Facility: **Calvert Cliffs Nuclear Power Plant** Date of Examination: **January 2011**
Exam Level: **SRO-I** Operating Test No.: **2011**

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N,R	SRO-Admin-1: Ability to perform a review of plant tests and determine required plant actions. 2.1.7 – Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (4.4, 4.7)
Conduct of Operations	N,R	SRO-Admin-2: Ability to determine the time to perform required actions during abnormal or emergency plant operations. 2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9, 4.2)
Equipment Control	N,R	SRO-Admin-3: Ability to apply Technical Specifications for a system. 2.2.12 Knowledge of surveillance procedures (3.7, 4.1)
Radiation Control	N,R	SRO-Admin-4: Determine radiological conditions for personnel exposure. 2.3.7 Ability to comply with radiation work permit requirements during normal or abnormal conditions. (RO 3.5, SRO 3.6)
Emergency Procedures / Plan	N,R	SRO-Admin-5: Determine the appropriate emergency response actions per the ERPIP 2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required. (2.4, 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 all 5 are required.

* Type Codes & 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)

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Control Room Systems[@] (**7 for SRO-I**)

System / JPM Title	Type Code*	Safety Function
a. **Sim-1:** Verify Reactivity Control Safety Function 004.A2.14 Emergency Boration (3.8, 3.9)	A N S	1
b. **Sim-2:** Unisolable CVCS leak 002.A2.01 Loss of coolant inventory (4.3, 4.4)	A N S	2
c. **Sim-3:** LOCA with a loss of ECCS flow path 06.A2.11 Rupture of the ECCS header (4.0, 4.4)	A N S	3
d. **Sim-4:**Verify Turbine Trip 45.A3.04 Ability to monitor automatic operation of the MT/G system, including: T/G trip (3.4, 3.6)	A N S	4 (Secondary)
e. **Sim-5:** Respond to an RCP seal failure 003.A2.01 Problems with RCP seals, especially rates of seal leak-off (3.5, 3.9)	A D S	4 (Primary)
f. **Sim-6:** Respond to the loss of a 120 volt vital AC bus 062.A2.04 Effect on plant of de-energizing a bus (3.1, 3.4)	N S	6
g. **Sim-7**: Override shut a PORV that is open due to instrument malfunction 007.A2.01 Stuck-open PORV or code safety (3.9, 4.2)	A L N S	5
In-Plant Systems[@] **3 for SRO-I**		
h. **Plant-1:** Ability to manually operate systems 008.A4.07 Control of minimum level in the CCWS surge tank (2.9, 2.9)	E N L R	8
i. **Plant-2:** Deenergize an instrumentation cabinet 013.A2.06 Inadvertent ESFAS actuation (3.7, 4.0)	EN N	2
j. **Plant-3:** Ability to manually operate systems 076.A4.02 SWS valves (2.6, 2.6)	D E L	4 (Secondary)

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

* Type Codes	Criteria for **SRO-I**	
	Required	Actual
(A)lternate path	**4-6**	6
(C)ontrol room	-	0
(D)irect from bank	**≤ 8**	2
(E)mergency or abnormal in-plant	**≥ 1**	2
(EN)gineered safety feature	-	1
(L)ow-Power / Shutdown	**≥ 1**	3
(N)ew or (M)odified from bank including 1(A)	**≥ 2**	8
(P)revious 2 exams	**≤ 3** (randomly selected)	0
(R)CA	**≥ 1**	1
(S)imulator	-	7

Control Room Systems JPM Descriptions

JPM #	Brief description of JPM
Sim-1 Alt Path	Evaluates an Operator's Ability to assess the Reactivity Control Safety Function The RO will be assigned to perform Reactivity Control Safety Function following a reactor trip caused by a faulted 13 and 14 4kv buses. The loss of 14 4kv buss renders rod position indication OOS requiring emergency Boration to 2300 PPM. Critical tasks are: • Identify emergency Boration is required • Perform an Emergency Boration per EOP-0 004.A2.14 Evaluates an Operator's Ability to (a) predict the impacts of the following malfunctions or operations on the CVCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Emergency Boration
Sim-2 Alt Path	Evaluates an Operator's Ability to mitigate RCS leaks. The CRO will be directed to 'Attempt to isolate the leak" in response to a 75 gpm RCS leak. After attempts to isolate the leak, the RCS leak will remain greater than the capacity of one charging pump requiring a reactor trip. Critical tasks are: • Isolate letdown • Start all containment air coolers with maximum cooling water • Determining a reactor trip is required 002.A2.01 Evaluates an Operator's Ability to (a) predict the impacts of the following malfunctions or operations on the RCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of coolant inventory
Sim-3 Alt Path	Evaluates an Operator's Ability to align core cooling with flow blockage A large RCS leak is in progress. 13 HPSI pump discharge flow path is partially isolated. 11 HPSI is tagged out for maintenance. The RO is directed to perform EOP-5 block step D, 'Monitor RCS Depressurization'. Critical tasks are: • Determine HPSI flow is below the minimum required flow • Start 12 HPSI • Re-Align 12 HPSI pump discharge flow path 06.A2.02 Evaluates an Operator's Ability to Ability to (a) predict the impacts of the following malfunctions or operations on the ECCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Loss of flow path
Sim-4 Alt Path	Evaluates an Operator's Ability to mitigate turbine malfunctions An electrical fault in the switchyard results in a loss of offsite power and a reactor trip. The CRO will be directed to perform 'Verify Turbine Trip' per EOP-0. The exciter field breaker will remain shut. Critical tasks are: • Determine a main turbine stop valve is stuck open • Shut the main steam isolation valves • Open the main generator exciter field breaker 45.A3.04: Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the MT/G system controls including: Expected response of secondary plant parameters following T/G trip

Control Room Systems JPM Descriptions

Sim-5	Evaluates an Operator's Ability to respond to an RCP seal failure. Critical tasks are: • Determine 11B RCP middle seal has failed. • Determine 11B RCP lower seal has failed. • Determine a plant shutdown is required. 03.A2.01: Ability to (a) predict the impacts of the following malfunctions or operations on the RCPS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Problems with RCP seals, especially rates of seal leak-off
Sim-6	Evaluates an Operator's Ability to respond to a buss loss A loss of 1Y01 occurs. The RO is directed to perform block step A of AOP-7J.The RO determines the bus loss and proceeds to block step V.A. Critical steps are: • Determine a loss of 1Y01 has occurred • Shift Reactor Reg, Pressurizer level control, RRS, Pressurizer Press control, and pressurizer heater cutoff to channel Y • Secures charging if exceeding TS upper limit of 225 inches. • Place 12 component cooling heat exchanger in service 062.A2.04 Ability to (a) predict the impacts of the following malfunctions or operations on the ac distribution system; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Effect on plant of de-energizing a bus.
Sim-7 Alt Path	Evaluates an Operator's Ability to respond to a stuck open PORV An instrument malfunction occurs causing a PORV to open on high pressure.. Critical steps are: • Determine plant is in MPT enable • Determine if RCPs may continue to run • Shutting the correct PORV block valve 007.A2.01 Ability to (a) predict the impacts of the following malfunctions or operations on the P S; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Stuck-open PORV or code safety

In-Plant JPM Descriptions

JPM #	Brief description of JPM
Plant-1	The candidate is directed to perform AOP-9A-2 step CF. to fill the Service Water and Component Cooling Head Tanks. Critical tasks are: • Establish manual makeup to the CC Head Tank • Establish manual makeup to 22 Service water Head Tank 008.A4.07 Ability to manually operate and/or monitor in the control room :Control of minimum level in the CCWS surge tank.
Plant-2	The candidate is directed to de-energize a Unit 2 AFAS sensor cabinet in support of maintenance. Critical tasks are: • Place correct AFAS cabinet power supply circuit breaker in off • Place correct 120V supply breaker in off. 013.K4.04 Knowledge of ESFAS design feature(s) and/or interlock(s) which provide for the following: Auxiliary feed actuation signal
Plant-3	The candidate is directed to manually override salt water valves to the service water heat exchangers during a Control Room evacuation. Critical tasks are: • Override 1-SW-5149-CV using a keyswitch • Operate the correct hand transfer valves (19) to place them in their fail position 076.A4.02 Ability to manually operate and/or monitor in the control room: SWS valves

Administrative JPMs

JPM #	Brief description of JPM
Admin-1	The Candidate is presented with a completed STP-05A-1, Auxiliary Feedwater System Quarterly Surveillance Test, and is directed to perform a level 2 review. The level 2 review will require 11Auxiliary Feedwater pump be declared inoperable. Critical Tasks are: • Determine 11 AFW pump is inoperable • Enter Technical Specification 3.7.3.A 2.1.7 – Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation. (4.4, 4.7)
Admin -2	The candidate is presented with a set of plant conditions following a station blackout. The candidate will use applicable reference in EOP7 and EOP attachments to determine time until a plant cooldown must be commenced. Critical Tasks are: • Correctly determine if a plant cooldown can be performed • Correctly determine Unit 2 AFW use requirements • Correctly determine how long the plant can be maintained in hot standby with available inventory 2.1.25 - Ability to interpret reference materials, such as graphs, curves, tables, etc. (3.9, 4.2)
Admin -3	The Candidate will be presented with a plan of the day and a copy of STP O-8A-1. The candidate will complete the pre-performance section of the surveillance to fulfill Technical Specification Surveillance requirements. Critical Tasks are: • Correctly determine ESFAS test requirements • Correctly determine if fuel oil transfer pump test is required • Correctly determine quarterly check valve testing requirements 2.2.40 Ability to apply Technical Specifications for a system. (3.4, 4.7)
Admin -4	The Candidate will be presented with a survey map and maintenance scope and determine radiological conditions for personnel exposure. Critical Tasks are: • State protective clothing requirements • Identify highest radiation level in the area • Calculate expected dose for the assignment • Identify dose rate alarm setpoint • Locate low dose area • Explains the classification of a Locked High Radiation Area • Describes differences in barriers between HRA vs. Locked HRA 2.3.7 Ability to comply with radiation work permit requirements during normal or abnormal conditions. (RO 3.5, SRO 3.6)
Admin -5	The candidate will make an ERPIP call based on an RCS leak rate calculated by the candidate. Critical Tasks are: • Properly classifies the event • Completes appropriate form within 15 minutes 2.4.38 Ability to take actions called for in the facility emergency plan, including supporting or acting as emergency coordinator if required. (2.4, 4.4)