

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

Applicant Information

Name:

Region: I

Date:

Facility/Unit: Salem Units 1 and 2

License Level: RO

Reactor Type: Westinghouse PWR

Start Time:

Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

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

Applicant's Signature

Results

Examination Value _____ Points

Applicant's Score _____ Points

Applicant's Grade _____ Percent

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

1.	A	B	C	D	26.	A	B	C	D
2.	A	B	C	D	27.	A	B	C	D
3.	A	B	C	D	28.	A	B	C	D
4.	A	B	C	D	29.	A	B	C	D
5.	A	B	C	D	30.	A	B	C	D
6.	A	B	C	D	31.	A	B	C	D
7.	A	B	C	D	32.	A	B	C	D
8.	A	B	C	D	33.	A	B	C	D
9.	A	B	C	D	34.	A	B	C	D
10.	A	B	C	D	35.	A	B	C	D
11.	A	B	C	D	36.	A	B	C	D
12.	A	B	C	D	37.	A	B	C	D
13.	A	B	C	D	38.	A	B	C	D
14.	A	B	C	D	39.	A	B	C	D
15.	A	B	C	D	40.	A	B	C	D
16.	A	B	C	D	41.	A	B	C	D
17.	A	B	C	D	42.	A	B	C	D
18.	A	B	C	D	43.	A	B	C	D
19.	A	B	C	D	44.	A	B	C	D
20.	A	B	C	D	45.	A	B	C	D
21.	A	B	C	D	46.	A	B	C	D
22.	A	B	C	D	47.	A	B	C	D
23.	A	B	C	D	48.	A	B	C	D
24.	A	B	C	D	49.	A	B	C	D
25.	A	B	C	D	50.	A	B	C	D

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

51.	A	B	C	D	76.	A	B	C	D
52.	A	B	C	D	77.	A	B	C	D
53.	A	B	C	D	78.	A	B	C	D
54.	A	B	C	D	79.	A	B	C	D
55.	A	B	C	D	80.	A	B	C	D
56.	A	B	C	D	81.	A	B	C	D
57.	A	B	C	D	82.	A	B	C	D
58.	A	B	C	D	83.	A	B	C	D
59.	A	B	C	D	84.	A	B	C	D
60.	A	B	C	D	85.	A	B	C	D
61.	A	B	C	D	86.	A	B	C	D
62.	A	B	C	D	87.	A	B	C	D
63.	A	B	C	D	88.	A	B	C	D
64.	A	B	C	D	89.	A	B	C	D
65.	A	B	C	D	90.	A	B	C	D
66.	A	B	C	D	91.	A	B	C	D
67.	A	B	C	D	92.	A	B	C	D
68.	A	B	C	D	93.	A	B	C	D
69.	A	B	C	D	94.	A	B	C	D
70.	A	B	C	D	95.	A	B	C	D
71.	A	B	C	D	96.	A	B	C	D
72.	A	B	C	D	97.	A	B	C	D
73.	A	B	C	D	98.	A	B	C	D
74.	A	B	C	D	99.	A	B	C	D
75.	A	B	C	D	100.	A	B	C	D

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 001

Unit 2 is at BOL and was manually tripped from 100% power when 21BF19, Feedwater Regulating Valve, failed closed.

An Estimated Critical Position (ECP) calculation was performed and boron concentration was adjusted for a critical rod height of Control Bank D at 115 steps.

However, when determining control bank worth, the personnel performing the ECP determined remaining rod worth using the MOL curve on Reactor Engineering Manual Figure 4 instead of the BOL curve.

Which one of the following describes how this error affects critical rod height?

- A. Criticality would occur within the ± 300 pcm administrative limit
- B. Criticality would occur above the rod insertion limit (RIL) but outside the ± 300 pcm administrative limit
- C. Criticality would occur below the Rod Insertion Limit (RIL) (C-58)
- D. Criticality cannot be achieved by pulling control rods

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 002

Given the following:

- Control bank control rod 1D2 dropped when a fuse failed
- Unit 2 remained at 50% power
- The fuse has been replaced and the circuit tested
- Reactor Engineering has granted permission to restore the rod to bank position at 8 steps per minute

During the control rod recovery, the following annunciator is received:

- OHA E-40, ROD BANK URGENT FAILURE

Which one of the following describes the cause of this alarm?

- A. Logic Cabinet Pulser failure
- B. Power Cabinet Regulation failure
- C. Bank Overlap Unit sequence error
- D. Logic Cabinet Slave Cyclor output error

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 003

Which one of the following indications requires the trip of an operating Reactor Coolant Pump?

- A. Shaft vibration is 12 mils
- B. Flange vibration is 6 mils
- C. RCP standpipe high level alarm
- D. Seal Injection flow is 5.5 GPM

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 004

Unit 1 is at 25% power. The main turbine is rolling at 1200 rpm when an internal fault causes 11 Station Power Transformer (SPT) to de-energize.

Which one of the following describes the required operator action?

- A. Ensure 11 SPT is isolated electrically
- B. Start Condensate Pumps as necessary to maintain SGFP suction pressure
- C. Trip the main turbine and ensure the DC Oil Pumps started
- D. Trip the reactor and perform the required actions of EOP-TRIP-1, REACTOR TRIP OR SAFETY INJECTION

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 005

Given the following conditions:

- Unit 2 is at 100% power.
- CVCS is aligned with 2CV55, Charging Header Flow Control Valve, in Manual
- 2CV71, Seal Injection Pressure control valve, was throttled to maintain Seal Injection pressure within limits
- Charging pump discharge pressure indicates 2410 psig
- Seal injection flow is 5.8 GPM to each RCP
- The RO is directed to raise Seal Injection flow to all RCPs

Which one of the following describes BOTH actions that will accomplish this task?

- A. Throttle open 2CV55, or throttle open 2CV71
- B. Throttle closed 2CV55, or throttle closed 2CV71
- C. Throttle open 2CV55, or throttle closed 2CV71
- D. Throttle closed 2CV55 or throttle open 2CV71

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 006

Given the following conditions:

- Unit 2 is at 100% power.
- VCT level indication on LT-112 has been erratic.
- As part of troubleshooting the problem 2SJ1&2SJ2, Charging Pump Suction from RWST, and 2CV40& 2CV41, Charging Pump Suction from VCT, have all been placed in MANUAL on the respective bezel.

Which one of the following describes the charging pump suction flowpath if an AUTO SI signal occurs and power is lost to the 230V bus (2B) that supplies 2SJ2 and 2CV41?

- A. Charging suction shifts immediately to the RWST (2SJ1). The VCT (2CV40) isolates
- B. Charging pumps will begin to cavitate when VCT level lowers below their NPSH
- C. Charging suction is via both the RWST and the VCT until LT-114 reaches the LO-LO setpoint, closing 2CV40
- D. SSPS shifts 2SJ1&2 and 2CV40&41 to AUTO, charging suction then shifts to the RWST (2SJ1) and the VCT (2CV40) isolates

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 007

Containment Pressure Channel II fails and is properly removed from service.

Which one of the following identifies the ESF actuation logic for the remaining Containment pressure channels?

- A. SI-1/2; CS-1/3
- B. SI-1/2; CS-2/3
- C. SI-1/3; CS-1/3
- D. SI-1/3; CS-2/3

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 008

An entry condition for S2.OP-AB.ROD-0004, ROD POSITION INDICATION FAILURE, is "One or more Group Demand Counters (GDC) indicating ± 2 steps from Slave Cyclor output".

Which one of the following describes how an operator can determine this condition exists?

- A. OHA E-24 ROD DEV OR SEQ alarm actuated
- B. Plant Computer point Rod Position Deviation is displayed
- C. Compare the P/A Converter indication to GDC indication
- D. Deviations may only be determined by voltmeter readings from the Rod Position Indication cabinets

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 009

Given the following conditions:

- Unit 2 is at 100% power.
- PRNIS Channel N-44 indication began oscillating and was removed from service IAW S2.OP-SO.RPS-0001, NUCLEAR INSTRUMENTATION CHANNEL TRIP/RESTORATION
- I&C installed the P-10 jumper per direction from the Operations Superintendent on duty.

