
 - D. 1. SITE AREA EMERGENCY
2. GENERAL EMERGENCY
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 81
(1 point)

Given the following Unit 1 conditions:

- The crew entered EP/1/A/5000/ES-1.3 (Transfer to Cold Leg Recirculation) following a Large Break LOCA
- While performing ES-1.3, the crew transitioned to EP/1/A/5000/ECA-1.1 (Loss of Emergency Coolant Recirc)
- Containment pressure is currently 3.2 PSIG

In accordance with ECA-1.1, while attempting to establish recirculation flow the crew will cool the core by _____(1)_____.

While performing ECA-1.1, if a RED Path occurs on Core Cooling the crew _____(2)_____ transition to FR-C.1 (Response To Inadequate Core Cooling).

Which ONE of the following correctly completes the statements above?

- A. 1. aligning the NC system for Bleed and Feed
2. will
 - B. 1. aligning the NC system for Bleed and Feed
2. will NOT
 - C. 1. dumping steam from intact Steam Generators
2. will
 - D. 1. dumping steam from intact Steam Generators
2. will NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 82
(1 point)

Unit 1 is operating at 98% power. PT/1/A/4600/001 (RCCA Movement Test) is in progress. As Control Bank D was being moved from 215 SWD to 205 SWD, one control rod in Control Bank D slipped to 120 SWD and stopped. Below is an incore thermocouple map one minute later.

	R	P	N	M	L	K	J	H	G	F	E	D	C	B	A
1						576		572		576					
2		546			599		611		603		605				
3				605				624				BAD		569	
4			597		602				609				617		
5		602				625				616				614	
6	563		611				611				626		623		568
7		602		606				617				620			
8	561				612		634		572				626		
9		619				611				613				614	
10	548		610				606				613				574
11				627				BAD				610		614	
12			612		599				608				622		
13				620		619				576		626		562	
14		540			628		613		608		614				
15						BAD		622		580					

Rod ____ (1) ____ is misaligned.

In order to continue Mode 1 operation, Tech. Spec. 3.1.4 (Rod Group Alignment Limits) will require a power reduction, SDM verification, and completion of ____ (2) ____.

Which ONE of the following correctly completes the statements above?

- A.
 1. D-12
 2. $F_{\Delta H}^N(X,Y)$ surveillance ONLY
- B.
 1. M-4
 2. $F_{\Delta H}^N(X,Y)$ surveillance ONLY
- C.
 1. D-12
 2. $F_{\Delta H}^N(X,Y)$ AND $F_Q(X,Y,Z)$ surveillances
- D.
 1. M-4
 2. $F_{\Delta H}^N(X,Y)$ AND $F_Q(X,Y,Z)$ surveillances

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 83
(1 point)

Given the following Unit 1 conditions:

- Unit is at 50% RTP
- An NC system leak has developed and is determined to be in the Pressurizer compartment
- Per leak hunt guidelines, Engineering has requested the crew evaluate Pressurizer level instrumentation per PT/1/A/4600/002A (Mode 1 Periodic Surveillance Items)
 - Selected Tavg is 574°F
 - Pressurizer Level Channels indicate as follows:
 - Channel 1 – 44.8%
 - Channel 2 – 42.9%
 - Channel 3 – 40.8%

The crew will report Pressurizer Level Channel _____(1)_____ is inoperable, in accordance with PT/1/A/4600/002A.

In accordance with Tech Spec 3.3.1 Bases, three channels of pressurizer level (vs. four) are required because _____(2)_____ .

Which ONE of the following correctly completes the statements above?

REFERENCE PROVIDED

- A. 1. ONE
2. of the slow rate of charging that is available
 - B. 1. ONE
2. pressurizer level does NOT provide a backup signal to any other reactor trips
 - C. 1. THREE
2. of the slow rate of charging that is available
 - D. 1. THREE
2. pressurizer level does NOT provide a backup signal to any other reactor trips
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 84
(1 point)

Given the following Unit 1 initial conditions:

- The crew has begun a Reactor startup
- Intermediate Range Channel N-35 begins to operate erratically
- Reactor Power is stabilized at 10^{-6} % RTP
- AP/1/A/5500/016 (Malfunction of Nuclear Instrumentation System) Case III (Intermediate Range Malfunction) is entered

Subsequently:

- Power remains stable at 10^{-6} % RTP
- AP/16 actions are complete

The "1/N-35A I/R CHANNEL 1 TRIP BYPASS" status light on 1SI-19
____(1)____ LIT.

Per Tech Spec 3.3.1, (RTS Instrumentation), the startup to MODE 1
____(2)____ continue.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. may
 - B. 1. is
2. may NOT
 - C. 1. is NOT
2. may
 - D. 1. is NOT
2. may NOT
-

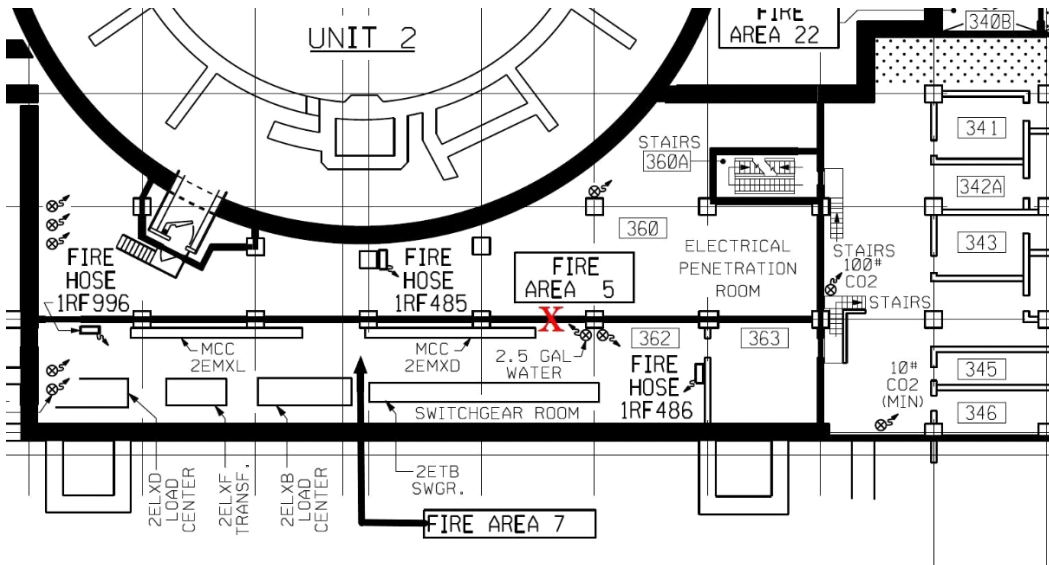
Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 85
(1 point)

Given the following Unit 2 conditions:

- An Auxiliary Operator has reported a hole in the wall represented by the "X" in the drawing below



In accordance with SLC 16.9-5 (Fire Rated Assemblies):

A High Safety Significant (HSS) Fire Area _____(1)_____ impacted.

A Fire Watch will be established per Condition _____(2)_____ .

Which ONE of the following correctly completes the statements above?

REFERENCE PROVIDED

- A. 1. is
2. A
- B. 1. is
2. C
- C. 1. is NOT
2. A
- D. 1. is NOT
2. C

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 86
(1 point)

Given the following Unit 1 conditions:

- The Unit is stable at 100% RTP
- Operators are performing PT/1/A/4150/001 A (NC Pump Seal Injection Flow Verification)
- 1NV-294 is fully open
- Seal Injection flow is 42 gpm and stable

Based on the conditions above, the Action Statement of Tech Spec 3.5.5 (Seal Injection Flow) _____(1)_____ required to be entered.

In accordance with the Bases of Tech Spec 3.5.5, the Seal Injection Flow Limit _____(2)_____ based on the safety analysis assumptions for minimum ECCS Injection flow.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. is
 - B. 1. is NOT
2. is
 - C. 1. is
2. is NOT
 - D. 1. is NOT
2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 87
(1 point)

Given the following Unit 2 conditions:

- The Unit is at 100% RTP
- A loss of 2ERPD has occurred
- The crew has entered AP/2/A/5500/029 (Loss of Vital or Aux Control Power)
- NO Tech Spec actions have been addressed

The current Containment Pressure channel logic for the remaining Containment Pressure channels which will cause a **Phase B** actuation is _____(1)_____ .

In accordance with Tech Spec 3.3.2 (ESFAS Instrumentation), when the failed channel is removed from service, I&E will place the Containment Pressure **Hi-Hi** Bistable in _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A. 1. 2/3
2. Trip
 - B. 1. 2/3
2. Bypass
 - C. 1. 1/3
2. Trip
 - D. 1. 1/3
2. Bypass
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 88
(1 point)

Given the following Unit 1 conditions:

- Unit is at 50% RTP
- A failure of the IFE System (Steam Generator Water Level and Feedwater Pump Speed Control System) results in SG narrow range levels rising to 87%

In order to mitigate the above condition, the CRS will enter ____ (1) ____ .

In accordance with T.S. 3.3.2 (ESFAS Instrumentation) Bases, feedwater isolation coincident with low Tavg is a function of the ____ (2) ____ interlock.

Consider each statement separately

Which ONE of the following correctly completes the statements above?

- A. 1. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
 2. P-14

 - B. 1. AP/1/A/5500/002 (Turbine Generator Trip)
 2. P-14

 - C. 1. EP/1/A/5000/E-0 (Reactor Trip or Safety Injection)
 2. P-4

 - D. 1. AP/1/A/5500/002 (Turbine Generator Trip)
 2. P-4
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 89
(1 point)

Given the following Unit 2 conditions:

- A loss of all offsite power (LOOP) occurred 20 minutes ago
- 2A D/G failed to start and remains shutdown
- 2B CA Pump will not start
- #2 CAPT has tripped and cannot be restarted
- All Unit 2 S/G levels are 13% and slowly lowering

Based on the conditions above, this Shift Manager will classify this event as a/an _____(1)_____ .

Per AD-EP-ALL-0111 (Control Room Activation of the ERO), **initial** NRC notification will be performed via transmittal of _____(2)_____ .

Which ONE of the following correctly completes the statements above?

REFERENCE PROVIDED

- A.
 1. Alert
 2. Emergency Notification Form (ENF)
 - B.
 1. Alert
 2. NRC Form 361 (Reactor Plant Event Notification Worksheet)
 - C.
 1. Site Area Emergency
 2. Emergency Notification Form (ENF)
 - D.
 1. Site Area Emergency
 2. NRC Form 361 (Reactor Plant Event Notification Worksheet)
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 90
(1 point)

Concerning operation of the Emergency Diesel Generator:

In accordance with OP/1/A/6350/002 (Diesel Generator Operation), the reason for not operating a D/G unloaded for a long period of time _____(1)_____ to prevent sludge buildup in the engine.

