

Facility: SALEM		Date of Examination: 05/10/10
Examination Level: RO • SRO		Operating Test Number: 08-01 NRC
Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R,D	Operate the Chilled Water System (Identify and Isolate Non-Essential Heat Loads) 2.1.25 Ability to interpret reference materials, such as graphs, curves, tables, etc.
Conduct of Operations	R,M	Evaluate a shift staffing situation and take corrective action IAW administrative procedures 2.1.5 Ability to use procedures related to shift staffing, such as minimum crew complement, overtime limitations, etc.
Equipment Control	S,N	Walkdown control console and determine most limiting LCO for current Mode of operation. 2.2.42 Ability to recognize system parameters that are entry level conditions for Technical Specifications SRO 4.6
Radiation Control	R,D,P	Authorize a Radioactive Gas Release. 2.3.6 Ability to approve release permits SRO-3.8
Emergency Plan	S,M	Classify Emergency / Non-Emergency Events, and complete the ICMF. 2.4.29 Knowledge of the Emergency Plan SRO 4.4
NOTE: All items (5 total) are required for SROs. RO applicants require only 4 items unless they are retaking only the administrative topics, when 5 are required.		
*Type Codes and Criteria (C)ontrol Room, (S)imulator, or Class(R)oom (D)irect from bank, (3 for ROs; 4 for SROs & RO retakes) (N)ew or (M)odified from bank (1) (P)revious 2 exams (1; randomly selected)		

Facility: <u>SALEM</u>	Date of Examination: <u>05/10/10</u>
Examination Level: • RO SRO	Operating Test Number: <u>08-01 NRC</u>

Administrative Topic (See Note)	Type Code*	Describe activity to be performed
Conduct of Operations	R,M	Perform a RCS Manual Leak Rate Calculation 2.1.18 Ability to make accurate, clear, and concise logs, records, status boards, and reports. RO-3.6
Conduct of Operations	R,M	Calculate Quadrant Power Tilt Ratio 2.1.43 Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant temperature, secondary plant, fuel depletion, etc. RO 4.1
Equipment Control	R,M	Perform a peer check of an ECC using Nuclear Design Data. 2.2.1 Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity. RO 4.5
Radiation Control	R, N	Perform Stay Time calculation for Emergency condition. 2.3.4 Knowledge of radiation exposure limits under normal and emergency conditions. RO-3.2
Emergency Plan	N/A	N/A

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 (D)irect from bank, (3 for ROs; 4 for SROs & RO retakes)
 (N)ew or (M)odified from bank (1)
 (P)revious 2 exams (1; randomly selected)

Facility: SALEM	Date of Examination: 05/10/10
Exam Level : RO SRO-I SRO-U	Operating Test No.: 08-01 NRC

Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a. Respond to successive dropped control rods at power (003 AA2.03 RO-3.6 SRO-3.8)	D,S,A	1
b. Perform EOP-TRIP-1 Immediate Actions and initiate Safety Injection based on board indication after auto SI fails to actuate (Normal Rx trip from 20% power entering an outage and fail steam dumps open with no first out of SI) (013 A4.03 RO-4.0 SRO-3.8)	A, EN, N	2
c. Respond to an unwarranted PZR Overpressure Protection System (POPS) actuation. (010 A4.03 RO-4.0 SRO-3.8)	A, N, L	3
d. Respond to a Shutdown LOCA (2.4.9 RO-3.8 SRO-4.2)	D,S,L	4 (pri)
e. Perform stroke time testing of 21MS167 (Main Steamline Isolation Valve) (039 A4.01 RO-2.9 SRO-2.8)	D, EN, S	4 (sec)
f. Perform a CFCU Operability and Service Water Flow Verification (022 A4.01 RO-3.6 SRO-3.6)	D,S,P	5
g. Start an EDG from the control room and energize an isolated vital bus (064 A4.01 RO-4.0 SRO-4.3)	L,N,S	6
h. Failure of Permissive P-6 to block Source Range Hi Flux trip during Rx S/U (012 A4.03 RO-3.6 SRO-3.6)	A, D, L, S	7

In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

i. Reset TDAFW pump steam inlet trip valve 2MS52 (APE 068 AA1.02 RO-4.3 SRO-4.5)	D, E, R	4 (sec)
j. Start the SBO Air Compressor (2.1.23 RO-4.3 SRO-4.4)	D,E	8
k. Commence a liquid waste release, and respond to high activity during the release (2.3.11 RO-3.8 SRO-4.3)	D, R, A,P	9

@ All RO and SRO-I control room (and in plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions ; in-plant systems and functions may overlap those tested in the control room.