Which one of the following describes plant response if PRNIS Channel N-43 fails high?

- A. The reactor remains at power. Rod Control is placed in MANUAL
- B. The reactor remains at power. The PR High Flux Trip on N-44 is bypassed
- C. The reactor will trip. SRNIS will be manually reinstated
- D. The reactor will trip. SRNIS will reinstate automatically

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 010

Unit 2 is at 100% power with all major control systems in AUTO.

Which one of the following describes an immediate consequence associated with loss of 2B 115VAC Vital Instrument Bus?

- A. AUTO and MANUAL rod withdrawal is blocked
- B. RCS low flow reactor trip logic changes from 2/4 to 1/4
- C. All PRNIS 2/4 logic is reduced to 2/3 until the required bistables are tripped
- D. Rods withdraw until the Nuclear/Turbine Mismatch signal decays out of the Rod Control System

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 011

Given the following conditions:

- A LOCA has occurred on Unit 1.
- The crew is in LOCA-1, Loss of Reactor Coolant.
- The RO notes that the Subcooling Margin Monitor (SCMM) is reading 16 °F less than his previous check but RCS pressure and temperature has remained constant

Which one of the following describes a reason for that change?

- A. The SCMM shifted to ADVERSE
- B. An in-core thermocouple failed high
- C. Rising containment pressure is lowering RCS pressure detector output
- D. Containment temperature is rising affecting the in-core thermocouple output from the reference junction box

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 012

Given the following conditions:

- A LOCA has occurred on Unit 2
- A PURPLE Path has developed on Containment Environment due to an abnormal rise in Containment Sump level

In accordance with FRCE-2, RESPONSE TO HIGH CONTAINMENT SUMP LEVEL, which one of the following tanks/systems are potential sources of in-leakage?

- A. Service Water and Primary Water Storage Tank
- B. Fire Protection and Auxiliary Feedwater
- C. Component Cooling Water and Main Feedwater
- D. Demineralized Water Storage Tank and Volume Control Tank

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 013

Which one of the following will prevent the RO from opening 22CS36, 22 RHR to CS Supply Valve, during the shift to cold leg recirculation?

- A. 21SJ44, Containment Sump Isolation Valve, is CLOSED
- B. RH2, RCS-RHR Loop Isolation Valve, is OPEN
- C. 22CS2, Containment Spray Pump Discharge Valve, is OPEN
- D. Either Containment Spray Pump breaker CLOSED

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 014

Unit 2 is at 100% power with all major control systems in AUTO. 22 Heater Drain Pump is OOS for breaker replacement.

Which one of the following specifies the power reduction required if 21 Condensate Pump trips? Assume SGFP suction pressure remains above the trip setpoint.

- A. 10%
- B. 15%
- C. 20%
- D. 25%

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 015

Unit 2 is at 100% power. 2B 4KV Vital Bus has just tripped on DIFF.

Which one of the following lists only equipment that is still OPERABLE?

- A. 21 AFW; 22 Charging; 24 CFCU
- B. 21 AFW; 21 SI; 22 CS
- C. 22 AFW; 21 CS; 2 ECAC
- D. 22 AFW; 21 RHR 22 SI

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 016

Given the following conditions:

- The crew is in FRHS-1, RESPONSE TO LOSS OF SECONDARY HEAT SINK, and the criteria for initiating RCS bleed and feed has been met.
- Prior to the actual procedure steps there is a CAUTION statement that reads:
- TO ESTABLISH RCS HEAT REMOVAL BY RCS BLEED AND FEED, STEPS 24 THRU 29 MUST BE PERFORMED QUICKLY AND WITHOUT INTERRUPTION

Which one of the following describes the basis for that statement?

- A. Stopping RCP's is the first step in the process. This terminates all RCS heat removal until bleed and feed is initiated
- B. Expeditious performance of the steps allows time for other compensatory actions if bleed and feed actions are unsuccessful
- C. Delay allows core cooling to degrade further. RCS pressure rises such that ECCS flow is lower when bleed and feed is initiated
- D. Establishing SI flow and then delaying opening the PZR PORV's may lead to damage to the PORV's and Code Safety Valves when they pass water

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 017

Which one of the following identifies the RMS channel(s) that is/are capable of closing 2WG41, Waste Gas Release Valve?

- A. 2R16, Plant Vent Effluent
- B. 2R41D, Plant Vent Release Rate
- C. Either 2R16 or 2R41D
- D. Either 2R41C, Plant Vent Noble Gas (High Range) or 2R41D

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 018

Given the following conditions:

- A LOCA has occurred on Unit 1.
- The RVLIS Summary Page is displaying DYNAMIC RANGE.
- During the subsequent cooldown and depressurization, void content indication remained constant at 80%.

Which one of the following describes actual void content response and reason for that response during the cooldown and depressurization?

- A. It was accurate at 80%. RVLIS is pressure and temperature compensated
- B. It was accurate at 80%. D/P is an accurate measure of void content, without compensation
- C. It was lower than 80%. Lowering pressure and rising density creates a RVLIS indication error
- D. It was higher than 80%. Lowering pressure and rising density creates a RVLIS indication error

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 019

Given the following conditions:

- A LOCA has occurred on Unit 2.
- The operating crew has transitioned to 2-EOP-LOCA-3, TRANSFER TO COLD LEG RECIRCULATION.

Which one of the following lists ALL of the interlocks that must be satisfied to open 21SJ45, RHR Discharge to SI Pumps Valve?

- A. 21 and 22SJ44, Containment Sump Suction Valve, OPEN
- B. 2SJ67 or 2SJ68, SI Pump Recirc Valve, CLOSED
- C. 21SJ44 OPEN; 2SJ67 or 2SJ68 CLOSED; RH1 or RH2, RHR-RCS Loop Suction Stop Valves, CLOSED
- D. 21 and 22 SJ44 OPEN; 2SJ67 or 2SJ68 CLOSED; RH1 or RH2 CLOSED

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 020

Unit 2 is at 50% power. There is a power ascension in progress at a rate of 10%/hr. Pressurizer (PZR) Pressure Channel III, PT-457 is selected for CONTROL.

Assuming no operator action, which one of the following describes RCS pressure response if the PZR Pressure Channel III fails low?

- A. Rises until the PZR Spray Valves open
- B. Rises until one PZR PORV opens
- C. Rises until both PZR PORV's open
- D. Rises until a PZR Code Safety Valve opens

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 021

Unit 2 is at 100% power. 21 Charging Pump is running and a 75 gpm letdown orifice is in service.

Assuming no operator action, which one of the following describes plant response if the PZR level channel selected to ALARM fails low?

- A. Charging flow remains constant. PZR level will be maintained at the 100% power setpoint
- B. Charging flow remains constant. PZR level will be maintained between the letdown isolation and zero power setpoints
- C. Charging flow will rise. PZR level will steadily rise to the reactor trip setpoint
- D. Charging flow will lower. PZR level will steadily rise to the reactor trip setpoint

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 022

Given the following conditions on Unit 2:

- The unit was at 100% power when an electronic failure and technician error resulted in an AUTO SI
- Train A Reactor Trip Brkr, RTB A, failed to open and is still closed
- I&C has NOT installed the P-4 jumpers on RTB A

Which one of the following describes a consequence of this situation?

- A. Condenser steam dumps will maintain Tavg at 552°F
- B. SI CANNOT be reset and AUTO SI from another signal is NOT blocked
- C. The PO will have to manually close the Feedwater Isolation Valves on 21 and 22 SG
- D. The HI Steam Flow/LO-LO Tavg SI setpoint remains at the 100% power value on Train A

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 023

Unit 1 is at 100% power with all major control systems in AUTO.

Which one of the following describes the response of steam generator (SG) level if PT-505, Turbine First Stage Pressure, fails to zero psig?

- A. All feedwater regulating valves shift to MANUAL. The PO must select PT-506 to restore automatic control
- B. All feedwater-regulating valves shift to MANUAL. The PO must maintain SG levels
- C. All SG levels are automatically maintained at 44% via a signal from PT-506
- D. All SG levels are automatically maintained at 44% via a signal from AVG STEAM FLOW

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 024

Given the following conditions on Unit 2:

- A large break LOCA has occurred
- Containment pressure peaked at 32 psig and is now 2.5 psig
- Pre-LOCA Containment temperature was 90°F
- Post-LOCA Containment temperature is 120°F
- The Technical Support Center has recommended that 22 Hydrogen Recombiner be placed in service

Which one of the following values is the proper setting for 22 Hydrogen Recombiner potentiometer?

- A. <50 KW
- B. 50-51 KW
- C. 51-52 KW
- D. >52 KW

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 025

Given the following conditions:

- The reactor is at 50% power.
- 24MS167, Main Steam Isolation Valve, trips CLOSED

Assuming the reactor does NOT trip, which one of the following describes the initial response of RCS ΔT and SG pressure in the affected loop?

- A. RCS ΔT rises and SG steam pressure lowers
- B. RCS ΔT lowers and SG steam pressure rises
- C. RCS ΔT rises and SG steam pressure rises
- D. RCS ΔT lowers and SG steam pressure lowers

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 026

Unit 1 is at 100% power.

Which one of the following describes ALL of the Vital Instrument Inverter breaker(s) that will be in the closed position for normal operations?

- A. Normal AC Supply only
- B. Normal AC Supply and DC Supply only
- C. Normal AC Supply and Backup AC Supply
- D. Normal AC Supply, Backup AC Supply, and DC Supply

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 027

The Station Blackout Air Compressor is aligned to Which one of the following Control Air headers?

- A. 1A and 2A
- B. 1B and 2B
- C. 1A and 2B
- D. 1B and 2A

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 028

Given the following conditions:

- Unit 2 is in MODE 4
- RCS Cooldown is in progress
- 21RHR Pump and Heat Exchanger (HX) are in service to provide shutdown cooling
- The CRS directs that the RCS cooldown rate be REDUCED

Which one of the following describes the method for reducing the cooldown rate?

- A. Throttle open on 21RH18, RHR Heat Exchanger Flow Control valve, while throttling closed on 2RH20, RHR Heat Exchanger Bypass valve, to maintain total RHR flow constant
- B. Throttle closed on 21RH18, RHR Heat Exchanger Flow Control valve, while throttling closed on 2RH20, RHR Heat Exchanger Bypass valve, to reduce total RHR flow
- C. Throttle closed on 21RH18, RHR Heat Exchanger Flow Control valve, while throttling open on 2RH20, RHR Heat Exchanger Bypass valve, to maintain total RHR flow constant
- D. Throttle open on 21RH18, RHR Heat Exchanger Flow Control valve, while throttling open on 2RH20, RHR Heat Exchanger Bypass valve, to raise RHR heat exchanger bypass flow

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 029

Steam Dump Controller in MS PRESS CONT mode due to a previous failure of PT-506 Turbine First Stage Pressure.

Following a reactor trip, PT-507, Main Steam Header Pressure fails off-scale high.

Assuming no operator action, Which one of the following describes the effect of this failure?

- A. Steam Dumps remain closed. RCS temperature rises until MS10s open to control RCS temperature
- B. Steam Dumps open. RCS temperature rapidly lowers until steam dumps close at 543 deg F. Steam dumps will then cycle to maintain 543 deg F
- C. Steam Dumps remain closed. RCS temperature rises until Main Steam Safety Valves open to control RCS temperature
- D. Steam Dumps open. RCS temperature rapidly lowers until 543 deg F when Main Steam Line Isolation and Safety Injection actuate

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 030

Which one of the following describes a design feature intended to prevent water hammer in the Containment Fan Coil Units during a SEC Mode III actuation?

- A. All SW57's, CFCU Pressure Control Inlet Valves, fully close to maintain CFCU inlet piping full until SW pressure is restored
- B. All SW57's, CFCU Pressure Control Inlet Valves, open fully and the SW accumulators maintain full flow through the CFCU while the SW Pumps start and pressure is restored
- C. SW accumulators are capable of providing 2640 gpm to each CFCU during the brief delay when SW Pumps are starting and pressure is being restored
- D. SW accumulators automatically discharge into both nuclear headers to maintain the CFCU's full of water while the SW Pumps start and pressure is restored

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 031

Given the following conditions:

- A complete loss of off-site power has occurred.
- All vital buses (both units) are loaded in SEC Mode II.
- All SEC's have been reset in anticipation of starting some additional equipment.

Which one of the following describes how Control Air pressure will be maintained?

- A. #1 ECAC is running supplying "A" Header; #2 ECAC is running supplying "B" Header
- B. #1 ECAC is running supplying "B" Header; #2 ECAC is running supplying "A" Header
- C. At 85 psig #1 ECAC auto starts and supplies "A" Header and #2 ECAC auto starts and supplies "B" Header
- D. At 85 psig #1 ECAC auto starts and supplies "B" Header and #2 ECAC auto starts and supplies "A" Header

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 032

Which one of the following leak locations will cause pressurizer level indication to read HIGHER than actual level?

- A. Level detector Reference Leg
- B. Level detector Variable Leg
- C. Pressurizer Vapor Space
- D. Pressurizer Surge Line

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 033

Which one of the following describes the minimum set of conditions necessary to initiate an instantaneous Blackout (Mode II) operation of the SECs?

- A. 1/3 4KV vital busses <95% rated voltage
- B. 2/3 4KV vital busses <95% rated voltage
- C. 1/3 4KV vital busses <70% rated voltage
- D. 2/3 4KV vital busses <70% rated voltage

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 034

Which one of the following indications is used to confirm a reactor trip?

- A. OHA 'First Out' indication
- B. Individual Rod Position Indication (IRPI)
- C. Reactor Trip Breaker Position Indication
- D. Intermediate Range Startup Rate indication

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 035

A pressurizer code safety valve has indications of leakage.

The following indications exist:

- Pressurizer pressure is 2225 psig and stable.
- Safety Valve tailpipe temperature indicates 231°F and rising slowly
- PRT pressure is 6 psig and rising 1 psi every 10 minutes

Which one of the following is the reason for the temperature indication seen downstream of the safety valve?

- A. The leak is too small to overcome ambient heat loss to the containment
- B. The fluid velocity in the tailpipe results in a loss of energy and lower temperature
- C. The fluid temperature corresponds to the PRT saturation pressure because minimal energy is lost in a throttling process.
- D. The volume of water in the PRT quenches the superheated vapor downstream of the leaking safety valve

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 036

Given the following conditions:

- A Small Break LOCA has occurred.
- The crew is performing the actions of EOP-LOCA-2, POST LOCA COOLDOWN AND DEPRESSURIZATION.
- SI pumps have been stopped.
- Normal Charging is aligned.
- The crew is depressurizing the RCS using normal spray

Which one of the following describes the strategy for the continuing depressurization?

- A. Maximize subcooling to ensure continued RCP operation
- B. Minimize subcooling to reduce RCS break flow.
- C. Maximize subcooling to prevent a challenge to the CORE COOLING critical safety function.
- D. Minimize subcooling to ensure pressurizer level remains above the lower limit to allow heater operation during the RCS cooldown

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 037

If a loss of RHR was due to a loss of Service Water or Component Cooling water, Which one of the following describes BOTH of the preferred methods of recovering RCS heat removal?

- A. Cold Leg Injection or Hot Leg Injection
- B. Cold Leg Injection or Reflux cooling
- C. Reflux cooling or Natural Circulation cooldown
- D. Natural Circulation cooldown or Hot Leg Injection

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 038

Unit 2 is at 100% power. All control systems are in automatic.

The controlling pressure input to the pressurizer pressure master controller fails to 2225 psig.

Which one of the following describes the initial response of the pressurizer heaters?

- A. Variable heaters and backup heaters are energized.
- B. Variable heaters and backup heaters are deenergized.
- C. Variable heaters are energized. Backup heaters are deenergized.
- D. Variable heaters are deenergized. Backup heaters are energized.

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 039

Reactor startup is in progress.

IR power indicates 5×10^{-11} amps on both channels. Source Range High Flux trip has NOT been blocked.

For the two switch positions shown below, describe the Reactor Protection System response to a blown instrument power fuse on Source Range channel N-31.

SR Level Trip Bypass: NORMAL

SR Level Trip Bypass: BYPASS

- | | | |
|----|-----------------|-----------------|
| A. | No Reactor Trip | No Reactor Trip |
| B. | Reactor Trip | No Reactor Trip |
| C. | No Reactor Trip | Reactor Trip |
| D. | Reactor Trip | Reactor Trip |

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 040

During a Reactor Startup the following conditions exist:

- P-6 has just energized
- Source Range Channel N-31 indicates 4×10^3 CPS
- Source Range Channel N-32 indicates 5×10^3 CPS
- Intermediate Range Channel N35 indicates 2×10^{-11} amps
- Intermediate Range Channel N36 indicates 2×10^{-10} amps

Which one of the following is the cause of the above readings?

- A. Intermediate Range Channel N35 is undercompensated.
- B. Intermediate Range Channel N36 is undercompensated.
- C. Intermediate Range Channel N35 is overcompensated.
- D. Intermediate Range Channel N36 is overcompensated.

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 041

The crew is performing S2.OP-AB.SG-0001, STEAM GENERATOR TUBE LEAK, due to a rise in radiation as indicated on 2R15, Condenser Air Ejector process radiation monitor.

The CRS orders a unit shutdown due to the following conditions:

- 2R15 is in ALARM
- 2R19C, SG BLOWDOWN PROCESS is RISING
- 2R53C, N16 MS LINE RAD MONITOR is RISING

Which one of the following describes the reason that a Unit shutdown is required for these conditions?

- A. The 2R15 alarm setpoint is based upon the 140 GPD tube leakage criteria requiring unit shutdown
- B. The combination of conditions indicates that the leakage is rising faster than a rate of 60 GPD/HR
- C. RCS inventory cannot be maintained if 2R53C reaches an alarm condition
- D. The combination of conditions will exceed the capacity of the Condensate Polishing system to remove impurities

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 042

Unit 2 has sustained a Steam Generator Tube Rupture. The crew is preparing to cooldown to a target temperature of 497°F.

A loss of Off-Site Power occurs. All equipment functions as required.

Which one of the following describes how the cooldown to target temperature will be accomplished?

- A. Intact SG MS10s set to 25%
- B. Main Steam Dumps in Pressure Control mode set to 25%
- C. Intact SG MS10s set to maximum rate
- D. Main Steam Dumps in Pressure Control mode set to maximum rate

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 043

Unit 2 has tripped due to a Feed Line break downstream of 22BF22, Feedwater Inlet Stop Check Valve, in the outer mechanical penetration area.

Following the reactor trip, which one of the following indications will be observed?

- A. 22SG pressure is lowering; 21 AFW pump pressure override will operate to limit AFW flow to 22SG
- B. 22SG pressure is lowering; 22 AFW pump pressure override will operate to limit AFW flow to 22SG
- C. All SG pressures are lowering; 21 AFW pump pressure override will operate to limit AFW flow to 22SG
- D. All SG pressures are lowering; 22 AFW pump pressure override will operate to limit AFW flow to 22SG

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 044

Unit 2 is at 100% power. All systems are in their normal alignments.

2A 125 volt DC bus is lost.

Which one of the following describes the effect, if any, on the 2A vital instrument inverter?

- A. Inverter output voltage will remain the same
- B. Inverter output voltage will drop, causing a transfer to the regulated supply
- C. Inverter output voltage will drop, requiring a manual transfer to the regulated supply.
- D. Inverter output voltage will remain the same, but the auctioneering circuit will cause static switch transfer to the alternate supply.

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 045

A Loss of Control Air has occurred on Unit 2. The crew is performing actions of S2.OP-AB.CA-0001, LOSS OF CONTROL AIR.

Which one of the following is the preferred method of secondary heat removal during this event and the basis for that method?

- A. 23 AFP is preferred because flow can still be controlled using 21AF11-24AF11, Aux Feedwater flow control valves,
- B. 23 AFP is preferred because AFW flow can more easily be controlled by manually controlling SG pressure via local operation of MS10s
- C. 21 and 22 AFPs are preferred because 23 AFP speed control is lost and 21AF11-24AF11 are failed closed
- D. 21 and 22 AFPs are preferred because SG level control will not require entry to the 23AFP room and the probability of a Main Steam Delta P SI is avoided

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 046

The crew is performing EOP-LOCA-2, POST LOCA COOLDOWN AND DEPRESSURIZATION. 22 Charging Pump has been stopped. Conditions are met for stopping one Safety Injection (SI) Pump.

Which one of the following identifies the pump to be stopped and the reason for the selection?

- A. Stop 21 SI Pump to equalize diesel generator loading
- B. Stop 21 SI Pump to increase the probability of continuing injection flow if one ECCS train is lost
- C. Stop 22 SI Pump to ensure one full train of injecting ECCS equipment is maintained in service
- D. Stop 22 SI Pump to ensure ECCS injection flow if any single vital bus failure occurs

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 047

Which one of the following is an entry condition for EOP-LOCA-5, LOSS OF EMERGENCY COOLANT RECIRCULATION?

- A. RWST LO-LO level alarm actuates with Containment sump level >62%
- B. Operators stopped both RHR pumps in EOP-LOCA-6, LOCA OUTSIDE CONTAINMENT
- C. Loss of 21 RHR pump when 22 RHR pump is providing Containment Spray in Cold Leg Recirculation
- D. Loss of 21 RHR pump and 22 Charging pump during Cold Leg Recirculation

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 048

The following conditions exist:

- Unit 2 is at 98 % power.
- Rod Control is operating in AUTOMATIC. Control Bank D is at 206 steps.
- Control Bank D begins withdrawing at a rate of 8 steps per minute.
- Tavg is verified to be approximately 2 degrees higher than Tref

Based on these conditions, which of the following actions is required next?

- A. Place Rod Control in Manual
- B. Stop any RCS borations in progress
- C. Check EHC controls to insure no Main Turbine runback is in progress
- D. Trip the reactor and go to EOP-TRIP-1, REACTOR TRIP OR SAFETY INJECTION

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 049

Unit 2 has been at 100% power for 40 days.

Which one of the following plant conditions requires verification of minimum SHUTDOWN MARGIN within one hour?

- A. Control Bank D Group 2 demand counter is declared INOPERABLE
- B. All control Bank D rods are verified 6 steps lower than the group demand counters
- C. One Control Bank D rod IRPI is declared inoperable
- D. One Control Bank D rod is declared untrippable

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 050

Fourteen hours following a LOCA, Hot Leg Recirculation is placed in service. Which one of the following describes the analyzed event that determined the need for Hot Leg Recirculation?

- A. Large Hot Leg Break
- B. Large Cold Leg Break
- C. Small Hot Leg Break
- D. Small Cold Leg Break

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 051

Given the following conditions:

- Unit 2 is at 41% power.
- 21 RCP seal leakoff is 2.9 GPM and has been rising for the past 2 hours.
- The crew is preparing to shutdown the plant when the following annunciator is received in the control room:
 - Control Console CC1, Bezel 2-5, SEAL LEAKOFF FLOW HI-LO
- 21 RCP seal leakoff flow is approximately 6.5 GPM and rising

Which one of the following describes all actions required?

- A. Trip 21 RCP and close 21CV104, 21 RCP seal leakoff isolation valve, in 3-5 minutes
- B. Trip the reactor, trip 21 RCP, and close 21CV104 in 3-5 minutes
- C. Commence a controlled plant shutdown, trip 21 RCP when the reactor trip breakers are open
- D. Commence a controlled plant shutdown, raise 21 SG level to minimize effects of shrink, then trip 21 RCP

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 052

Unit 2 is operating at 100 % power when a Loss of Off-Site power causes a reactor trip. Ten minutes after the trip, the following conditions exist:

- 21SG Pressure 1010 psig and stable
- 22SG Pressure 1005 psig and stable
- 23SG Pressure 1015 psig and stable
- 24SG Pressure 1010 psig and stable

- All RCPs are Off
- RCS Pressure is 2230 psig and stable
- Thot is approximately 575°F in all 4 loops and lowering slowly
- Core Exit TCs indicate approximately 580°F
- Tcold is approximately 555°F in all 4 loops and stable

Based on the above indications, what is the condition of the RCS?

- A. Natural Circulation exists. The steam dumps are maintaining heat removal
- B. Natural Circulation does not exist. Heat removal may be established by opening the steam dumps
- C. Natural Circulation exists. MS10s are maintaining heat removal
- D. Natural Circulation does not exist. Heat removal may be established by opening the MS10s

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 053

Unit 2 is operating at 88% power.

The crew is attempting to isolate a Component Cooling Water leak in accordance with S2.OP-AB.CC-0001, COMPONENT COOLING ABNORMALITY.

The following conditions exist:

- 22 Charging pump is operating
- 21 and 23 Component Cooling pumps are operating
- 22 Component Cooling pump and heat exchanger are isolated
- Component Cooling Surge tank level indication, LI-628A, is 40% and lowering
- Component Cooling Surge Tank Makeup is isolated
- OHA Alarm C-2 CNTMT SUMP PMP START has actuated

Which one of the following identifies the location of the leak?

- A. 21 Component Cooling header
- B. 22 Component Cooling header
- C. Non-safeguards header
- D. Either 22 Component Cooling header OR Non-safeguards header

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 054

During an ATWT event from 100% power, Which one of the following will provide the most immediate negative reactivity insertion?

- A. RCS boration
- B. Manual rod insertion
- C. Manual Turbine Trip
- D. Isolating a Faulted Steam Generator

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 055

Which one of the following describes the reason for the sequence of diagnostic steps in EOP-TRIP-1 REACTOR TRIP OR SAFETY INJECTION?

- A. Main Steam Line break diagnosis takes priority because a high energy steam break could potentially mask other failures
- B. SGTR diagnosis takes priority because of the highest probability of radioactive release
- C. Main Steam Line break diagnosis takes priority because AFW must be isolated to remain within accident analysis assumptions for containment pressure
- D. SGTR diagnosis takes priority to minimize the potential for component failure due to water in the Main Steam lines

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 056

Following a SMALL BREAK LOCA coincident with loss of Off-Site power, the crew is performing action contained in EOP-FRTS-1, RESPONSE TO IMMINENT PRESSURIZED THERMAL SHOCK CONDITIONS.

Which one of the following describes the difference in SI termination criteria for FRTS-1 as opposed to the criteria in EOP-TRIP-3, SAFETY INJECTION TERMINATION?

The criteria in FRTS-1 is...

- A. less restrictive to allow for a faster reduction in RCS pressure
- B. more restrictive to allow for a more controlled reduction in RCS pressure
- C. less restrictive because subsequent RCP restart is likely to cause propagation of any existing flaw in the reactor vessel walls
- D. more restrictive because subsequent RCP restart is likely to cause propagation of any existing flaw in the reactor vessel walls

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 057

Which one of the following describes why the Condensate pump suction temperature is monitored and limited to <140 deg F during a loss of Main Condenser vacuum?

- A. Minimize the possibility of condensate polishing resin damage and minimizes the possibility of last stage turbine blade overheating.
- B. Minimize the possibility of condensate polishing resin damage and steam flashing in the condensate suction pipe
- C. Minimize steam flashing in the condensate suction piping and ensures Main Condenser heat removal capability
- D. Minimize the possibility of last stage turbine blade overheating and ensures Main Condenser heat removal capability

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 058

A loss of all AC power has occurred on Unit 2.

The CRS directs performance of Blackout coping actions per S2.OP-AB.LOOP-0001, LOSS OF OFF-SITE POWER, Attachment 1, Part A.

Which one of the following actions will be taken as a result of performing this attachment?

- A. Reduction of Unit 3 Battery loads
- B. Isolation of RCP seals
- C. Manual start of 23 AFW pump
- D. De-energization of SECs

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 059

Unit 2 is at 100% power. All control systems in automatic.

- OHA B-3, "2B VTL INSTR BUS INVRT FAIL" is received
- All channel II indications are failed
- Aux Alarm Typewriter, 2B 115VAC VITAL INSTR BUS LOSS OF VOLT is in alarm

Which one of the following describes the effect on subsequent operation of the pressurizer backup heaters?

- A. Can be operated from the control room after placing pressurizer pressure master controller in manual
- B. Can be operated from the control room after installation of a jumper
- C. Can be turned ON and OFF using CMC switch and LOCAL/REMOTE selector on Elev. 78
- D. Can be operated in automatic after pressurizer level channel III is selected for ALARM

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 060

Which one of the following describes the fire protection actuation sequence if a fire is sensed in the Diesel Fuel Oil Storage Tank area?

- A. CO2 discharge begins immediately. If the thermal detector has NOT reset within five minutes then the deluge valve opens and remains open for five minutes
- B. If CO2 flow is NOT sensed within one minute then the deluge valve opens and remains open until the detector resets
- C. If CO2 flow is NOT sensed within one minute then OHA A-7, FIRE PROT FIRE actuates and the crew will be directed to manually open the deluge valve
- D. If CO2 flow is NOT sensed within one minute then the deluge valve opens and remains open for five minutes

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 061

Due to a chemical spill, the Unit 2 control room is being evacuated per S2.OP-AB.CR-0001, CONTROL ROOM EVACUATION.

Which one of the following describes all locations where individual RCP Seal Injection flow indication will be monitored?

- A. Hot Shutdown Panel only
- B. Hot Shutdown Panel and Local flow indicators in Mech Pen Elev 78'
- C. CVC Charging pumps flow and pressure instrument panel, 216-2 and Hot Shutdown Panel
- D. CVC Charging pumps flow and pressure instrument panel, 216-2 and Local flow indicators in Mech Pen Elev 78'

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 062

The crew is performing EOP-FRCC-1, RESPONSE TO INADEQUATE CORE COOLING. Both channels of Reactor Vessel Level Indication System (RVLIS) are INOPERABLE. Preparations are being made to start RCPs.

Which one of the following indications provides the status of RCS inventory under these conditions?

- A. Pressurizer Level
- B. Safety Injection flow
- C. Core Exit Thermocouples
- D. Core Delta Temperature ($T_{hot} - T_{cold}$)

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 063

Following an alarm on R31, Letdown Line Failed Fuel Process Monitor, high RCS activity was confirmed IAW S2.OP-AB.RC-0002, HIGH ACTIVITY IN REACTOR COOLANT.

The CRS directs a plant shutdown be performed.

Which one of the following actions performed IAW AB.RC-0002 is designed to limit the release of radioactivity in the event of a subsequent SGTR?

- A. MSIVs are closed
- B. MS10 setpoints are raised
- C. RCS is cooled down below 500°F
- D. Maximum condensate polishers are placed in service

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 064

Which one of the following Unit 2 Radiation Monitoring System channels in alarm will require action IAW EOP-LOCA-6, LOCA OUTSIDE CONTAINMENT?

- A. 2R5, Fuel Handling Building Spent Fuel Pit area
- B. 2R13A, 21 CFCU Service Water process monitor
- C. 2R15, Condenser Air Ejector
- D. 2R16, Plant Vent Effluent

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 065

The crew is performing actions of EOP-TRIP-3, SAFETY INJECTION TERMINATION.

- SI is reset
- SECs are reset
- All safeguards equipment has been stopped with the exception of 21 Charging pump

Subsequently, a Loss of Off-Site power occurs and the following conditions are present:

- RCS pressure is 1660 psig and lowering slowly
- Pressurizer level is 11% and lowering slowly

Which one of the following actions are required?

- A. Allow blackout loading sequence to complete, then continue aligning charging and letdown to maintain RCS inventory control
- B. Allow blackout loading sequence to complete, then manually reinitiate Safety Injection
- C. Allow blackout with SI loading sequence to complete, then check that safeguards equipment is operating properly
- D. Allow blackout loading to complete, reset SECs, and start ECCS pumps as necessary to maintain RCS inventory

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 066

The crew is preparing to commence Steam Generator depressurization IAW EOP-LOPA-1, LOSS OF ALL AC POWER.

Which one of the following describes the method and reason for the depressurization?

- A. Depressurize at the maximum rate to minimize RCS inventory loss
- B. Depressurize at the maximum rate to enhance AFW flow
- C. Depressurize at a maximum rate not to exceed a cooldown rate of 100 deg F/Hr to minimize a challenge to the Thermal Shock Safety Function
- D. Depressurize at a maximum rate not to exceed a cooldown rate of 100 deg F/Hr to maintain the ability to continue reflux boiling heat removal

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 067

Given the following conditions:

- The crew is performing EOP-LOSC-2, MULTIPLE SG DEPRESSURIZATION
- Action has been taken to limit the RCS cooldown rate.

While resetting Safety Injection during the SI termination sequence, the STA reports the following:

- RED path on Heat Sink CSF status tree
- 21MS167 has been closed and 21SG pressure is 550 psig and rising

Which one of the following describes the actions required and the basis for those actions under these conditions?

- A. Transition to EOP-LOSC-1, LOSS OF SECONDARY COOLANT, due to rising SG pressure. Raise feedwater flow to prevent unnecessary entry to EOP-FRHS-1, LOSS OF HEAT SINK
- B. Perform actions of EOP-FRHS-1 to establish minimum feedwater flow to avoid a challenge to the Core Cooling CSF
- C. Perform actions of EOP-LOSC-2 until Safety Injection is terminated, to minimize the possibility of pressurizer overfill
- D. Wait for verification that 21 SG is isolated, the transition to EOP-LOSC-1 to establish minimum heat sink and complete SI termination

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 068

Given the following conditions:

- The crew is performing EOP-TRIP-1, REACTOR TRIP OR SAFETY INJECTION.
- The Plant Operator (PO) has been directed to perform EOP-APPX-1, COMPONENT COOLING RESTORATION.
- While performing APPX-1, the CRS determines that a transition to EOP-LOCA-1, LOSS OF REACTOR COOLANT, is necessary.

Which one of the following actions are required?

- A. Discontinue action in APPX-1 until directed by EOP-LOCA-1
- B. Continue action in APPX-1 but do not block or reset SECs until directed by EOP-LOCA-1
- C. Complete the action required by APPX-1 prior to transition to LOCA-1
- D. Transition to LOCA-1 and continue action as necessary in APPX-1

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 069

Which one of the following describes the PSEG initial administrative dose control level for a 23-year-old new employee with a lifetime exposure of 6.8 Rem?

- A. 2000 mrem/yr TEDE
- B. 3000 mrem/yr TEDE
- C. 4000 mrem/yr TEDE
- D. 4750 mrem/yr TEDE

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 070

Which one of the following parameter limits is designed to ensure that radiation releases will remain within the limits of 10CFR20?

- A. Liquid Waste discharge activity
- B. Primary system activity
- C. Secondary system activity
- D. Primary to secondary leakage

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 071

Unit 2 is at 100% power. One hour ago, the Pre-lube Pump on 2A Diesel Generator (2A DG) seized. Maintenance is investigating the availability of a spare. This shift 2A DG Jacket Water Heater is on the schedule to be removed from service to allow replacement of the temperature controller.

Which one of the following describes the action required if 2A DG Jacket Water Heater is cleared and tagged for the scheduled maintenance?

- A. Perform 2A DG surveillance once every 12 hours to demonstrate continued operability
- B. Run 2A DG as necessary to maintain lube oil temperature $>180^{\circ}\text{F}$ and jacket water temperature $>100^{\circ}\text{F}$
- C. If Service Water temperature is $>34^{\circ}\text{F}$ then run 2A DG as necessary to maintain lube oil temperature $>100^{\circ}\text{F}$
- D. Declare 2A DG inoperable and perform the necessary surveillances to demonstrate the operability of the remaining AC sources

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 072

An Independent Verification (IV) of valve position is required in an area with a 150 mrem/hr dose rate.

Which one of the following identifies the maximum time allowed for the IV before “hands-on” verification may be waived?

- A. 4 minutes
- B. 6 minutes
- C. 8 minutes
- D. 10 minutes

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 073

Unit 2 is operating at 100% power. All control systems are in automatic. All required plant equipment is in service.

Which one of the following equipment failures requires the EARLIEST action per Technical Specifications?

- A. Failure of 21 EDG
- B. Failure of battery charger 2A1
- C. Failure of 2A vital instrument inverter
- D. Failure of 28 volt DC bus 2A

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 074

Unit 2 is at 100% power. All control systems are in automatic. No evolutions are in progress. You are assigned to relieve the on-shift RO for approximately 30 – 45 minutes.

Which one of the following describes the shift turnover requirement for this activity?

- A. Turn over the operating status of the watchstation, sign the short-term relief log, attach it to the watchstation narrative log at the end of the shift.
- B. Turn over the operating status of the watchstation, document the short-term relief in the watchstation narrative log.
- C. Perform a board walkdown, sign the applicable portion of the watchstation turnover checklist, and document the relief in the watchstation narrative log.
- D. Perform a full turnover, complete the watchstation turnover checklist, and attach the checklist to the narrative log at the end of the shift.

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 075

Which one of the following completes the statement regarding the physical relationship of the Main Turbine Trip Solenoids (20AST, 20-2AST 20ET) and the reactor protection system (RPS) trains?

On a reactor trip from 100% power - - - .

- A. RPS Train A trips the 20ET and 20-2AST solenoids
- B. RPS Train A trips the 20AST and 20-2AST solenoids
- C. RPS Train B trips the 20ET and 20-2AST solenoids
- D. RPS Train B trips the 20AST and 20ET solenoids

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 076

Which one of the following describes the personnel allowed in the Salem "At the Controls" area without the permission of the RO/PO?

- A. On-Shift control room personnel only
- B. On-Shift control room personnel, and a maximum of one I&C technician or mechanic
- C. On-Shift control room personnel, and up to two Training candidates
- D. On-Shift control room personnel, a maximum of one I&C technician or mechanic, and up to two Training candidates

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 077

Unit 1 is at 100% power. All control systems are in automatic.

- 21 Safety Injection pump is INOPERABLE.
- T.S. ACTION 3.5.2.a was entered 6 hours ago due to the INOPERABLE pump.

Which one of the following additional component failures would require ACTION per T.S. 3.0.3?

- A. 21 RHR pump
- B. 21 Charging pump
- C. 22 Safety Injection pump
- D. 22 Containment Spray pump

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 078

Given the following conditions:

- Unit 2 is in MODE 6 and you are on duty at the Work Control Center.
- A worker's blocking tag must be placed so that a technician can perform maintenance on a breaker for an MOV. The work will NOT affect plant operations.
- There is already a worker's blocking tag installed on the same breaker for someone performing corrective maintenance on the valve.

Which one of the following describes the action to be taken regarding the current request?

- A. A Group Tagging Request must be initiated in order to incorporate the two tagging requests
- B. The first tag must be removed in accordance with the appropriate procedure before the new tag can be installed
- C. The new tag may be placed on the breaker with approval from the WCC SRO or unit CRS
- D. The new tag may be placed on the breaker with approval from the person on the first tag and the WCC SRO or unit CRS

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 079

A reactor startup is being performed 20 hours after a trip from 100% power.

- Estimated Critical Rod Position is Control Bank D at 38 steps
- Criticality is predicted in approximately 5 hours

If the startup was to proceed one hour EARLY, what is the effect on the Inverse Count Rate Ratio (ICRR)?

ICRR will...

- A. ACCURATELY predict criticality at a LOWER rod height
- B. ACCURATELY predict criticality at a HIGHER rod height
- C. INACCURATELY predict criticality in a CONSERVATIVE direction
- D. INACCURATELY predict criticality in a NON-CONSERVATIVE direction

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 080

Following a reactor trip, the crew is performing EOP-TRIP-2, REACTOR TRIP RESPONSE.

The following conditions exist on the CSF Status Trees:

- Shutdown Margin GREEN
- Core Cooling GREEN
- Heat Sink YELLOW
- Thermal Shock GREEN
- Containment Env GREEN
- Coolant Inventory YELLOW

Which one of the following describes the required CSF Status Tree monitoring interval?

- A. Continuous until the YELLOW conditions are clear
- B. Continuous until exit from the EOPs
- C. Every 10-20 minutes with CRS concurrence
- D. ONLY required when Safety Injection is initiated

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 081

The crew is responding to a PURPLE condition on Core Cooling per EOP-FRCC-2, RESPONSE TO DEGRADED CORE COOLING when the STA reports the following:

- | | |
|---------------------------|--------|
| • Shutdown Margin | GREEN |
| • Core Cooling | YELLOW |
| • Heat Sink | YELLOW |
| • Thermal Shock | PURPLE |
| • Containment Environment | RED |
| • Coolant Inventory | YELLOW |

Which one of the following actions are required?

- A. Complete FRCC-2, then transition to FRTS-2, RESPONSE TO ANTICIPATED THERMAL SHOCK
- B. Complete FRCC-2, then transition to FRCE-1, RESPONSE TO EXCESSIVE CONTAINMENT PRESSURE
- C. Immediately transition to FRTS-2, RESPONSE TO ANTICIPATED THERMAL SHOCK
- D. Immediately transition to FRCE-1, RESPONSE TO EXCESSIVE CONTAINMENT PRESSURE

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 082

Given the following conditions:

- Unit 2 is at 35% power and raising power at 5%/hr after a mini-outage.
- Rod Control is in AUTO and a dilution is in progress.
- While ensuring that all control rods are above the Rod Insertion Limit (RIL) IAW Technical Specification Surveillance 4.1.3.5, the RO notes that Control Bank Rods 2D1 and 2D3 Individual Rod Position Indicators (IRPI) read 20 steps below the Group Bank Demand.

Which one of the following describes the correct action?

- A. Restore the IRPI's to operable within one hour or be in HOT STANDBY within the following six hours
- B. Place Rod Control in MANUAL and hold power at <50% until all IRPI's are within ± 12 steps of Group Demand
- C. A one-hour "thermal soak time" is permitted before the IRPI's are declared inoperable. Rod motion is limited to ± 6 steps during that period
- D. Verify remaining Control Bank D rods are above the RIL and no alarms indicating misaligned rods have actuated. Power escalation can continue

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 083

Following are the Unit 2 conditions:

- RCS Temperature 185°F
- RCS Pressure 250 psig
- 21 RCP is running
- 21 RHR Pump is in service
- 22 RHR Pump will be started and 21 RHR Pump will be stopped

Which one of the following describes why a NCO must be prepared to adjust 2CV18, Letdown HX Outlet Valve, immediately following the start of 22 RHR Pump?

- A. Prevent lifting the Letdown Line Relief Valve (2CV6)
- B. Prevent excessive DP across the reactor coolant filter
- C. Maintain RHR pressure below relief valves setpoint (21/22SJ48)
- D. Maintain RCP seal differential pressure above the minimum required

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 084

Given the following:

- Unit 2 is at 100% power. 2C SEC is deenergized.
- A reactor trip occurs, followed by a loss of AFW
- The crew is initiating RCS feed and bleed IAW 2-EOP-FRHS-1, RESPONSE TO LOSS OF SECONDARY HEAT SINK.
- You have been assigned to perform 2-EOP-APPX-3, SI VERIFICATION.

Which one of the following valves, if any, will you have to re-position manually?

- A. None. All valves are re-positioned by the SSPS
- B. 2SW26, Turbine Area SW Stop Valve
- C. 21SW20, Turbine Area SW Stop Valve
- D. 23SW20, Turbine Area SW Stop Valve

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 085

Unit 2 is in Hot Standby with preparations for a reactor startup in progress.

- All shutdown control rod banks are withdrawn.
- Chemistry is drawing a boron sample prior to the beginning of control bank control rod withdrawal when OHA A-29, 2A-2C TEST OR TROUBLE actuates.
- The NEO dispatched to investigate reports that 2AVIB-24, 2A SEC supply breaker has tripped open.

Considering only the SEC, which one of the following is the correct action per Technical Specifications?

- A. Maintain Hot Standby until all SEC's are OPERABLE
- B. Startup and power operations can continue with 2/3 SEC's
- C. Startup can continue. Maintain power less than 5% until all SEC's are OPERABLE
- D. Restore all SECs to OPERABLE within the next 6 hours or be in Cold Shutdown within the following 30 hours

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 086

Given the following conditions:

- A small break LOCA has occurred on Unit 2.
- All RCP's were stopped IAW the TRIP-1 CAS
- RVLIS Full Range is reading 65%.
- The crew is in 2-EOP-LOCA-1, LOSS OF REACTOR COOLANT, when the STA confirms a CORE COOLING PURPLE PATH.

Which one of the following describes the status of the reactor coolant system?

- A. Subcooled $>10^{\circ}\text{F}$
- B. Subcooled $1-10^{\circ}\text{F}$
- C. Saturated
- D. Superheated

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 087

Given the following conditions:

- Unit 2 has experienced a LOCA.
- Safety Injection has actuated
- All equipment is operating as designed

Which one of the following describes the operation of the ventilation systems inside containment?

- A. CRDM Cooling Fans shutdown, Containment Iodine Removal Units shutdown, Containment Fan Cooling Units operating in slow speed
- B. CRDM Cooling Fans operating, Containment Iodine Removal Units shutdown, Containment Fan Cooling Units operating in fast speed
- C. CRDM Cooling Fans operating, Containment Iodine Removal Units operating, Containment Fan Cooling Units operating in slow speed
- D. CRDM Cooling Fans shutdown, Containment Iodine Removal Units shutdown, Containment Fan Cooling Units operating in fast speed

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 088

Which one of the following conditions will result in a Feedwater Isolation signal?

- A. Containment Pressure >5 psig
- B. Containment Phase B Isolation signal
- C. Reactor Trip concurrent with Tave <554°F
- D. Manual initiation of Main Steam Line Isolation

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 089

Unit 2 is at 100% power. PT-505, Turbine First Stage Pressure is out of service when 22 SGFP trips on a spurious low lube oil pressure signal.

Which one of the following describes the reason why S2.OP-AB.CN-0001, FEEDWATER/CONDENSATE SYSTEM ABNORMALITY, directs a reactor trip?

- A. The turbine runback will begin and then terminate immediately because the EHC sees a zero output from PT-505
- B. RCS transient response is greater because Rod Control is in MANUAL and steam dump is degraded with PT-505 out of service
- C. The arbitrated first stage pressure signal prevents the ADFWCS from terminating the runback because PT-505 and PT-506, Turbine First Stage Pressure, and main steam flow are all in disagreement
- D. The challenge associated with attempting to maintain the unit on-line while both Rod Control and all BF19 valves are in MANUAL and a turbine runback is in progress is not considered to be worth the risk

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 090

Given the following:

- Unit 2 tripped from full power (EOL) when off-site power was lost
- All vital busses are powered from their respective emergency diesel generator
- The operating crew is in 2-EOP-TRIP-2, REACTOR TRIP RESPONSE
- Natural circulation flow is verified
- All SG NR levels are all between 9-33%
- 21-24MS10, SG Atmospheric Relief Valves, are in MANUAL and throttled open

Which one of the following describes the response of RCS Tcold and Core Exit Thermocouple (CET) indications if the Plant Operator (PO) reduces AFW flow by 5E04 lbm/hr to control SG level?

- A. RCS Tcold's rise; CET's remain the same
- B. RCS Tcold's rise; CET's rise
- C. RCS Tcold's lower; CET's remain the same
- D. RCS Tcold's lower; CET's rise

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 091

A main steam line break has occurred inside Unit 1 Containment. An AUTO SI has initiated.

Which one of the following describes the response of RCS pressure and ECCS flow?

- A. RCS pressure lowers and ECCS flow rises until the MSIV's close. After the MSIV's close, RCS pressure rises and ECCS flow lowers
- B. RCS pressure lowers and ECCS flow rises until the MSIV's close. After the MSIV's close, both RCS pressure and ECCS flow stabilize
- C. RCS pressure lowers and ECCS flow rises until the MSIV's close and the affected SG boils dry. After that, RCS pressure rises and ECCS flow lowers
- D. RCS pressure lowers and ECCS flow rises until the MSIV's close and the affected SG boils dry. After that, both RCS pressure and ECCS flow stabilize

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 092

Given the following conditions:

- Unit 2 is at 100% power.
- The undervoltage (UV) sensing device on 2E 4KV Group Bus removed from service for bench testing.

With UV sensing out-of-service on 2E 4KV Group Bus, which one of the following describes the MINIMUM undervoltage logic necessary to initiate a reactor trip?

- A. 2H 4KV Group Bus undervoltage sensing device drop out will cause a reactor trip
- B. 2F 4KV Group Bus undervoltage sensing device drop out will cause a reactor trip
- C. Both 2F and 2H 4KV Group Bus undervoltage sensing devices must drop out to cause a reactor trip
- D. Both 2G and 2H 4KV Group Bus undervoltage sensing devices must drop out to cause a reactor trip

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 093

A technician error results in a MANUAL Containment Spray actuation.

Which one of the following describes the ONLY valves closed by this inadvertent actuation?

- A. Main Steam Isolation Valves and Feed Regulating Valves
- B. Feed Regulating Valves and RCP CCW Valves
- C. Main Steam Isolation Valves and Containment Ventilation Isolation Valves
- D. RCP CCW Valves and Containment Ventilation Isolation Valves

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 094

Given the following conditions:

- Unit 2 is at 88% power
- A leak occurs on the Spent Fuel Pool Cooling system.
- The crew has shut down the operating Spent Fuel Cooling pump.
- Spent Fuel Pool level continues to lower
- Normal Makeup is unavailable

IAW S2.OP-SO.SF-0006, SPENT FUEL POOL EMERGENCY FILL, which one of the following is the preferred source of makeup water to recover Spent Fuel Pool level?

- A. Refueling Water Storage Tank (RWST)
- B. Primary Water Storage Tank (PWST)
- C. Unit 1 Spent Fuel Pool Cooling System
- D. Unit 1 Refueling Water Storage Tank

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 095

Given the following conditions:

- Unit 2 tripped from 100% power
- 22 SPT failed, and the associated 4KV group busses are deenergized
- All other electrical components functioned as designed

Which one of the following describes the combination of Condensate Pumps and Heater Drain pumps that REMAIN IN OPERATION as a result?

- A. 21 and 22 Condensate pumps, 21 Heater Drain pump
- B. 22 and 23 Condensate pumps, 22 Heater Drain pump
- C. 23 Condensate pump, 21 and 23 Heater Drain pumps
- D. 21 and 23 Condensate pumps, 21 and 22 Heater Drain pumps

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 096

Which one of the following describes the reason that battery chargers 2B1 and 2B2 are NOT operated in parallel in MODES 1-4?

- A. Maintains battery voltage within Tech Spec limit
- B. Prevents exceeding the continuous charging current limit of 200 amps
- C. Maintains electrical separation of class 1E components
- D. Prevents excessive gas generation in the battery

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 097

Given the following:

- Unit 1 is at 100% power.
- 1A 125VDC Bus has been de-energized because of a ground. Operators and the Shift Electrician are attempting to locate and isolate the ground so the bus can be re-energized.
- Alternate 125VDC power supply cannot be aligned until the ground is located

Which one of the following describes how this situation affects operation of 11 AFW Pump?

- A. It will start on a SEC actuation or a LO-LO SG level but CANNOT be started from the control room
- B. It will start on a SEC actuation but will NOT automatically start on a LO-LO SG level and cannot be started from the control room
- C. It can only be started from the local control panel or by manually closing the breaker
- D. It can only be started by manually closing the breaker

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 098

Which one of the following may occur if an EDG is NOT loaded to the minimum value shortly after being synchronized?

- A. NEG PHASE SEQ EDG alarm
- B. EDG OVERVOLTAGE alarm
- C. EDG OVERSPEED Trip
- D. REVERSE POWER EDG Breaker Trip

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 099

A LOCA has occurred on Unit 2. Electrical and ECCS problems have resulted in a transition to FRCC-2, RESPONSE TO DEGRADED CORE COOLING.

- 21 SI Pump was just started
- 22 RHR Pump has been running for 30 minutes
- 21 and 25 SW Pumps are running
- No CCW Pumps are running
- RCS pressure is 900 psig, lowering slowly

Which one of the following describes the operating limitations, if any, on 22 RHR Pump?

- A. No limitations. SW cools the mechanical seal cooler and a recirculation path is available to the RWST
- B. Stop it immediately. The pump has already exceeded "no CCW operating time limitations"
- C. It can be run for a maximum of 30 minutes longer. Beyond that, seal and pumped fluid overheating can result in pump damage and/or failure
- D. It shall be run as long as RCS pressure is lowering. It can be stopped any time after RCS pressure stabilizes or is rising above the shutoff head

U.S.N.R.C. Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator

Question 100

Unit 1 is in a refueling outage. The Fuel Transfer Gate Valve is open. Following are a list of Fuel Handling System interlocks:

- I. FUEL HANDLING CRANE HOIST FULL UP
- II. REACTOR SIDE LIFTING FRAME DOWN
- III. SPENT FUEL PIT SIDE LIFTING FRAME DOWN
- IV. MANIPULATOR CRANE GRIPPER TUBE UP

Which one of the choices lists only interlocks that must be satisfied to send the Conveyor Car from the REACTOR SIDE to the SPENT FUEL PIT SIDE?

- A. II and III
- B. II and IV
- C. I, II and III
- D. II, III and IV

Site-Specific Written Examination
Salem Units 1 and 2
Reactor Operator
Answer Key

1. B	26. D	51. B	76. A
2. B	27. A	52. D	77. C
3. B	28. C	53. C	78. B
4. D	29. D	54. C	79. B
5. C	30. D	55. A	80. C
6. A	31. B	56. A	81. D
7. B	32. A	57. B	82. C
8. C	33. D	58. A	83. D
9. D	34. D	59. B	84. D
10. A	35. C	60. D	85. D
11. A	36. B	61. B	86. D
12. A	37. C	62. C	87. A <i>RR 6-27-01</i>
13. B	38. C	63. C	88. D A
14. C	39. B	64. D	89. C
15. B	40. B	65. D	90. B
16. C	41. A	66. A	91. C
17. B	42. C	67. C	92. B
18. A	43. B	68. D	93. D
19. C	44. A	69. A	94. A
20. B	45. D	70. A	95. A
21. D	46. B	71. D	96. C
22. B	47. B	72. A	97. D
23. C	48. A	73. A	98. D
24. C	49. D	74. A	99. C
25. B	50. B	75. B	100. A