In accordance with TS 3.8.1 (AC Sources - Operating) Bases, the maximum loading limit for each D/G is _____(2)_____ KW for up to 2 hours in any 24 hour period.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. 7700
 - B. 1. is
2. 8750
 - C. 1. is NOT
2. 7700
 - D. 1. is NOT
2. 8750
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 91
(1 point)

Given the following Unit 1 initial conditions:

- Unit was at 100% RTP
- The #1 CAPT is out-of-service for maintenance

Subsequently:

- The unit is manually tripped when both CF pumps trip
- 1A and 1B CA pumps fail to automatically start and cannot be started manually
- The crew has implemented EP/1/A/5000/FR-H.1 (Response to Loss of Secondary Heat Sink)
- SG WR level is 40% in all SGs

In accordance with FR-H.1:

NC system Feed and Bleed must be initiated within a MAXIMUM of _____(1)_____ minutes after reaching Feed and Bleed initiation criteria.

After Feed and Bleed is initiated, efforts to restore feedwater flow to the S/Gs _____(2)_____ be terminated.

Which ONE of the following correctly completes the statements above?

- A. 1. 8
2. MAY
 - B. 1. 4
2. MAY
 - C. 1. 8
2. MAY NOT
 - D. 1. 4
2. MAY NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 92
(1 point)

Given the following Unit 1 conditions:

- The crew is performing PT/0/A/4150/019 (1/M Approach to Criticality)
- All shutdown banks are fully withdrawn
- Control Bank A rods are fully withdrawn
- Control Bank B rods are being withdrawn

Subsequently:

- Control Bank B rod K14 drops
- DRPI indication for rod K14:
 - Rod position indication is '0' with RB indication below the rod
- Demand position counter for Bank B Groups 1 & 2 indicates 114 steps

In accordance with T.S. 3.1.7 (Rod Position Indication) Bases, LCO 3.1.7
_____ (1) _____ met.

In accordance with PT/0/A/4150/019, the CRS will direct insertion of
_____ (2) _____.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. all control banks ONLY
 - B. 1. is NOT
2. all control banks ONLY
 - C. 1. is
2. all control banks AND shutdown banks
 - D. 1. is NOT
2. all control banks AND shutdown banks
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 93
(1 point)

Given the following Unit 1 initial conditions:

- Unit is at 100% RTP
- At **0900** a Large Break LOCA occurs
- At **0910** the Shift Manager declares an Alert
- Efforts to establish adequate Safety Injection flow to the core are unsuccessful
- The crew has secured NCPs due to loss of subcooling

Subsequently:

- Core Exit Thermocouples and RVLIS level indications are as follows for the times listed

Time	CETC	RVLIS
0930	650° - Rising	50% - lowering
0945	720° - Rising	46% - lowering
1000	770° - Rising	41% - lowering
1015	790° - Rising	38% - lowering

The Shift Manager re-evaluated EALs at **0945** and is evaluating again at **1010**.

At time **0945**, EAL upgrade criteria _____(1)_____ met.

At time **1015**, the Shift Manager _____(2)_____ declare a General Emergency.

Which ONE of the following correctly completes the statements above?

REFERENCE PROVIDED

- A. 1. is
2. will
- B. 1. is
2. will NOT
- C. 1. is NOT
2. will
- D. 1. is NOT
2. will NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 94
(1 point)

In accordance with AD-OP-ALL-1001, (Conduct of Abnormal Operations), regarding 10 CFR 50.54 (x) Deviations:

the SRO approving the Deviation _____(1)_____ required to obtain concurrence from a second SRO prior to taking the action.

the NRC Operations Center must be notified within a maximum time of _____(2)_____ after taking the action.

Which ONE of the following correctly completes the statements above?

- A. 1. is
2. 1 HOUR
 - B. 1. is
2. 15 minutes
 - C. 1. is NOT
2. 1 HOUR
 - D. 1. is NOT
2. 15 minutes
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 95
(1 point)

Given the following unit 2 conditions:

- The unit is at 100% RTP
- It is determined that some S/G Safety Valve test results were incorrectly recorded during the previous refueling outage
- The following indicates the correct S/G Safety Valve lift setpoints:

Safety	Lift Press (psig)	Safety	Lift Press (psig)	Safety	Lift Press (psig)	Safety	Lift Press (psig)
2SV-20	1185	2SV-14	1178	2SV-8	1165	2SV-2	1213
2SV-21	1228	2SV-15	1201	2SV-9	1183	2SV-3	1190
2SV-22	1245	2SV-16	1212	2SV-10	1244	2SV-4	1208
2SV-23	1222	2SV-17	1260	2SV-11	1225	2SV-5	1222
2SV-24	1241	2SV-18	1233	2SV-12	1238	2SV-6	1273

Based on the conditions above, Rated Thermal Power is limited to a MAXIMUM of ____ (1) ____ .

Per 3.7.1 (Main Steam Safety Valves) bases, the most limiting Anticipated Operational Occurrence (AOO) is a ____ (2) ____ .

Which ONE of the following correctly completes the statements above?

REFERENCE PROVIDED

- A. 1. 24%
2. full power turbine trip without steam dump operation
- B. 1. 24%
2. steam generator tube rupture
- C. 1. 41%
2. full power turbine trip without steam dump operation
- D. 1. 41%
2. steam generator tube rupture

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 96
(1 point)

In accordance with AD-OP-ALL-200 (Clearance and Tagging):

a previously licensed SRO _____(1)_____ sign as clearance APPROVER.

if a clearance is designated as an Exceptional Clearance, Shift Manager permission _____(2)_____ required for approval.

Which ONE of the following correctly completes the statements above?

- A. 1. can
2. is
 - B. 1. can
2. is NOT
 - C. 1. can NOT
2. is
 - D. 1. can NOT
2. is NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 97
(1 point)

In accordance with AD-WC-ALL-0420 (Shutdown Risk Management) and AD-WC-ALL-0340 (Outage Schedule Development and Revision Process):

defense in Depth (DID) sheets are **first** REQUIRED for risk management once _____(1)_____ is reached during the shutdown.

the Plant Condition Mode Change (PCMC) reports _____(2)_____ intended to track **operability** of structures, systems, or components (SSC) required by Technical Specifications (TS) or Selected License Commitments (SLC).

Which ONE of the following correctly completes the statements above?

- A. 1. Mode 3
2. are NOT
 - B. 1. Mode 3
2. are
 - C. 1. Mode 4
2. are NOT
 - D. 1. Mode 4
2. are
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 98
(1 point)

Given the following conditions:

- A release, of AMT A, is being prepared from the Monitor Tank Building utilizing OEMF-57 as the monitor

OP/0/B/6500/060 (Discharge of an AMT to the Environment) _____(1)_____ require alignment of RN to the RL header.

Per SLC 16.11-4 (Liquid Radwaste Treatment System), the Liquid Radwaste Treatment System shall be demonstrated Functional by meeting _____(2)_____ .

Which ONE of the following correctly completes the statements above?

- A.
 - 1. does
 - 2. SLC 16.11-1 (Liquid Effluents) AND 16.11-3 (Dose)
 - B.
 - 1. does NOT
 - 2. SLC 16.11-1 (Liquid Effluents) AND 16.11-3 (Dose)
 - C.
 - 1. does
 - 2. SLC 16.11-1 (Liquid Effluents) ONLY
 - D.
 - 1. does NOT
 - 2. SLC 16.11-1 (Liquid Effluents) ONLY
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 99
(1 point)

Given the following Unit 1 conditions:

- Unit is in Mode 3 following a refueling outage
- The status of the Personnel Air Locks (PAL) is as follows:
 - Upper Airlock Inner Door Operable
 - Upper Airlock Outer Door Operable
 - Lower Airlock Inner Door Inoperable
 - Lower Airlock Outer Door Operable
- Repairs required are on the barrel (airlock side of the inner door)

The guidance for Containment entry, to repair the Lower Airlock Door, is contained in _____(1)_____ .

The Lower Airlock Outer Door _____(2)_____ be opened to make the repair.

Which ONE of the following correctly completes the statements above?

- A. 1. Tech. Spec. 3.6.2, (Containment Air Locks)
2. may
 - B. 1. Tech. Spec. 3.6.2, (Containment Air Locks)
2. may NOT
 - C. 1. Site Directive 3.1.2, (Access to Reactor Building and Areas Having High Pressure Steam Relief Devices)
2. may
 - D. 1. Site Directive 3.1.2, (Access to Reactor Building and Areas Having High Pressure Steam Relief Devices)
2. may NOT
-

Catawba Nuclear Station

ILT 21 CNS SRO NRC Examination

Question: 100
(1 point)

Given the following Unit 1 conditions:

- Unit is responding to a main steam line break inside containment
- The operators completed E-0 (Reactor Trip and Safety Injection) and transitioned to EP/1/A/5000/E-2 (Faulted Steam Generator Isolation)
- A RED PATH on Containment Integrity occurred and the operators transitioned to EP/1/A/5000/FR-Z.1 (Response to High Containment Pressure) at Step 8 of E-2
- A RED PATH on NC Integrity occurred and the operators transitioned to EP/1/A/5000/FR-P.1 (Response to Imminent Pressurized Thermal Shock Condition) from Step 4 of FR-Z.1

Following a completion of FR-P.1 and a report from the STA that all CSFs are now GREEN, what is the correct procedure transition?

- A. Return to E-2 Step 1 and continue.
 - B. Return to E-2 step 8 and continue.
 - C. Return to FR-Z.1 Step 4 and complete the procedure, then return to E-2 step 8.
 - D. Enter EP/1/A/5000/ES-0.0 (Rediagnosis) and use guidance for procedure entry.
-

WRITTEN EXAM
REFERENCE PACKAGE CONTENTS

EXAM ID: CNS ILT 21 NRC Exam (SRO)	
1	CNS ROD Book Section 2.6
2	CNS Unit 1 Data Book Figure 57 (Reactor Coolant Saturation Curve, Wide Range)
3	PT/1/A/4600/002A, Rev. 234, Encl. 13.1, Page 11 of 37
4	SLC 16.9-5 (Fire Rated Assemblies)
5	Tech Spec. 3.7.1 Table 3.7.1-1 & 3.7.1-2
6	CSD-EP-CNS-0101-02 (EAL Wall Charts)
7	Steam Tables
8	Mollier Diagram