*Type Codes:	Criteria for RO / SRO-I / SRO-U
(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / ≤ 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1 (A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

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a. Respond to successive dropped control rods at power (003 AA2.03 RO-3.6 SRO-3.8)	D,S,A	1
b. Perform EOP-TRIP-1 Immediate Actions and initiate Safety Injection based on board indication after auto SI fails to actuate (Normal Rx trip from 20% power entering an outage and fail steam dumps open with no first out of SI) (013 A4.03 RO-4.0 SRO-3.8)	A, EN, N	2
c. Respond to an unwarranted PZR Overpressure Protection System (POPS) actuation. (010 A4.03 RO-4.0 SRO-3.8)	A, N, L	3
d. Respond to a Shutdown LOCA (2.4.9 RO-3.8 SRO-4.2)	D,S,L	4 (pri)
e.		
f. Perform a CFCU Operability and Service Water Flow Verification (022 A4.01 RO-3.6 SRO-3.6)	D,S,P	5
g. Start an EDG from the control room and energize an isolated vital bus (064 A4.01 RO-4.0 SRO-4.3)	L,N,S	6
h. Failure of Permissive P-6 to block Source Range Hi Flux trip during Rx S/U (012 A4.03 RO-3.6 SRO-3.6)	A, D, L, S	7

In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

i. Reset TDAFW pump steam inlet trip valve 2MS52 (APE 068 AA1.02 RO-4.3 SRO-4.5)	D, E, R	4 (sec)
j. Start the SBO Air Compressor (2.1.23 RO-4.3 SRO-4.4)	D,E	8
k. Commence a liquid waste release, and respond to high activity during the release (2.3.11 RO-3.8 SRO-4.3)	D, R, A,P	9

@ All RO and SRO-I control room (and in plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions ; in-plant systems and functions may overlap those tested in the control room.

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(A)lternate path	4-6 / 4-6 / 2-3
(C)ontrol room	
(D)irect from bank	≤ 9 / ≤ 8 / < 4
(E)mergency or abnormal in-plant	≥ 1 / ≥ 1 / ≥ 1
(EN)gineered safety feature	- / - / ≥ 1 (control room system)
(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1 (A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: SALEM	Date of Examination: 05/10/10
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Control Room Systems@ (8 for RO; 7 for SRO-I; 2 or 3 for SRO-U, including 1 ESF)

System / JPM Title	Type Code*	Safety Function
a.		
b. Perform EOP-TRIP-1 Immediate Actions and initiate Safety Injection based on board indication after auto SI fails to actuate (Normal Rx trip from 20% power entering an outage and fail steam dumps open with no first out of SI) (EPE 007 EA2.02 RO-4.3 SRO-4.6)	A, EN, N	2
c.		
d. Respond to a Shutdown LOCA (2.4.9 RO-3.8 SRO-4.2)	D,S,L	4 (pri)
e.		
f.		
g.		
h. Failure of Permissive P-6 to block Source Range Hi Flux trip during Rx S/U (012 A4.03 RO-3.6 SRO-3.6)	A, D, L, S	7

In-Plant Systems (3 for RO; 3 for SRO-I; 3 or 2 for SRO-U)

i.		
j. Start the SBO Air Compressor (2.1.23 RO-4.3 SRO-4.4)	D,E	8
k. Commence a liquid waste release, and respond to high activity during the release (2.3.11 RO-3.8 SRO-4.3)	D, R, A,P	9

@ All RO and SRO-I control room (and in plant) systems must be different and serve different safety functions; all 5 SRO-U systems must serve different safety functions ; in-plant systems and functions may overlap those tested in the control room.