**UNIT ONE
REACTOR OPERATING DATA
SECTION 2.6**

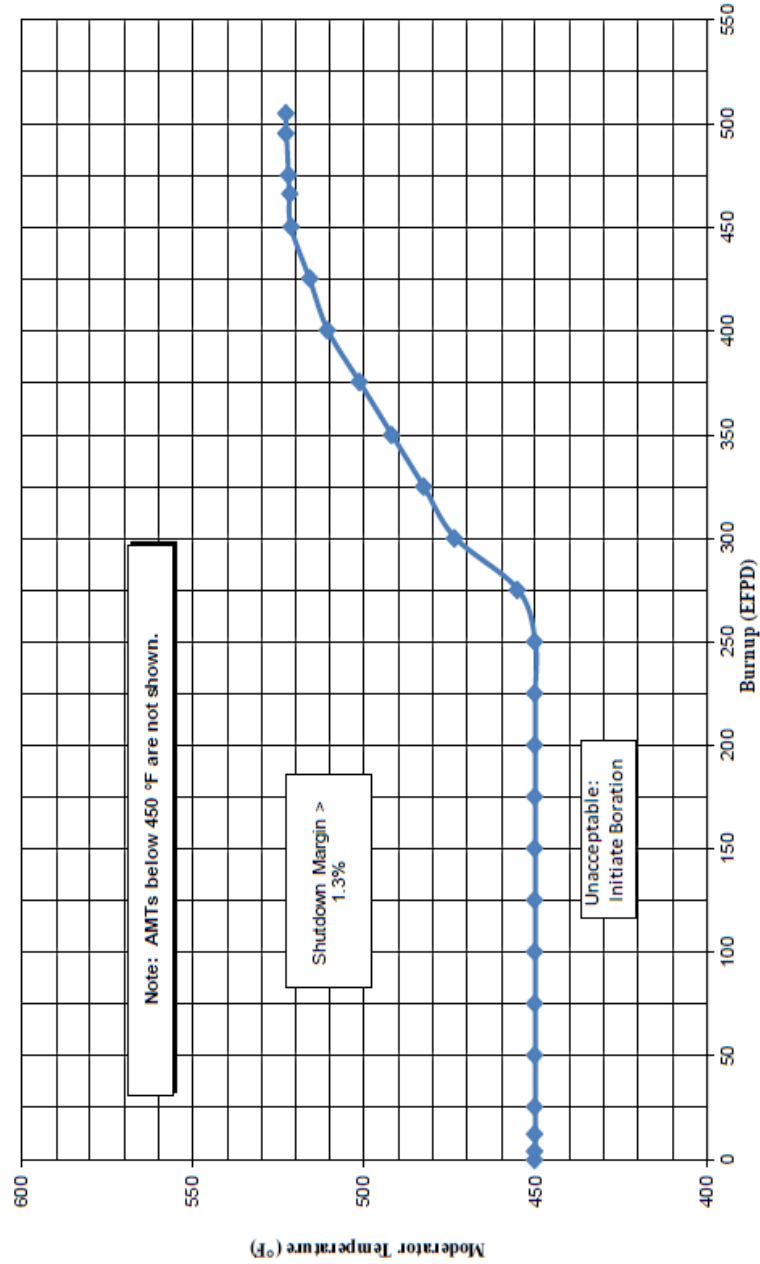
Source: CNEI-0400-361
Prepared by: MW Hawes
Revision Number: 870
Date: 5/25/20

**MINIMUM NC TEMPERATURE FOR 1.3% SHUTDOWN MARGIN
FOLLOWING REACTOR TRIP**

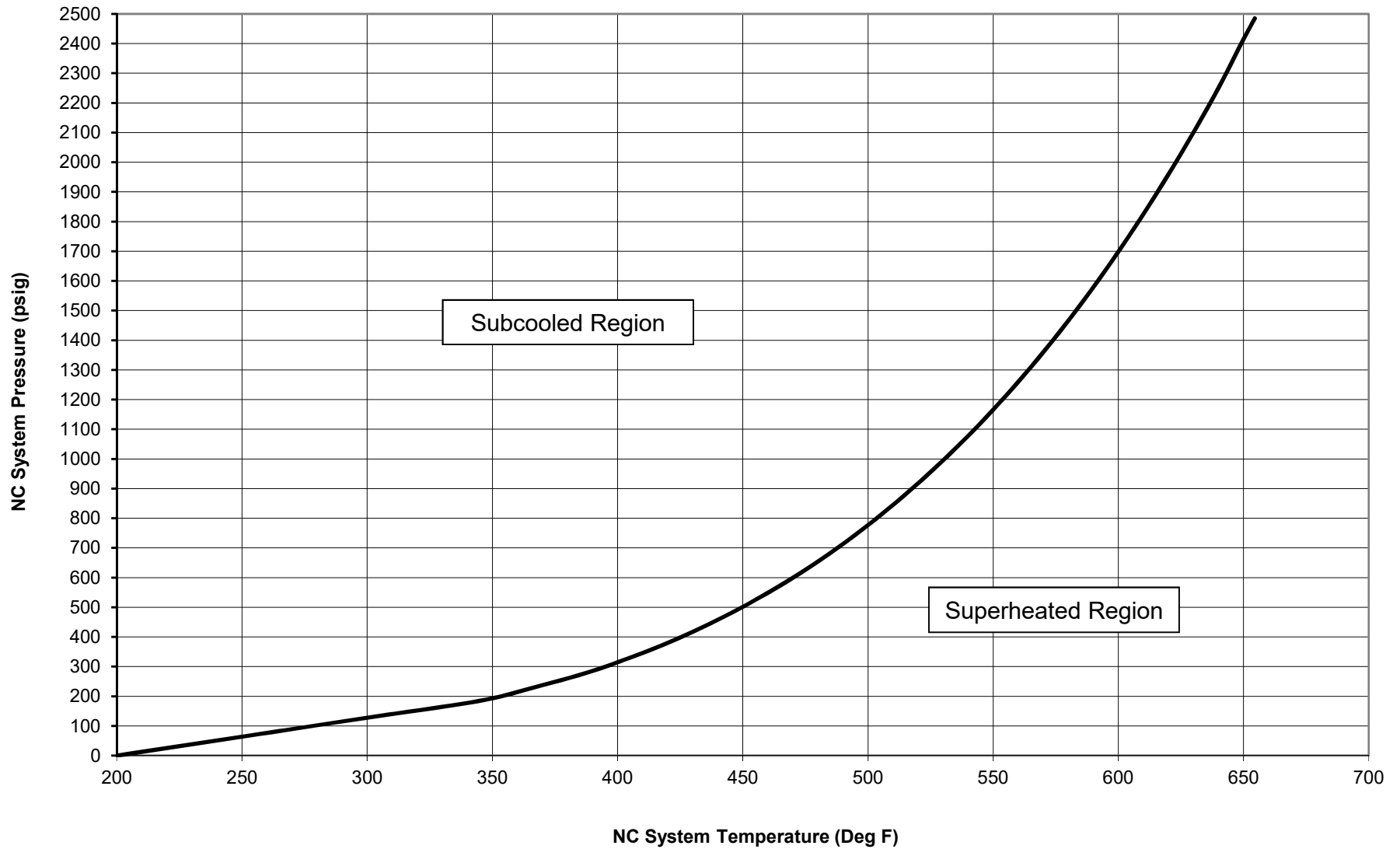
Catawba 1 Cycle 26
Startup and Operational Report

CNEI-0400-361, Rev. 0
CRD 35

**Figure 3
Allowable Moderator Temperature vs Burnup
for 1.3% Shutdown Margin
(Immediately Following and up to 2 hours after Reactor Trip)**



EFPD	0	4	12	25	45	50	75	100	125	150	175	200	225	250	275	300	325	350	375	400	425	450	466	475	495	505
AMT	450	450	450	450	450	450	450	450	450	450	450	450	450	450	455	473	483	492	501	511	516	521	522	522	523	523



Enclosure 13.1

Periodic Surveillance Items Data

#	SURVEILLANCE ITEM (Tech Spec Reference)	ACCEPTANCE CRITERIA	QUALIFYING CONDITIONS	COMPUTER POINT/ GAUGE ID	DAY SHIFT INITIALS	NIGHT SHIFT INITIALS
21	PZR Water Level Monitor Channel Check (SR 3.3.1.1, Table 3.3.1-1 Item 9)	Level differential between highest and lowest channels $\leq 3.5\%$. Calculate below: High Channel _____ % Low Channel _____ % Differential _____ %		C1A0707 C1A0867 C1A0873		
22	PZR Total Water Volume (SR 3.4.9.1)	PZR Level: $\leq 92\%$		C1A0707 C1A0867 C1A0873		
23	PZR Pressure Monitor Channel Check (SR 3.3.1.1, Table 3.3.1-1 Item 8a & 8b) & (SR 3.3.2.1, Table 3.3.2-1 Item 1d))	Press. differential between highest and lowest channels ≤ 28 psig. Calculate below: High Channel _____ psig Low Channel _____ psig Differential _____ psig		C1A0713 C1A0868 C1A0874 C1A0880		

16.9 AUXILIARY SYSTEMS

16.9-5 Fire Rated Assemblies

COMMITMENT All required Fire Rated Assemblies (walls, floors/ceilings, cable enclosures and other fire barriers) and all sealing devices in fire rated assembly penetrations (fire doors, fire dampers, and penetration seals) as shown on the CN-1105 drawing series shall be **FUNCTIONAL**.

APPLICABILITY: At all times.

-----NOTE-----

Non-functional or breached fire barrier features (walls, floors, ceilings, doors, dampers, and penetration seals) in the diesel generator rooms and the auxiliary feedwater pump rooms may affect CO₂ System **FUNCTIONALITY**. See SLC 16.9-3, "CO₂ Systems".

REMEDIAL ACTIONS

IF the required Fire Rated Assembly sealing device is a Fire Door, see Table 16.9-5-1

IF the required Fire Rated Assembly sealing device is a Fire Damper see Table 16.9-5-2

IF required Fire Rated Assembly is a Fire Barrier or Penetration Seal:

1. Identify the location of the impaired fire protection feature by elevation, column, and building
2. Verify the wall, floor/ceiling is a committed boundary on the CN-1105 drawing series (if not a committed boundary, SLC 16.9-5 does not apply)
3. Refer to CN-1209-10 series drawings to identify the Fire Area on both sides of the impaired feature
4. IF either of the Fire Areas is identified as High Safety Significant (HSS) (see Table 16.9-5-3) then implement the **REQUIRED ACTION CONDITION A**
5. IF the Fire Areas are not HSS, then identify the associated shutdown trains/methods of the Fire Areas on each side of the barrier using Table 16.9-5-4 and implement the **REQUIRED ACTION** as identified in the following Chart:

Shutdown Train (Side 1 & Side 2)	<i>A</i>	<i>B</i>	SSS	<i>A or B</i>	<i>A and B</i>
<i>A</i>	CONDITION C	CONDITION B	CONDITION B	CONDITION C	CONDITION B
<i>B</i>	CONDITION B	CONDITION C	CONDITION B	CONDITION C	CONDITION B
SSS	CONDITION B	CONDITION B	CONDITION C	CONDITION B	CONDITION B
<i>A or B</i>	CONDITION C	CONDITION C	CONDITION B	CONDITION C	CONDITION B
<i>A and B</i>	CONDITION B	CONDITION B	CONDITION B	CONDITION B	CONDITION C

REMEDIAL ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>A. One or more HSS* required Fire Rated Assemblies is non-functional.</p>	<p>A.1 Establish a continuous fire watch on at least one side of the assembly.</p>	<p>1 hour</p>
	<p><u>OR</u></p>	
	<p>A.2.1 Verify at least one side of the assembly has FUNCTIONAL fire detection instrumentation.</p>	<p>1 hour</p>
	<p><u>AND</u></p>	
	<p>A.2.2 Establish an hourly fire watch patrol on at least one side of the assembly.</p>	<p>1 hour</p>
	<p><u>OR</u></p>	
	<p>A.3 Complete an evaluation as permitted by NRC RIS 2005-07 to institute required action(s).</p>	<p>Prior to terminating Required Action A.1 or A.2</p>

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>B. One or more LSS** required Fire Rated Assemblies is non-functional.</p>	<p>B.1 Establish an hourly fire watch on at least one side of the assembly.</p> <p><u>OR</u></p>	<p>1 hour</p>
	<p>B.2.1 Verify at least one side of the assembly has FUNCTIONAL fire detection instrumentation.</p> <p><u>AND</u></p>	<p>1 hour</p>
	<p>B.2.2 Establish a once per shift fire watch patrol on at least one side of the assembly.</p> <p><u>OR</u></p>	<p>1 hour</p>
	<p>B.3 Complete an evaluation as permitted by NRC RIS 2005-07 to institute required action(s).</p>	<p>Prior to terminating Required Action B.1 or B.2</p>

(continued)

REMEDIAL ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. One or more DID*** required Fire Rated Assemblies is non-functional.	C.1 Establish a once per shift fire watch on at least one side of the assembly.	1 hour
	<u>OR</u>	
	C.2 Verify at least one side of the assembly has FUNCTIONAL fire detection instrumentation.	1 hour
	<u>OR</u>	
	C.3 Complete an evaluation as permitted by NRC RIS 2005-07 to institute required action(s).	Prior to terminating Required Action C.1

*High Safety Significant (HSS) Fire Areas containing required Fire Rated Assemblies are defined in Table 16.9-5-3.

**Low Safety Significant (LSS) Fire Areas containing required Fire Rated Assemblies are defined as those areas with a boundary between redundant shutdown trains.

***Defense-in-Depth (DID) Fire Areas containing required Fire Rated Assemblies are defined as analysis compartment boundaries or PRA compartment boundaries that do not meet the HSS or LSS definitions.

TESTING REQUIREMENTS

TEST	FREQUENCY
TR 16.9-5-1 Verify each HSS and LSS interior unlocked fire door is closed.	24 hours
TR 16.9-5-2 Verify each HSS and LSS locked closed fire door is closed.	7 days
TR 16.9-5-3 Perform an inspection and functional test of the release and closing mechanism and latches for each swinging fire door shown in Table 16.9-5-1.	6 months
TR 16.9-5-4 Perform a visual inspection of the exposed surfaces of each required Fire Rated Assembly.	18 months
TR 16.9-5-5 -----NOTE----- Any abnormal changes or degradation shall be identified and resolved via the corrective action program. Based on the investigation results, additional dampers may be selected for inspection. Samples will be grouped by unit, system, and train and shall be selected such that each damper is inspected every 15 years. ----- Perform a visual inspection of fire dampers in each required Fire Rated Assembly, shown in Table 16.9-5-2.	18 months, in accordance with the predefined inspection schedule

(continued)

TESTING REQUIREMENTS (continued)

TEST	FREQUENCY
<p>TR 16.9-5-6 -----NOTE----- Any abnormal changes or degradation shall be identified and resolved via the corrective action program. Based on the investigation results, additional Fire Rated Assemblies may be selected for inspection. Samples shall be selected such that each Fire Rated Assembly is inspected every 15 years. ----- Perform a visual inspection of penetration seals in each HSS AND LSS required Fire Rated Assembly.</p>	<p>18 months, in accordance with the predefined inspection schedule</p>
<p>TR 16.9-5-7 Perform an inspection and functional test of the automatic hold open, release and closing mechanism for each rolling fire door shown in Table 16.9-5-1.</p>	<p>18 Months</p>

Table 16.9-5-1
Required Fire Doors

DOOR NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
AX500F	AUX	56, FF	522+0	1/4	DID	C
AX214A	AUX	54-55, FF-GG	543+0	1/4	DID	C
AX214B	AUX	58-59, FF-GG	543+0	1/4	DID	C
AX217D	AUX	52-53, BB	543+0	3/34	LSS	B
AX217F ⁽¹⁾	AUX	51, AA-BB	543+0	3/40	LSS	B
AX217G	AUX	52-53, BB	543+0	3/32	LSS	B
AX227D	AUX	54-55, MM-NN	543+0	4/22	DID	C
AX227E	AUX	59-60, MM-NN	543+0	4/22	DID	C
AX228A	AUX	56-57, EE	543+0	4/9	DID	C
AX228B	AUX	57-58, EE	543+0	4/10	DID	C
AX248	AUX	57-58, QQ	543+0	4/ASB	LSS	B
AX260B	AUX	61-62, BB-CC	543+0	2/36	LSS	B
AX260F ⁽¹⁾	AUX	62, AA-BB	543+0	2/39	LSS	B
AX260G	AUX	61-62, BB-CC	543+0	2/31	LSS	B
AX260H	AUX	61-62, BB-CC	543+0	2/33	LSS	B
T527#1	AUX	52-53, BB-CC	543+0	3/37	LSS	B
AX202	AUX	51, NN	543+0	4/STAIR	DID	C
AX253A	AUX	63, NN	543+0	4/STAIR	DID	C
AX227A	AUX	59, FF-GG	543+0	4/STAIR	DID	C
AX260E	AUX	52, CC	543+0	3/STAIR	DID	C
AX516M	AUX	62, CC	543+0	2/STAIR	DID	C
AX354A	AUX	55, DD-EE	554+0	22/45	LSS	B
AX354B	AUX	59, DD-EE	554+0	22/46	LSS	B
AX418	AUX	57, BB	554+0	9/10	DID	C
AX419	AUX	57, DD-EE	554+0	9/10	DID	C
AX420A	AUX	59, DD-EE	554+0	9/46	LSS	B
AX421A	AUX	55, DD-EE	554+0	10/45	LSS	B
S102A	AUX	53-54, AA	554+0	10/SRV	LSS	B
AX302	AUX	41, CC-DD	556+0	25/41	DID	C
AX304	AUX	41, AA-BB	556+0	26/42	DID	C
AX306	AUX	73, DD-EE	556+0	27/43	DID	C
AX308	AUX	73, BB-CC	556+0	28/44	DID	C
AX348B	AUX	54-55, MM-NN	560+0	11/22	DID	C
AX348C	AUX	53-54, HH	560+0	4/11	DID	C
AX348D	AUX	59-60, MM-NN	560+0	11/22	DID	C
AX348E	AUX	60-61, HH	560+0	4/11	DID	C
AX352B	AUX	53, CC-DD	560+0	6/STAIR	HSS	A
AX352C	AUX	53, CC-DD	560+0	10/STAIR	DID	C
AX352D	AUX	46-47, BB-CC	560+0	6/RB1	HSS	A
AX353	AUX	45, BB	560+0	6/8	HSS	A
AX353B	AUX	45, AA-BB	560+0	8/41	LSS	B
AX353C	AUX	45, AA-BB	560+0	8/42	DID	C

(continued)

Table 16.9-5-1

Required Fire Doors

DOOR NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
AX393B	AUX	61, CC-DD	560+0	9/STAIR	DID	C
AX393C	AUX	61, CC-DD	560+0	5/STAIR	DID	C
AX393D	AUX	67-68, BB-CC	560+0	5/RB2	LSS	B
AX394	AUX	69, BB	560+0	5/7	DID	C
AX394B	AUX	69, AA-BB	560+0	7/43	LSS	B
AX394C	AUX	69, AA-BB	560+0	7/44	DID	C
AX395	AUX	61, AA-BB	560+0	7/9	LSS	B
AX396	AUX	53, AA-BB	560+0	8/10	LSS	B
AX415	AUX	45-46, CC-DD	560+0	6/RB1	HSS	A
AX416	AUX	68-69, CC-DD	560+0	5/RB2	LSS	B
AX417	AUX	57, QQ	560+0	11/ASB	LSS	B
AX313D	AUX	51, NN	560+0	11/STAIR	DID	C
AX388B	AUX	63, NN	560+0	11/STAIR	DID	C
AX348	AUX	59, FF-GG	560+0	11/STAIR	DID	C
AX355A	AUX	53-54, FF	568+0	4/11	DID	C
AX355D	AUX	60, FF	568+0	4/11	DID	C
AX355E	AUX	60, FF	568+0	11/STAIR	DID	C
AX515	AUX	54, BB	574+0	17/45	HSS	A
AX516	AUX	56-57, DD	574+0	14/45	HSS	A
AX516A	AUX	57-58, DD	574+0	16/46	HSS	A
AX516K	AUX	57, AA-BB	574+0	16/17	HSS	A
AX517A	AUX	53-54, DD-EE	574+0	22/45	LSS	B
AX517B	AUX	60-61, DD-EE	574+0	22/46	LSS	B
AX517C	AUX	57, DD-EE	574+0	45/46	DID	C
AX517D	AUX	57, DD-EE	574+0	9/46	LSS	B
AX517E	AUX	56-57, DD-EE	574+0	10/46	LSS	B
AX518	AUX	60, BB	574+0	16/46	HSS	A
S303	SRV	36-37, 1N	574+0	45/SRV	DID	C
S303C	SRV	36-37, V	574+0	45/SRV	DID	C
S304A	AUX	60, AA	574+0	46/SRV	DID	C
AX500H	AUX	54-55, MM-NN	577+0	18/22	DID	C
AX500K	AUX	53-54, HH-GG	577+0	4/18	DID	C
AX500L	AUX	59-60, MM-NN	577+0	18/22	DID	C
AX500N	AUX	60-61, HH-GG	577+0	4/18	DID	C
AX513B	AUX	53, CC-DD	577+0	13/STAIR	HSS	A
AX514	AUX	45, BB	577+0	13/15	HSS	A
AX514B	AUX	45-46, AA-BB	577+0	6/13	HSS	A
AX517	AUX	57, EE	577+0	9/18	DID	C
AX525	AUX	55-56, QQ	577+0	18/ASB	LSS	B
AX525B	AUX	56, QQ	577+0	18/ASB	LSS	B
AX526D	AUX	58, QQ	577+0	18/ASB	LSS	B
A314#3	AUX	61, CC-DD	577+0	12/STAIR	HSS	A
AX533C	AUX	61, CC-DD	577+0	46/STAIR	DID	C
AX534	AUX	69, BB	577+0	12/14	HSS	A

(continued)

Table 16.9-5-1
Required Fire Doors

DOOR NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
AX534B	AUX	68-69, AA-BB	577+0	7/14	HSS	A
AX535A	AUX	61, AA-BB	577+0	14/46	HSS	A
AX536	AUX	53, AA-BB	577+0	15/45	HSS	A
AX656	AUX	53, CC-DD	577+0	45/STAIR	DID	C
AX500P	AUX	51, NN	577+0	18/STAIR	DID	C
AX500S	AUX	63, NN	577+0	18/STAIR	DID	C
AX338A	AUX	60, FF-GG	577+0	18/STAIR	DID	C
AX602	AUX	52, UU-VV	594+0	24/ASB	DID	C
AX627	AUX	62, UU-VV	594+0	23/ASB	DID	C
AX630	AUX	58, QQ	594+0	22/ASB	LSS	B
AX632	AUX	57, QQ	594+0	22/ASB	LSS	B
AX635	AUX	60-61, QQ	594+0	22/ASB	LSS	B
AX635E	AUX	53-54, QQ	594+0	22/ASB	LSS	B
AX635F	AUX	53-54, QQ	594+0	22/ASB	LSS	B
AX655	AUX	62-63, DD	594+0	19/48	LSS	B
AX656C	AUX	61, CC-DD	594+0	19/22	LSS	B
AX657	AUX	60-61, CC	594+0	19/22	LSS	B
AX657A ⁽²⁾	AUX	54, BB	594+0	21/35	HSS	A
AX657B	AUX	52-53, CC-DD	594+0	20/22	LSS	B
AX657E ⁽²⁾	AUX	53, BB	594+0	21/35	HSS	A
AX657F	AUX	60, DD-EE	594+0	21/22	HSS	A
AX657G	AUX	57-58, DD-EE	594+0	21/22	HSS	A
AX657H	AUX	54, DD-EE	594+0	21/22	HSS	A
AX657J	AUX	53, BB-CC	594+0	20/21	HSS	A
AX658B	AUX	51-52, DD	594+0	20/49	LSS	B
S400	AUX	55-56, AA	594+0	21/SRV	HSS	A
S406	AUX	58-59, AA	594+0	21/SRV	HSS	A
AX635G	AUX	51, NN	594+0	22/STAIR	DID	C
AX635H	AUX	63, NN	594+0	22/STAIR	DID	C
AX654A	AUX	60, FF	594+0	22/STAIR	DID	C
AX654B	AUX	61, CC-DD	594+0	19/STAIR	DID	C
AX665B	AUX	53, CC-DD	594+0	22/STAIR	DID	C
AX700B	AUX	50-51, JJ-KK	605+10	24/RB1	LSS	B
AX700D	AUX	63-64, KK	605+10	22/23	LSS	B
AX701	AUX	50-51, JJ-KK	605+10	22/RB1	LSS	B
AX714B	AUX	63-64, JJ-KK	605+10	23/RB2	LSS	B
AX720	AUX	50-51, HH-JJ	605+10	22/RB1	LSS	B
AX721	AUX	63-64, HH-JJ	605+10	22/RB2	LSS	B
AX714C	AUX	50-51, KK	605+10	22/24	LSS	B
AX715A	AUX	63-64, JJ-KK	605+10	22/RB2	LSS	B
S211 ⁽²⁾	TB1	17, V	568+0	SRV/TB1	DID	C
S212	TB1	19, V	568+0	SRV/TB1	DID	C
S210	TB1	21, V	568+0	SRV/TB1	DID	C

(continued)

Table 16.9-5-1
Required Fire Doors

DOOR NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
S206	TB1	22, V	568+0	SRV/TB1	DID	C
S201	TB1	33, V	568+0	SRV/TB1	DID	C
SR3 ⁽³⁾	TB1	30-31, V	568+0	SRV/TB1	DID	C
S201A	TB1	27, V	568+0	SRV/TB1	DID	C
T101	TB1	31, 1K	568+0	TB1/U1 OTT	DID	C
S424	TB1	24-25, V	594+0	SRV/TB1	DID	C
S425	TB1	23, V	594+0	SRV/TB1	DID	C
S426	TB1	22, V	594+0	SRV/TB1	DID	C
SR21 ⁽³⁾	TB1	24, V	594+0	SRV/TB1	DID	C
S472	TB1	27, V	594+0	SRV/TB1	DID	C
S423	TB1	29, V	594+0	SRV/TB1	DID	C
S422	TB1	29, V	594+0	SRV/TB1	DID	C
SR7 ⁽³⁾	TB1	29-30, V	594+0	SRV/TB1	DID	C
S416	TB1	32, V	594+0	SRV/TB1	DID	C
S444	TB1	15, V	594+0	SRV/TB1	DID	C
TR4 ⁽³⁾	TB1	15-16, V	594+0	SRV/TB1	DID	C
T200A	TB1	32, 1J-1K	594+0	TB1/U1 MTOT	DID	C
S701	TB1	22, 1L	619+6	SRV/TB1	DID	C
S704	TB1	33, 1L	619+6	SRV/TB1	DID	C
S209	TB2	20, P	568+0	SRV/TB2	DID	C
S208	TB2	22, P	568+0	SRV/TB2	DID	C
SR2 ⁽³⁾	TB2	32-33, P	568+0	SRV/TB2	DID	C
S462	TB2	32, P	568+0	SRV/TB2	DID	C
SR4 ⁽³⁾	TB2	30-31, P	568+0	SRV/TB2	DID	C
S1102	TB2	27, P	568+0	SRV/TB2	DID	C
T151	TB2	31, 2K	568+0	TB2/U2 OTT	DID	C
S423E	TB2	26, P-Q	594+0	SRV/TB2	DID	C
S416A	TB2	32, P	594+0	SRV/TB2	DID	C
SR8 ⁽³⁾	TB2	29-30, P	594+0	SRV/TB2	DID	C
S422A	TB2	29, P	594+0	SRV/TB2	DID	C
S423A	TB2	29, P	594+0	SRV/TB2	DID	C
S435	TB2	24-25, P	594+0	SRV/TB2	DID	C
S436	TB2	23, P	594+0	SRV/TB2	DID	C
S437	TB2	22, P	594+0	SRV/TB2	DID	C
SR22 ⁽³⁾	TB2	24, P	594+0	SRV/TB2	DID	C
S444A	TB2	15, P	594+0	SRV/TB2	DID	C
SR16 ⁽³⁾	TB2	15-16, P	594+0	SRV/TB2	DID	C
S472A	TB2	27, P	594+0	SRV/TB2	DID	C
T250A	TB2	32, 2J-2K	594+0	TB2/U2 MTOT	DID	C
S701A	TB2	22, 2L	619+6	SRV/TB2	DID	C
S704A	TB2	33, 2L	619+6	SRV/TB2	DID	C
AX662A	NSWPS	----	600+0	29/30	LSS	B

- (1) These doors are not equipped with closing mechanisms or latches and are therefore exempt from TESTING REQUIREMENT 16.9-5-3.
- (2) These doors are held open with a fusible link.
- (3) Rolling Door.

Table 16.9-5-2

Required Fire Dampers

DAMPER NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
1VA-FD001	AUX	53/GG-FF	522+0	1/4	DID	C
1VA-FD002	AUX	53/GG-HH	522+0	1/4	DID	C
1VA-FD003	AUX	55-56/GG-HH	522+0	1/4	DID	C
1VA-FD004	AUX	55-56/GG-HH	522+0	1/4	DID	C
1VA-FD005	AUX	54-55/GG-HH	522+0	1/4	DID	C
1VA-FD006	AUX	54-55/GG-HH	522+0	1/4	DID	C
1VA-FD007	AUX	53/GG-FF	522+0	1/4	DID	C
1VA-FD008	AUX	53/GG-FF	522+0	1/4	DID	C
1VA-FD009	AUX	53-54/FF-GG	522+0	1/1 (ND PUMPS)	DID	C
1VA-FD010	AUX	56-57/ GG-HH,	522+0	1/4	DID	C
1VA-FD011	AUX	56-57/FF	522+0	1/4	DID	C
1VA-FD012	AUX	51/NN-PP	543+0	11/STAIR	DID	C
1VA-FD013	AUX	54/MM	543+0	4/22	DID	C
1VA-FD014	AUX	54/MM	543+0	4/22	DID	C
1VA-FD015	AUX	54-55/MM-NN	543+0	4/22	DID	C
1VA-FD016	AUX	54-55/MM-NN	543+0	4/22	DID	C
1VA-FD017	AUX	54-55/MM-NN	543+0	4/22	DID	C
1VA-FD020	AUX	55/JJ-KK	543+0	4/4 (NV PUMPS)	DID	C
1VA-FD033	AUX	51-52/AA-BB	543+0	3/40	LSS	B
1VA-FD034	AUX	51-52/AA-BB	543+0	3/40	LSS	B
1VA-FD035	AUX	52/AA-BB	543+0	3/32	LSS	B
1VA-FD036	AUX	52-53/BB	543+0	3/32	LSS	B
1VA-FD038	AUX	52-53/BB	543+0	3/34	LSS	B
1VA-FD039	AUX	52-53/BB	543+0	3/34	LSS	B
1VA-FD040	AUX	52-53/BB	543+0	3/32	LSS	B
1VA-FD041	AUX	52-53/BB	543+0	3/32	LSS	B
1VA-FD042	AUX	53/CC	543+0	3/STAIR	DID	C
1VA-FD043	AUX	53/CC-DD	543+0	3/STAIR	DID	C
1VA-FD045	AUX	52-53/DD	560+0	3/6	HSS	A
1VA-FD046	AUX	52-53/CC-DD	577+0	6/13	HSS	A
1VA-FD047	AUX	52-53/CC-DD	577+0	6/13	HSS	A
1VA-FD048	AUX	54/MM-NN	560+0	11/22	DID	C
1VA-FD049	AUX	54/MM	560+0	11/22	DID	C
1VA-FD050	AUX	54-55/MM	560+0	4/22	DID	C
1VA-FD051	AUX	54-55/MM	560+0	4/22	DID	C
1VA-FD052	AUX	55/MM-NN	560+0	11/22	DID	C
1VA-FD053	AUX	55/MM	560+0	11/22	DID	C
1VA-FD054	AUX	53/GG-HH	560+0	4/11	DID	C
1VA-FD055	AUX	53/GG-HH	560+0	4/11	DID	C
1VA-FD056	AUX	53/KK	560+0	4/11	DID	C
1VA-FD057	AUX	53/GG-HH	560+0	4/11	DID	C

(continued)

Table 16.9-5-2

REQUIRED FIRE DAMPERS

DAMPER NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
1VA-FD058	AUX	53-54/HH	560+0	4/11	DID	C
1VA-FD059	AUX	54/GG-HH	560+0	4/11	DID	C
1VA-FD060	AUX	54/HH	560+0	4/11	DID	C
1VA-FD061	AUX	56-57/QQ	577+0	18/ASB	LSS	B
1VA-FD062	AUX	55-56/QQ	577+0	18/ASB	LSS	B
1VA-FD063	AUX	55/MM-NN	577+0	18/22	DID	C
1VA-FD064	AUX	55/MM	577+0	18/22	DID	C
1VA-FD065	AUX	54/MM	577+0	18/22	DID	C
1VA-FD066	AUX	54/MM	577+0	18/22	DID	C
1VA-FD067	AUX	54/HH	577+0	4/18	DID	C
1VA-FD068	AUX	53-54/HH	577+0	4/18	DID	C
1VA-FD069	AUX	54/GG-HH	577+0	4/18	DID	C
1VA-FD070	AUX	53-54/HH	577+0	4/18	DID	C
1VA-FD071	AUX	53-54/HH	577+0	4/18	DID	C
1VA-FD072	AUX	53/HH	577+0	4/18	DID	C
1VA-FD073	AUX	53/HH	577+0	4/18	DID	C
1VA-FD074	AUX	53/GG-HH	577+0	4/18	DID	C
1VA-FD075	AUX	53-54/KK-LL	594+0	18/22	DID	C
1VA-FD076	AUX	53-54/KK-LL	594+0	18/22	DID	C
1VA-FD078	AUX	57/NN	594+0	22/STAIR	DID	C
1VA-FD087	AUX	55-56/QQ	594+0	22/ASB	LSS	B
1VA-FD088	AUX	53-54/QQ	594+0	22/ASB	LSS	B
1VA-FD133	AUX	53/CC-DD	594+0	22/STAIR	DID	C
1VA-FD139	AUX	51-52/DD	543+0	3/4	DID	C
1VA-FD140	AUX	53-54/FF-GG	560+0	4/11	DID	C
1VA-FD141	AUX	53-54/FF-GG	560+0	4/11	DID	C
1VA-FD142	AUX	53/GG	560+0	4/11	DID	C
1VA-FD143	AUX	53/JJ-HH	560+0	4/11	DID	C
1VA-FD144	AUX	53/KK	560+0	4/11	DID	C
1VA-FD145	AUX	51/KK	560+0	11/18	DID	C
1VA-FD146	AUX	51/KK	560+0	11/18	DID	C
1VA-FD147	AUX	52/MM	560+0	11/18	DID	C
1VA-FD148	AUX	52/MM-NN	560+0	4/11	DID	C
1VA-FD149	AUX	52-53/DD	560+0	3/6	HSS	A
1VA-FD150	AUX	52-53/DD	560+0	3/6	HSS	A
1VA-FD152	AUX	52-53/BB-CC	543+0	3/37	LSS	B
1VA-FD153	AUX	52-53/CC	543+0	3/37	LSS	B
1VA-FD154	AUX	53-54/GG-HH	594+0	4/22	DID	C
1VA-FD155	AUX	53-54/GG-HH	594+0	4/22	DID	C
1VA-FD159	AUX	49-50/AA-BB	543+0	CO2	HSS	A
1VA-FD160	AUX	50-51/AA-BB	543+0	CO2	HSS	A
1VA-FD163	AUX	56/EE	543+0	10/45	LSS	B
1VA-FD164	AUX	56-57/EE	543+0	4/10	DID	C
2VA-FD001	AUX	61/GG-FF	522+0	1/4	DID	C
2VA-FD002	AUX	61/GG-FF	522+0	1/4	DID	C

(continued)

Table 16.9-5-2

REQUIRED FIRE DAMPERS

DAMPER NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
2VA-FD003	AUX	60-61/FF-GG	522+0	1/1 (ND PUMPS)	DID	C
2VA-FD004	AUX	61/GG-FF	522+0	1/4	DID	C
2VA-FD005	AUX	60-61/GG-HH	522+0	1/4	DID	C
2VA-FD006	AUX	59-60/GG-HH	522+0	1/4	DID	C
2VA-FD007	AUX	59-60/GG-HH	522+0	1/4	DID	C
2VA-FD008	AUX	58-59/GG-HH	522+0	1/4	DID	C
2VA-FD009	AUX	58-59/GG-HH	522+0	1/4	DID	C
2VA-FD010	AUX	57-58/GG-HH	522+0	1/4	DID	C
2VA-FD011	AUX	57-58/FF	522+0	1/4	DID	C
2VA-FD012	AUX	59-60/MM-NN	543+0	4/22	DID	C
2VA-FD013	AUX	59/MM	543+0	4/22	DID	C
2VA-FD014	AUX	59/MM	543+0	4/22	DID	C
2VA-FD015	AUX	59-60/MM-NN	543+0	4/22	DID	C
2VA-FD020	AUX	63/NN	534+0	4/STAIR	DID	C
2VA-FD023	AUX	59/JJ-KK	543+0	4/4 (NV PUMPS)	DID	C
2VA-FD036	AUX	61-62/DD	560+0	2/5	LSS	B
2VA-FD037	AUX	61-62/CC-DD	577+0	5/12	HSS	A
2VA-FD038	AUX	61-62/CC-DD	577+0	5/12	HSS	A
2VA-FD040	AUX	62-63/AA-BB	543+0	2/39	LSS	B
2VA-FD041	AUX	62-63/AA-BB	543+0	2/39	LSS	B
2VA-FD042	AUX	62/AA-BB	543+0	2/31	LSS	B
2VA-FD043	AUX	61-62/BB	543+0	2/31	LSS	B
2VA-FD045	AUX	61/CC	543+0	2/STAIR	DID	C
2VA-FD046	AUX	61/CC-DD	543+0	2/STAIR	DID	C
2VA-FD048	AUX	61-62/BB	543+0	2/33	LSS	B
2VA-FD049	AUX	61-62/BB	543+0	2/33	LSS	B
2VA-FD050	AUX	61-62/BB	543+0	2/31	LSS	B
2VA-FD051	AUX	61-62/BB	543+0	2/31	LSS	B
2VA-FD053	AUX	60/MM	560+0	11/22	DID	C
2VA-FD054	AUX	59/MM-NN	560+0	11/22	DID	C
2VA-FD056	AUX	60/MM-NN	560+0	11/22	DID	C
2VA-FD057	AUX	59-60/MM	560+0	11/22	DID	C
2VA-FD058	AUX	59-60/MM	560+0	4/22	DID	C
2VA-FD059	AUX	60-61/HH	560+0	4/11	DID	C
2VA-FD060	AUX	61/HH-JJ	560+0	4/11	DID	C
2VA-FD061	AUX	60-61/GG-HH	560+0	4/11	DID	C
2VA-FD062	AUX	61/GG-HH	560+0	4/11	DID	C
2VA-FD063	AUX	61/GG-HH	560+0	4/11	DID	C
2VA-FD064	AUX	60-61/GG-HH	560+0	4/11	DID	C
2VA-FD065	AUX	61/HH	560+0	4/11	DID	C
2VA-FD069	AUX	58-59/QQ	577+0	18/ASB	LSS	B
2VA-FD070*	AUX	59-60/QQ	577+0	18/ASB	LSS	B
2VA-FD071	AUX	59-60/MM-NN	577+0	18/22	DID	C
2VA-FD072	AUX	59-60/MM	577+0	18/22	DID	C

(continued)

Table 16.9-5-2

REQUIRED FIRE DAMPERS

DAMPER NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
2VA-FD073	AUX	60/MM	577+0	18/22	DID	C
2VA-FD074	AUX	60/MM	577+0	18/22	DID	C
2VA-FD075	AUX	60/HH	577+0	4/22	DID	C
2VA-FD076	AUX	60/HH	577+0	4/22	DID	C
2VA-FD077	AUX	60-61/HH	577+0	4/22	DID	C
2VA-FD078	AUX	60-61/HH	577+0	4/22	DID	C
2VA-FD079	AUX	61/HH	577+0	4/22	DID	C
2VA-FD080	AUX	61/GG-HH	577+0	4/22	DID	C
2VA-FD081	AUX	61/HH	577+0	4/22	DID	C
2VA-FD083	AUX	63/NN	594+0	22/STAIR	DID	C
2VA-FD086	AUX	60/FF	594+0	22/STAIR	DID	C
2VA-FD087	AUX	59-60/QQ	594+0	22/ASB	LSS	B
2VA-FD088	AUX	60-61/QQ	594+0	22/ASB	LSS	B
2VA-FD093	AUX	58-59/QQ	594+0	22/ASB	LSS	B
2VA-FD097	AUX	61/CC-DD	594+0	22/STAIR	DID	C
2VA-FD108A	AUX	57-59/QQ	611+0	22/ASB	LSS	B
2VA-FD108B	AUX	57-59/QQ	611+0	22/ASB	LSS	B
2VA-FD114	AUX	59-60/KK-LL	594+0	18/22	DID	C
2VA-FD115	AUX	59-60/KK-LL	594+0	18/22	DID	C
2VA-FD137	AUX	60-61/FF-GG	560+0	4/18	DID	C
2VA-FD138	AUX	60-61/FF-GG	560+0	4/18	DID	C
2VA-FD139	AUX	61/GG	560+0	4/11	DID	C
2VA-FD141	AUX	62-63/DD	543+0	2/4	DID	C
2VA-FD142	AUX	60-61/KK	560+0	4/11	DID	C
2VA-FD143	AUX	62-63/KK	560+0	4/18	DID	C
2VA-FD144	AUX	63/KK	560+0	4/18	DID	C
2VA-FD145	AUX	61-62/MM-NN	560+0	4/11	DID	C
2VA-FD146	AUX	61-62/DD	560+0	2/5	LSS	B
2VA-FD147	AUX	61-62/DD	560+0	2/5	LSS	B
2VA-FD151	AUX	61-62/BB-CC	543+0	2/36	LSS	B
2VA-FD152	AUX	61-62/CC	543+0	2/36	LSS	B
2VA-FD153	AUX	60-61/GG-HH	594+0	4/22	DID	C
2VA-FD154	AUX	60-61/GG-HH	594+0	4/22	DID	C
2VA-FD157	AUX	63-64/AA-BB	543+0	CO2	HSS	A
2VA-FD158	AUX	64-65/AA-BB	543+0	CO2	HSS	A
2VA-FD160	AUX	57-58/QQ	543+0	4/ASB	LSS	B
2VA-FD161	AUX	57-58/QQ	543+0	4/ASB	LSS	B
2VA-FD163	AUX	58/EE	543+0	9/46	LSS	B
2VA-FD164	AUX	57-58/EE	543+0	4/9	DID	C
0BRS-FD001	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRS-FD010	AUX	57/DD-EE	554+0	9/10	DID	C
0BRS-FD019	AUX	59/DD-EE	554+0	9/22	DID	C
0BRX-FD001A	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRX-FD001B	AUX	54-55/DD-EE	554+0	10/22	DID	C

(continued)

Table 16.9-5-2

REQUIRED FIRE DAMPERS

DAMPER NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
0BRX-FD001C	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRX-FD001D	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRX-FD001E	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRX-FD001F	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRX-FD001G	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRX-FD001H	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRX-FD002	AUX	54-55/DD-EE	554+0	10/22	DID	C
0BRX-FD009	AUX	57/AA-BB	554+0	9/10	DID	C
0BRX-FD010	AUX	57/AA-BB	554+0	9/10	DID	C
0BRX-FD011	AUX	57/BB-CC	554+0	9/10	DID	C
0BRX-FD012	AUX	57/CC-DD	554+0	9/10	DID	C
0BRX-FD013	AUX	57/CC-DD	554+0	9/10	DID	C
0BRX-FD014	AUX	57/DD-EE	554+0	9/10	DID	C
0BRX-FD021	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD022A	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD022B	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD022C	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD022D	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD022E	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD022F	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD022G	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD022H	AUX	60/DD-EE	554+0	9/22	DID	C
0BRX-FD023	AUX	57/BB-CC	554+0	9/10	DID	C
1CRA-FD005A	AUX	54-55/DD-EE	594+0	21/22	HSS	A
1CRA-FD005B	AUX	54-55/DD-EE	594+0	21/22	HSS	A
1CRA-FD008	AUX	54/AA	594+0	21/35	HSS	A
1CRA-FD009	AUX	53-54/CC-DD	594+0	22/STAIR	DID	C
1CRA-FD010	AUX	53-54/CC	594+0	21/STAIR	HSS	A
1CRA-FD011	AUX	53/AA-BB	594+0	20/35	DID	C
1CRA-FD012	AUX	53/BB-CC	594+0	20/21	HSS	A

(continued)

Table 16.9-5-2

REQUIRED FIRE DAMPERS

DAMPER NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
1CRA-FD013	AUX	52/CC-DD	594+0	20/22	LSS	B
1CRA-FD016	AUX	54-55/DD-EE	574+0	22/45	LSS	B
1CRA-FD017	AUX	54-55/DD	574+0	17/45	HSS	A
1CRA-FD018	AUX	54-55/DD	574+0	17/45	HSS	A
1CRA-FD019	AUX	54/AA-BB	574+0	17/45	HSS	A
1CRA-FD020	AUX	57/CC-DD	574+0	16/17	HSS	A
1CRA-FD021	AUX	53-54/DD-EE	574+0	22/45	LSS	B
1CRA-FD022	AUX	55-56/DD	574+0	17/45	HSS	A
1CRA-FD023	AUX	56-57/DD	574+0	17/45	HSS	A
1CRA-FD024A	AUX	57/DD-EE	574+0	45/46	DID	C
1CRA-FD024B	AUX	57/DD-EE	574+0	45/46	DID	C
1CRA-FD025A	AUX	54-55/DD-EE	574+0	22/45	LSS	B
1CRA-FD025B	AUX	54-55/DD-EE	574+0	22/45	LSS	B
1CRA-FD026	AUX	54-55/EE	577+0	18/22	DID	C
1CRA-FD028	AUX	53-54/EE	577+0	18/22	DID	C
1CRA-FD029	AUX	54-55/EE	568+0	11/22	DID	C
1CRA-FD030	AUX	54-55/EE	568+0	11/22	DID	C
1CRA-FD039	AUX	57/EE-FF	577+0	18/18 (KC PUMPS)	DID	C
1CR-FD001	AUX	55-56/DD-EE	594+0	21/22	HSS	A
1CR-FD002	AUX	55-56/DD-EE	594+0	21/22	HSS	A
1CR-FD003	AUX	54/AA-BB	594+0	21/35	HSS	A
1CR-FD004	AUX	53-54/BB	594+0	21/35	HSS	A
1CR-FD005	AUX	53-54/BB	594+0	21/35	HSS	A
1CR-FD007	AUX	51/CC-DD	594+0	13/20	HSS	A
2CRA-FD005A	AUX	59-60/DD-EE	594+0	21/22	HSS	A
2CRA-FD005B	AUX	59-60/DD-EE	594+0	21/22	HSS	A
2CRA-FD008	AUX	60/AA-BB	594+0	19/21	HSS	A
2CRA-FD009	AUX	60-61/CC	594+0	19/22	LSS	B
2CRA-FD012	AUX	61/CC-DD	594+0	19/22	LSS	B
2CRA-FD015	AUX	59-60/DD-EE	574+0	22/46	LSS	B
2CRA-FD016	AUX	59-60/DD	574+0	16/46	HSS	A
2CRA-FD017	AUX	59-60/DD	574+0	16/46	HSS	A
2CRA-FD018	AUX	60/AA-BB	574+0	16/46	HSS	A
2CRA-FD019	AUX	58-59/DD	574+0	16/46	HSS	A
2CRA-FD020	AUX	57-58/DD	574+0	16/46	HSS	A
2CRA-FD021	AUX	60-61/DD-EE	574+0	22/46	LSS	B
2CRA-FD022A	AUX	59-60/DD-EE	574+0	22/46	LSS	B

(continued)

Table 16.9-5-2

REQUIRED FIRE DAMPERS

DAMPER NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
2CRA-FD022B	AUX	59-60/DD-EE	574+0	22/46	LSS	B
2CRA-FD023	AUX	59-60/EE	577+0	18/22	DID	C
2CRA-FD025	AUX	60-61/EE	577+0	18/22	DID	C
2CRA-FD026	AUX	59-60/EE	568+0	11/22	DID	C
2CRA-FD027	AUX	59-60/EE	568+0	11/22	DID	C
2CR-FD001	AUX	58-59/DD-EE	594+0	21/22	HSS	A
2CR-FD002	AUX	58-59/DD	594+0	21/22	HSS	A
2CR-FD003	AUX	63-64/CC	594+0	12/19	HSS	A
1VF-FD001A	AUX	51, NN-PP	605+10	22/24	LSS	B
1VF-FD001B	AUX	51, NN-PP	605+10	22/24	LSS	B
1VF-FD002A	AUX	50-51/NN-PP	631+6	24/38	DID	C
1VF-FD002B	AUX	50-51/NN-PP	631+6	24/38	DID	C
1VF-FD004	AUX	49/PP-QQ	631+6	24/38	DID	C
1VF-FD005	AUX	49-50/PP-QQ	631+6	24/38	DID	C
1VF-FD006	AUX	50-51	631+6	24/38	DID	C
1VF-FD007	AUX	50-51/KK-LL	605+10	22/24	LSS	B
1VF-FD010	AUX	50-51/KK	605+10	22/24	LSS	B
1VF-FD011	AUX	50-51/JJ-KK	631+6	22/38	LSS	B
1VF-FD013	AUX	50-51/JJ-KK	616+10	22/24	LSS	B
1VF-FD014	AUX	50-51/JJ-KK	616+10	22/24	LSS	B
2VF-FD001A	AUX	63, NN-PP	605+10	22/23	LSS	B
2VF-FD001B	AUX	63, NN-PP	605+10	22/23	LSS	B
2VF-FD002A	AUX	63-64/NN-PP	631+6	23/47	DID	C
2VF-FD002B	AUX	63-64/NN-PP	631+6	23/47	DID	C
2VF-FD004	AUX	65/PP-QQ	631+6	23/47	DID	C
2VF-FD005	AUX	64-65/PP-QQ	631+6	23/47	DID	C
2VF-FD006	AUX	63-64/PP-QQ	631+6	23/47	DID	C
2VF-FD007	AUX	63-64/KK-LL	605+10	22/23	LSS	B
2VF-FD010	AUX	63-64/KK	605+10	22/23	LSS	B
2VF-FD011	AUX	64-64/JJ-KK	631+6	22/47	LSS	B
2VF-FD013	AUX	63-64/JJ-KK	616+10	22/23	LSS	B
2VF-FD014	AUX	63-64/JJ-KK	616+10	22/23	LSS	B
1TB-FD001	TB1	18-19/V	594+0	TB1/SRV	DID	C
1TB-FD002	TB1	18-19/V	594+0	TB1/SRV	DID	C
1TB-FD003	TB1	18-19/V	594+0	TB1/SRV	DID	C
1TB-FD004	TB1	18-19/V	594+0	TB1/SRV	DID	C
1TB-FD005	TB1	18-19/V	594+0	TB1/SRV	DID	C
1TB-FD006	TB1	18-19/V	594+0	TB1/SRV	DID	C
1TB-FD007	TB1	21-22/V	594+0	TB1/SRV	DID	C
1TB-FD008	TB1	21-22/V	594+0	TB1/SRV	DID	C
1TB-FD009	TB1	21-22/V	594+0	TB1/SRV	DID	C
1TB-FD010	TB1	21-22/V	594+0	TB1/SRV	DID	C
1TB-FD011	TB1	21-22/V	594+0	TB1/SRV	DID	C
1TB-FD012	TB1	21-22/V	594+0	TB1/SRV	DID	C
1TB-FD032	TB1	18-19/V	594+0	TB1/SRV	DID	C

(continued)

Table 16.9-5-2

REQUIRED FIRE DAMPERS

DAMPER NUMBER	BLDG	LOCATION	ELEVATION	FIRE AREA INTERFACE	RISK CRITERIA	REMEDIAL ACTION CONDITION
1TB-FD038	TB1	16-17/V	594+0	TB1/SRV	DID	C
1TB-FD039	TB1	16-17/V	594+0	TB1/SRV	DID	C
1TB-FD040	TB1	16/V	594+0	TB1/SRV	DID	C
1TB-FD043	TB1	30-31/1J-1K	568+0	TB1/OTT	DID	C
1TB-FD044	TB1	32/1J-1K	594+0	TB1/MTOT	DID	C
1TB-FD045	TB1	30/1J-1K	594+0	TB1/MTOT	DID	C
1TB-FD046	TB1	32/1K-1L	568+0	TB1/OTT	DID	C
2TB-FD013	TB2	21-22/P	594+0	TB2/SRV	DID	C
2TB-FD014	TB2	21-22/P	594+0	TB2/SRV	DID	C
2TB-FD015	TB2	21-22/P	594+0	TB2/SRV	DID	C
2TB-FD016	TB2	21-22/P	594+0	TB2/SRV	DID	C
2TB-FD017	TB2	21-22/P	594+0	TB2/SRV	DID	C
2TB-FD018	TB2	21-22/P	594+0	TB2/SRV	DID	C
2TB-FD019	TB2	18-19/P	594+0	TB2/SRV	DID	C
2TB-FD020	TB2	18-19/P	594+0	TB2/SRV	DID	C
2TB-FD021	TB2	18-19/P	594+0	TB2/SRV	DID	C
2TB-FD022	TB2	18-19/P	594+0	TB2/SRV	DID	C
2TB-FD023	TB2	18-19/P	594+0	TB2/SRV	DID	C
2TB-FD024	TB2	18-19/P	594+0	TB2/SRV	DID	C
2TB-FD031	TB2	32/2K-2L	568+0	TB2/OTT	DID	C
2TB-FD032	TB2	18/P	594+0	TB2/SRV	DID	C
2TB-FD036	TB2	16-17/P	594+0	TB2/SRV	DID	C
2TB-FD038	TB2	17-18/P	594+0	TB2/SRV	DID	C
2TB-FD039	TB2	32/2J-2K	594+0	TB2/MTOT	DID	C
2TB-FD040	TB2	30/2J-2K	594+0	TB2/MTOT	DID	C
2TB-FD041	TB2	30-31/2J/2K	568+0	TB2/OTT	DID	C

*2VA-FD070 is exempt from inspection requirements (SLC TR 16.9-5-5) for ALARA reasons

Table 16.9-5-3

HIGH SAFETY SIGNIFICANT (HSS) FIRE AREAS*

FIRE AREA	BLDG	ELEVATION	DESCRIPTION
6	AUX	560+0	Unit 1 Electrical Pen Room EI 560
12	AUX	577+0	Unit 2 Electrical Pen Room EI 577
13	AUX	577+0	Unit 1 Electrical Pen Room EI 577
14	AUX	577+0	Unit 2 4160V Essential Swgr Room (2ETA)
15	AUX	577+0	Unit 1 4160V Essential Swgr Room (1ETA)
16	AUX	574+0	Unit 2 Cable Room EI 574
17	AUX	574+0	Unit 1 Cable Room EI 574
21	AUX	594+0	Main Control Room EI 594

*High Safety Significant (HSS) Fire Areas are defined as the areas with HSS fire barrier features in accordance with the Catawba NFPA 805 Monitoring Program.

Table 16.9-5-4

FIRE AREAS AND SHUTDOWN TRAIN / METHOD

FIRE AREA	FIRE AREA DESCRIPTIONS	ASSURED SHUTDOWN TRAIN / METHOD
1	ND & NS Pump Room EI 522 (Common)	SSS
2	Unit 2 CA Pump Room EI 543	SSS
3	Unit 1 CA Pump Room EI 543	SSS
4	Aux Bldg. Gen Area & NV Pump Room EI 543 (Common)	SSS
5	Unit 2 Electrical Pen Room EI 560	A
6	Unit 1 Electrical Pen Room EI 560	A
7	Unit 2 4160V Essential SWGR Room EI 560	A
8	Unit 1 4160V Essential SWGR Room EI 560	A
9	Unit 2 Battery Room EI 554	SSS
10	Unit 1 Battery Room EI 554	SSS
11	Aux Bldg. Gen Area & U1 KC Pump Room EI 560 (Common)	SSS
12	Unit 2 Electrical Pen Room EI 577	B
13	Unit 1 Electrical Pen Room EI 577	B
14	Unit 2 4160V Essential SWGR Room EI 577	B
15	Unit 1 4160V Essential SWGR Room EI 577	B
16	Unit 2 Cable Room EI 574	SSS
17	Unit 1 Cable Room EI 574	SSS
18	Aux Bldg. Gen Area & U2 KC Pump Room EI 577 (Common)	SSS
19	Unit 2 Electrical Pen Room EI 594	A
20	Unit 1 Electrical Pen Room EI 594	A
21	Control Room EI 594 (Common)	SSS
22	Aux Bldg. Gen Area EI 594 (Common)	SSS
23	Unit 2 Fuel Storage Area EI 605	A
24	Unit 1 Fuel Storage Area EI 605	A
25	Diesel Generator Bldg. 1A EI 556	B
25A	Diesel Generator Bldg. 1A Stairwell	B
26	Diesel Generator Bldg. 1B EI 556	A
26B	Diesel Generator Bldg. 1B Stairwell	A
27	Diesel Generator Bldg. 2A EI 556	B
27A	Diesel Generator Bldg. 2A Stairwell	B
28	Diesel Generator Bldg. 2B EI 556	A
28B	Diesel Generator Bldg. 2B Stairwell	A
29	Train A RN Pump Structure EI 600 (Common)	B
30	Train B RN Pump Structure EI 600 (Common)	A
31	Unit 2 Train A Aux Shutdown Panel EI 543	B
32	Unit 1 Train A Aux Shutdown Panel EI 543	B
33	Unit 2 Train B Aux Shutdown Panel EI 543	A
34	Unit 1 Train B Aux Shutdown Panel EI 543	A
35	Control Room Tagout Area EI 594	A or B
36	Unit 2 Turbine Driven CA Pump Control Panel Room EI 543	B
37	Unit 1 Turbine Driven CA Pump Control Panel Room EI 543	B
38	Unit 1 Fuel Storage Area HVAC Room EI 631	A or B

(continued)

Table 16.9-5-4

FIRE AREAS AND SHUTDOWN TRAIN / METHOD

FIRE AREA	FIRE AREA DESCRIPTIONS	ASSURED SHUTDOWN TRAIN / METHOD
39	Unit 2 Turbine Driven CA Pump Pit EI 543	B
40	Unit 1 Turbine Driven CA Pump Pit EI 543	B
41	DG1A Sequencer Tunnel EI 556	B
42	DG1B Sequencer Tunnel EI 556	A
43	DG2A Sequencer Tunnel EI 556	B
44	DG2B Sequencer Tunnel EI 556	A
45	Unit 1 Cable Room Corridor EI 574	B
46	Unit 2 Cable Room Corridor EI 574	B
47	Unit 2 Fuel Storage Area HVAC Room EI 631	A or B
48	Unit 2 Interior Doghouse	A and B
49	Unit 1 Interior Doghouse	A and B
50	Unit 2 Exterior Doghouse	A and B
51	Unit 1 Exterior Doghouse	A and B
ASB	Auxiliary Service Building	A or B
RB1	Unit 1 Reactor Building	A and B
RB2	Unit 2 Reactor Building	A and B
SRV	Service Building	B
SSF	Standby Shutdown Facility	A or B
STAIR*	Stairway	See Note
TB1	Unit 1 Turbine Building	A or B
TB2	Unit 2 Turbine Building	A or B
YRD**	Yard Area	A or B

* IF the barrier in a stairway is adjacent to a HSS Fire Area (see Table 16.9-5-3), enter CONDITION A; otherwise enter CONDITION C.

** Exterior walls that interface with the YRD do not require entry into a CONDITION statement and therefore do not have a REQUIRED ACTION.

A = A TRAIN

B = B TRAIN

SSS = STANDBY SHUTDOWN SYSTEM

BASES

The functional integrity of the Fire Rated Assemblies and associated sealing devices ensures that fires will be confined or adequately retarded so as not to spread between fire areas/compartments.

The fire barriers and associated penetration seals are passive elements in the facility fire protection program and are subject to periodic inspections.

Risk-informed insights from the Fire PRA process can apply to compensatory actions. The safety significance of the fire area can provide relief for required compensatory actions. In addition, the presence of functional fire detection can reduce the required compensatory actions. Functional fire detection in the area provides early warning of a fire for fire brigade response. Fire detection can provide a compensatory action equivalent to or better than fire watch.

Fire barrier penetration seals, including cable/pipe penetration seals and fire dampers, are considered FUNCTIONAL when the visually observed condition indicates no abnormal change or abnormal degradation. An evaluation is performed to determine the cause of any identified fire barrier penetration seal abnormal change in appearance or abnormal degradation and the effect of this change on the ability of the fire barrier penetration seal to perform its function. Based on this evaluation additional inspections may be performed.

Access to Fire Damper 2VA-FD070 is in a locked Hi-Rad area. Due to ALARA reasons, this damper is exempt from inspection requirements (SLC TR 16.9-5-5). The technical justification for excluding this damper from inspection is in calculation CNC-1435.00-00-0035.

During periods of time when a barrier is not FUNCTIONAL, either:

- (1) Perform the recommended fire watch in accordance with the criteria in the remedial actions, or
- (2) a licensee may choose to implement a different required action or a combination of actions (e.g., additional administrative controls, operator briefings, temporary procedures, interim shutdown strategies, operator manual actions, temporary fire barriers, temporary detection or suppression systems). Such a change must be made to the approved Fire Protection Plan (FPP). However, the licensee must complete a documented evaluation of the impact of the proposed required action to the FPP. The evaluation must demonstrate that the required actions would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. Any change to the FPP must maintain compliance with the General Design Criteria and 10 CFR 50.48(a).

The evaluation of the required action should incorporate risk insights regarding the location, quantity, and type of combustible material in the fire area; the presence of ignition sources and their likelihood of occurrence; the automatic fire suppression and the fire detection

capability in the fire area; the manual fire suppression capability in the fire area; and the human error probability where applicable.

BASES (continued)

The expectation is to promptly complete the corrective action at the first available opportunity and eliminate the reliance on the required action.

This SLC is part of the Catawba Fire Protection Program and therefore subject to the provisions of Section 2.C.(5) of the Catawba Renewed Facility Operating Licenses.

REFERENCES

1. Catawba UFSAR, Section 9.5.1.
2. Catawba Nuclear Station 10 CFR 50.48(c) Fire Protection Safety Evaluation (SE).
3. Catawba Plant Design Basis Specification for Fire Protection, CNS-1465.00-00-0006, as revised.
4. Catawba UFSAR, Section 18.2.8.
5. Catawba License Renewal Commitments, CNS-1274.00-00-0016, Section 4.12.2.
6. NRC Regulatory Issue Summary 2005-07, Compensatory Measures to Satisfy the Fire Protection Program Requirements, April 19, 2005.
7. Catawba Renewed Facility Operating License Conditions 2.C.(5).
8. CNC-1435.00-00-0084, Catawba NFPA 805 Monitoring Program.
9. CNC-1435.00-00-0044, Fire Protection Nuclear Safety Capability Assessment.
10. CNC-1435.00-00-0035, Penetration Seal Data Base and 86-10 Evaluations.
11. CN-1209.10 series drawings.
12. CN-1105 series drawings.

Table 3.7.1-1 (page 1 of 1)
OPERABLE Main Steam Safety Valves versus
Maximum Allowable Power Range Neutron Flux High
Setpoints in Percent of RATED THERMAL POWER

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	MAXIMUM ALLOWABLE POWER RANGE NEUTRON FLUX HIGH SETPOINTS (% RTP)	
	<u>Unit 1</u>	<u>Unit 2</u>
4	≤ 57	≤ 58
3	≤ 40	≤ 41
2	≤ 24	≤ 24

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

VALVE NUMBER				LIFT SETTING (psig ± 3%)
<u>STEAM GENERATOR</u>				
A	B	C	D	
SV-20	SV-14	SV-8	SV-2	1175
SV-21	SV-15	SV-9	SV-3	1190
SV-22	SV-16	SV-10	SV-4	1205
SV-23	SV-17	SV-11	SV-5	1220
SV-24	SV-18	SV-12	SV-6	1230

Examination KEY
ILT 21 CNS SRO NRC Examination

<i>Q</i>	<i>A</i>	<i>Q</i>	<i>A</i>	<i>Q</i>	<i>A</i>	<i>Q</i>	<i>A</i>
1	D	26	A	51	B	76	A
2	C	27	D	52	D	77	B
3	B	28	B	53	A	78	B
4	D	29	B	54	B	79	B
5	A	30	C	55	B	80	D
6	C	31	D	56	D	81	C
7	A	32	C	57	B	82	D
8	B	33	D	58	D	83	C
9	D	34	B	59	B	84	B
10	A	35	D	60	B	85	D
11	D	36	A	61	C	86	A
12	B	37	B	62	D	87	B
13	A	38	C	63	C	88	C
14	A	39	B	64	C	89	C
15	A	40	C	65	C	90	A
16	D	41	A	66	B	91	D
17	A	42	B	67	C	92	B
18	D	43	C	68	A	93	A
19	B	44	D	69	C	94	C
20	B	45	D	70	C	95	C
21	A	46	C	71	D	96	C
22	D	47	D	72	A	97	C
23	B	48	C	73	A	98	B
24	C	49	D	74	D	99	A
25	C	50	A	75	A	100	C