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(L)ow-Power / Shutdown	≥ 1 / ≥ 1 / ≥ 1
(N)ew or (M)odified from bank including 1 (A)	≥ 2 / ≥ 2 / ≥ 1
(P)revious 2 exams	≤ 3 / ≤ 3 / ≤ 2 (randomly selected)
(R)CA	≥ 1 / ≥ 1 / ≥ 1
(S)imulator	

Facility: <u>SALEM 1 & 2</u>	Scenario No.: <u>ESG-1</u>	Op-Test No.: <u>08-01 NRC</u>
Examiners: _____	Operators: _____	
Initial Conditions: 90% power, MOL. 23 SW pp C/T for strainer repair.		
Turnover: Raise Rx power to 100%		

Event No.	Malf. No.	Event Type*	Event Description
1		N CRS/PO R RO	Raise power
2		I CRS/RO	Tavg channel fails high (Tech Specs)
3		C CRS/PO	#4 SW Bay leak, leak isolation requires isolating all #4 Bay SW pps, with 23SW pp C/T (TS 3.0.3 entry)
4		C CRS/RO	RCP #1 seal degradation leading to failure
5		C CRS/PO	2A 4KV vital bus de-energizes on Rx trip, EDG output bkr does not shut, no SW pumps are running
6		M ALL	SBLOCA
7		C ALL	SEC controlled equipment fails to start (22 SI pp)
8		C ALL	Loss of Off-Site power after SI reset

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: SALEM 1 & 2 Scenario No.: ESG-2 Op-Test No: 08-01 NRC

Examiners: _____ Operators: _____

Initial Conditions: 100% power, BOL, PZR level CH III selected for control due to CH I indication problem. Rod Control in manual due to PT-505 channel calibration in progress. 21 Heater Drain Tank pump O/S due to oil leak. 22 Condensate pump has elevated vibration.

Turnover: Reduce power at 30% per hour to 79% in preparation for removing 22 Condensate Pump from service.

Event No.	Malf. No.	Event Type*	Event Description
1		N SRO/PO R RO	Perform power reduction
2		N/A CRS	CFCU trip (Tech Specs)
3a		I CRS / RO	VCT level ch fails high
3b		N PO	Re-establish RCS Letdown
4		C CRS/RO	Operating charging pump cavitation (Tech Specs)
5a		C CRS/PO	22 Cond pump trip, degraded SGFP suction pressure
5b		M ALL	23 Cond pump, loss of both SGFPs
6		C RO	MainTurbine fails to trip initially, MSLI successful
7		C CRS/PO	21 AFW pump will not start, 22 AFW pp pressure override defeat failure, 23 AFW pp trips. FRHS with condensate pump recovery.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: <u>SALEM 1 & 2</u>	Scenario No.: ESG-3	Op-Test No.: 08-01 NRC
Examiners: _____ _____	Operators: _____ _____	
<p>Initial Conditions: 4.8% power, MOL, Main Turbine is on the Turning Gear. Rx startup by Control Rods was performed. 2PR1 PZR PORV is leaking, 2PR6 is shut with power applied to comply with Tech Specs.</p> <p>Turnover: Raise Rx power to 17% over the next 30 minutes in preparation for rolling the Main Turbine. Reactivity plan developed by Rx Engineering directs raising power with control rods only</p>		

Event No.	Malf. No.	Event Type*	Event Description
1		N CRS/PO R RO	Raise Rx power
2		I CRS / RO	PZR pressure instrument fails high (Tech Spec)
3		C CRS / PO	ECCS Accumulator low pressure (Tech Specs)
4		M ALL	Rapid degradation of condenser vacuum/loss of steam dumps with power above capacity of SG Atmospheric reliefs.
5		C CRS/RO	Rod Control failure results in no inward rod movement or Rx trip available - ATWT / FRSM
6		C CRS/RO	Rapid Borate Stop valve fails to open
7		C CRS/RO	PZR PORV fails open.

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor

Facility: SALEM 1 & 2 Scenario No.: ESG-4 (Spare) Op-Test No.: 08-01 NRC

Examiners: _____ Operators:

Initial Conditions: Rx power is 67%, BOL. Power is reduced due to 21MS29 Main Turbine Governor Valve failed shut 1 hour ago. 2PS1 is leaking and its manual isolation valve is shut. 2PR1 is leaking and its block valve is shut with power applied

Turnover: Maintain current power while 21MS29 failure is investigated.

Event No.	Malf. No.	Event Type*	Event Description
1		I ALL	Controlling PZR level channel fails low (Tech Specs)
2		N ALL	2 nd turbine governor valve (23MS29) fails closed Power reduction to <30% power (Tech Spec-AFD)
3		C RO	Steam leak downstream of MSIVs
4		C RO	Rx fails to trip from trip switch, RTB trip successful
5		M ALL	Steam rupture with failed open MSIV
6		C PO	22 AFW pp fails to start
7		C CRS / PO	SGTR following affected SG de-pressurization

* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor