

Facility: VC SUMMER		Date of Examination: 5/4/2015
Examination Level (circle one): RO /SRO		Operating Test Number: NRC-ILO-13-01
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations (A1-a)	R,M	RO/SRO Common Determine dilution volume required to establish estimated critical condition and determine if available volume in the holdup tanks can accommodate dilution of the RCS to the estimated critical boron concentration. K/A: 2.1.25 (RO: 3.9, SRO: 4.2) K/A: 2.1.37 (RO: 4.3, SRO: 4.6)
Conduct of Operations (A1-b)	R,N	RO/SRO Common Calculate work hour limitations for a covered worker based on a current schedule and additional activities using SAP-0152. K/A: 2.1.5 (RO: 2.9, SRO: 3.9)
Equipment Control (A2)	R,N	Given a loss of a DC power panel affecting annunciators use AOP-100.5 to determine applicable Surveillance requirements. K/A: 2.2.14 (RO: 3.9, SRO: 4.3)
Radiation Control (A3)	R,D,P	RO/SRO Common Calculate the expected dose for two work options in a radiation area with airborne activity and prioritize them according to the VC Summer ALARA philosophy. K/A: 2.3.12 (RO: 3.2, SRO: 3.7)
Emergency Plan (A4)		Not selected for RO.
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)		

JPM SUMMARY STATEMENTS

CONDUCT OF OPERATIONS (A1-a): This is modified from a JPM in the bank. The plant will be in Mode 3 pending Reactor start up. A current RCS boron concentration and the estimated critical boron concentration will be provided along with a copy of the Curve Book. The Candidate will determine the dilution volume required to establish estimated critical condition and then determine if available volume in the holdup tanks can accommodate dilution of the RCS to the estimated critical boron concentration. This JPM will be modified from JPMs in the bank by changing the current and critical boron concentrations. [NJPA-021A(R1)]

K/A 2.1.25 - Ability to interpret reference materials such as graphs, curves, tables, etc. (RO: 3.9, SRO: 4.2)

K/A 2.1.37 - Knowledge of procedures, guidelines, or limitations associated with reactivity management. (RO: 4.3, SRO: 4.6)

VCS Task: O-004-006-01-01: Perform boric acid concentration change calculations.

CONDUCT OF OPERATIONS (A1-b): This is a new JPM. The candidate will be provided with a work hour history for three covered workers and a current work schedule for the individuals. Additional proposed work activities with planned durations will be provided. The additional activities will require inclusion in the work hour calculation. Candidate will calculate work hour limitations based on the current schedule and the added activities. Candidate will use SAP-0152, Fatigue Management and Work Hour Limits based on requirements of OAP-100.6, Control Room Conduct and Control of Shift Activities. Candidate will determine whether each of the three workers would be allowed to work the added shift. [NJPA-1000(R1)]

K/A: 2.1.5 – Ability to use procedures related to shift staffing, such as minimum crew compliment, overtime limitations, etc. (RO: 2.9, SRO: 3.9)

VCS Task: O-341-038-03-02: Interpret and ensure compliance with plant administrative procedures during normal and off normal plant operations.

EQUIPMENT CONTROL (A2): This is a new JPM. The Unit is in Mode one. The candidate will be given a loss of a DC power panel and a copy of AOP-100.5, Loss of Main Control Board Annunciators. The candidate will determine applicable Surveillance requirements for the lost Annunciators using AOP-100.5. [NJPA-1006(R1)]

K/A: 2.2.14 – Knowledge of the process for controlling equipment configuration or status. (RO: 3.9, SRO: 4.3)

VCS Task: O-000-170-05-01: Respond to loss of Main Control Board annunciators per AOP-100.5.

RADIATION CONTROL (A3): This is a bank JPM that was used on the 2011 NRC Exam. The candidate will compare two options to conduct work in a high radiation area with airborne activity due to a hydrogen explosion in the waste gas system. The candidate will calculate the expected dose for the two options and prioritize them according to the VC Summer ALARA philosophy. [NJPA-083A(R1)]

K/A: 2.3.12 - Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirement, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (RO: 3.2,SRO: 3.7)

VCS Task: O-000-061-05-01: Respond to area radiation monitoring system alarms.

EMERGENCY PLAN (A4): Not selected for RO.

Facility: VC SUMMER		Date of Examination: 2015
Examination Level (circle one): RO/SRO		Operating Test Number: NRC-ILO-13-01
Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations (A1-a)	R,M	RO/SRO Common Determine dilution volume required to establish estimated critical condition and determine if available volume in the holdup tanks can accommodate dilution of the RCS to the estimated critical boron concentration. K/A: 2.1.25 (RO: 3.9, SRO: 4.2) K/A: 2.1.37 (RO: 4.3, SRO: 4.6)
Conduct of Operations (A1-b)	R,N	RO/SRO Common Calculate work hour limitations for a covered worker based on a current schedule and additional activities using SAP-0152. K/A: 2.1.5 (RO: 2.9, SRO: 3.9)
Equipment Control (A2)	R,D	Determine administrative actions required for transfer of 7.2Kv bus1DB to alternate feed using SAP-205. K/A: 2.2.14 (RO: 3.9, SRO: 4.3)
Radiation Control (A3)	R,D,P	RO/SRO Common Calculate the expected dose for two work options in a radiation area with airborne activity and prioritize them according to the VC Summer ALARA philosophy. K/A: 2.3.12 (RO: 3.2, SRO: 3.7)
Emergency Plan (A4)	S,N	Declare a Site Area Emergency in accordance with EPP-001 and complete the EPP-002 notification form. K/A: 2.4.41 (RO: 2.9, SRO: 4.6) K/A: 2.4.40 - (RO: 2.7, SRO: 4.5)
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)		

JPM SUMMARY STATEMENTS

CONDUCT OF OPERATIONS (A1-a): This is modified from a JPM in the bank. The plant will be in Mode 3 pending Reactor start up. A current RCS boron concentration and the estimated critical boron concentration will be provided along with a copy of the Curve Book. The Candidate will determine the dilution volume required to establish estimated critical condition and then determine if available volume in the holdup tanks can accommodate dilution of the RCS to the estimated critical boron concentration. This JPM will be modified from JPMs in the bank by changing the current and critical boron concentrations. [NJPA-021A(R1)]

K/A 2.1.25 - Ability to interpret reference materials such as graphs, curves, tables, etc. (RO: 3.9, SRO: 4.2)

K/A 2.1.37 - Knowledge of procedures, guidelines, or limitations associated with reactivity management. (RO: 4.3, SRO: 4.6)

VCS Task: O-004-006-01-01: Perform boric acid concentration change calculations.

CONDUCT OF OPERATIONS (A1-b): This is a new JPM. The candidate will be provided with a work hour history for three covered workers and a current work schedule for the individuals. Additional proposed work activities with planned durations will be provided. The additional activities will require inclusion in the work hour calculation. Candidate will calculate work hour limitations based on the current schedule and the added activities. Candidate will use SAP-0152, Fatigue Management and Work Hour Limits based on requirements of OAP-100.6, Control Room Conduct and Control of Shift Activities. Candidate will determine whether each of the three workers would be allowed to work the added shift. [NJPA-1000(R1)]

K/A: 2.1.5 – Ability to use procedures related to shift staffing, such as minimum crew compliment, overtime limitations, etc. (RO: 2.9, SRO: 3.9)

VCS Task: O-341-038-03-02: Interpret and ensure compliance with plant administrative procedures during normal and off normal plant operations.

EQUIPMENT CONTROL (A2): This JPM is direct from the bank. The candidate will determine administrative actions to place 7.2Kv bus 1DB on alternate feed. Candidate will complete SAP-205, Status Control and Removal and Restoration, Attachment 1, Removal and Restoration Checksheet for XSW1DB 16, BUS 1DB NORMAL INCOMING BKR to track all the requirements associated with transferring Bus 1DB to XTF-4/6. It will be critical to indicate that TS 3.8.1.1.a and 3.0.4 do apply. [NJPA-210A(R1)]

K/A: 2.2.14 - Knowledge of the process for controlling equipment configuration or status. (RO: 3.9, SRO: 4.3)

VCS Task: O-341-038-03-02: Interpret and ensure compliance with plant administrative procedures during normal and off normal plant operations.

RADIATION CONTROL (A3): This is a bank JPM that was used on the 2011 NRC Exam. The candidate will compare two options to conduct work in a high radiation area with airborne activity due to a hydrogen explosion in the waste gas system. The candidate will calculate the expected dose for the two options and prioritize them according to the VC Summer ALARA philosophy. [NJPA-083A(R1)]

K/A: 2.3.12 - Knowledge of radiological safety principles pertaining to licensed operator duties, such as containment entry requirement, fuel handling responsibilities, access to locked high-radiation areas, aligning filters, etc. (RO: 3.2, SRO: 3.7)

VCS Task: O-000-061-05-02: Respond to area radiation monitoring system alarms.

EMERGENCY PLAN (A4): This is a new JPM. The candidate will declare a Site Area Emergency in accordance with EPP-001, Activation and Implementation of Emergency Plan. The candidate will declare the Site Area Emergency due to an inadequate core cooling event that results in a potential loss of the Fuel Clad Barrier and a loss or potential of the Reactor Coolant System Barrier. The candidate will also be required to complete the EPP-002, Communication and Notification, Attachment I, Nuclear Power Plant Notification Form. This is a time critical JPM. [NJPA-1003(R1)]

K/A: 2.4.41 - Knowledge of the emergency action level thresholds and classifications.
(RO: 2.9, SRO: 4.6)

K/A: 2.4.40 - Knowledge of the SRO's responsibilities in emergency plan implementation.
(RO: 2.7, SRO: 4.5)

VCS Task: O-344-019-03-02: Classify Events requiring Emergency Plan Implementation

Facility: VC Summer		Date of Examination: 5/4/2015
Exam Level (circle one): RO SRO(I) / SRO(U)		Operating Test No.: NRC-ILO-13-01
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. Generic Abnormal Plant Evolution 001 [NJPSF-141A(R1)] Continuous Rod Withdrawal. (AOP-403.3, EOP-1.0, E-0)	P,D,A,L,S	1
b. System 010 [NJPSF-007A(R1)] Steam Generator Tube Rupture (Depressurize RCS to < Ruptured S/G pressure). (EOP-4.0, E-3)	M,A,L,S	3
c. Generic Abnormal Plant Evolution 025 [NJPS-065(R1)] Establish hot leg injection during loss of RHR at mid-loop conditions. (AOP-115.5)	D,L,S	4P
d. System 026 [NJPSF-019A(R1)] Manually initiate Reactor Building Spray. (EOP-1.0, E-0)	M,A,L,S,EN	5
e. System 064 [NJPS-025(R2)] Start and load "B" Emergency Diesel Generator. (SOP-306)	D,S	6
f. System 016 [NJPS-1000(R1)] Respond to Steam Generator Pressure Channel malfunction. (AOP-401.3)	N,S	7
g. System 033 [NJPS-084(R1)] Restore Spent Fuel Pool level during refueling. (AOP-123.1)	D,L,S	8
h. System 029 [NJPS-1001(R1)] Establish Reactor Building Purge Supply and Exhaust. (SOP-114)	N,L,S	9
In-Plant Systems [@] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Generic Emergency Plant Evolution 055 [NJPP-402] Locally Dilute the Boric Acid Tanks (EOP-6.0, ECA-0.0)	D,L,E,R	1
j. Generic Abnormal Plant Evolution 068 [NJPPF-049(R1)] Control Room evacuation (duties of BOP operator) (AOP-600.1)	P,D,A,L,E	4S
k. System 062 [NJPP-040] Transfer a Vital 120 volt Instrument Power Supply (SOP-310)	D	6

@ 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	RO
(A)lternate path	4-6 / 4-6 / 2-3	4
(C)ontrol room		
(D)irect from bank	$\leq 9 / \leq 8 / \leq 4$	7
(E)mergency or abnormal in-plant	$\geq 1 / \geq 1 / \geq 1$	2
(EN)gineered safety feature	NA / NA / ≥ 1 (control room system)	
(L)ow-Power	$\geq 1 / \geq 1 / \geq 1$	8
(N)ew or (M)odified from bank including 1(A)	$\geq 2 / \geq 2 / \geq 1$	4
(P)revious 2 exams	$\leq 3 / \leq 3 / \leq 2$ (randomly selected)	2
(R)CA	$\geq 1 / \geq 1 / \geq 1$	1
(S)imulator		8

VC SUMMER 2015 NRC JPM SUMMARY

- a. This is a bank JPM that was previously used on the 2013 License exam. The candidate will respond to continuous rod withdrawal in accordance with AOP-403.3, Continuous Control Rod Motion, and EOP-1.0 (E-0), Reactor Trip/Safety Injection Actuation. The candidate will be told to withdraw rods to criticality (Shutdown Banks will be withdrawn, but Control Banks will be fully inserted). Candidate will withdraw Control Bank A to 10 steps and verify indications that all the Control Bank A rods came off the bottom. On pulling rods so that rods reach 103 steps, rods will continue to withdraw with no operator input. A failure of all automatic trips will make it critical that the candidate trip the reactor. The continuous rod motion is where this JPM becomes alternate path. The critical step will be to pull rods, then to trip the reactor when uncontrolled rod motion occurs prior to reaching the Estimated Critical Position of 100 steps on bank D.

K/A 001AA1.05: Ability to operate and/or monitor the following as they apply to the Continuous Rod Withdrawal: Reactor Trip switches (RO: 4.3, SRO: 4.2)

NUREG 1122 APE: Continuous rod withdrawal

VCS Task: O-000-006-05-01: Respond to Continuous Rod Motion per AOP-403.3/SOP-403.

- b. This JPM is modified from a bank JPM. The candidate will take actions to depressurize the RCS to less than the pressure of the ruptured steam generator in accordance with EOP-4.0 (E-3), Steam Generator Tube Rupture. The candidate will attempt to open the only available pressurizer spray valve to depressurize the RCS but the valve will fail to open. This leads to the alternate path for this JPM. In order to accomplish the depressurization, the applicant will have to utilize a Pressurizer PORV. When criteria to stop the depressurization are met the chosen PORV will not shut. The candidate must then close the associated PORV block valve. This JPM is significantly modified from another JPM in the bank by failing the spray valve closed and by the failure of the selected PORV to close when demanded. The critical step is closing the PORV block valve to terminate the RCS depressurization.

K/A 010000A203: Pressurizer Pressure Control System (PZR PCS). Ability to (a) predict the impacts of PORV failures on the PZR PCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: PORV failures. (RO: 4.1, SRO: 4.2)

NUREG 1122 System: Pressurizer Pressure Control System (PZR PCS)

VCS Task: O-000-038-05-01: Respond to Steam Tube Rupture per EOP-4.0.

- c. This is a bank JPM. The initial conditions for this JPM have the plant in Mode 5 and RCS at Mid-loop conditions. Due to lowering hot leg level, the crew will have entered AOP-115.1, RHR Pump Vortexing and then AOP-115.5, Loss of RHR with the RCS not Intact (Modes 5 and 6). The candidate will be given the following parameters: RCS hot leg level in the region of unacceptable operation for RHR, core exit TC temperatures >200°F and increasing and the "A" Charging pump available. The candidate will be directed to implement AOP-115.5 Attachment 2, Establishing Hot Leg Injection as an alternative action from AOP-115.5 step 17. Candidate should manually align hot leg injection, start "A" Charging pump and raise hot leg level. The critical step will be to start "A" Charging pump.

K/A 000025K301: Knowledge of the reasons for the following responses as they apply to the Loss of Residual Heat Removal System: Shift to alternate flow path (RO: 3.1, SRO: 3.4)

NUREG 1122 APE: Loss of Residual Heat Removal System

VCS Task: O-000-083-05-01: Respond to Loss of Residual Heat Removal System While at Mid-loop Conditions per AOP-115.5/SOP-115.

d. This JPM is modified from a bank JPM. The initial conditions for this JPM are a Reactor Trip from 100% power with Safety Injection actuated. Neither train of Reactor Building spray will have auto actuated and RB pressure will be greater than 12.0 psig. The Candidate will be directed to perform Step 8 of EOP-1.0 (E-0), Reactor Trip/Safety Injection Actuation. The Train "A" RB Spray manual actuation will fail to operate. If Train "B" RB Spray is manually actuated then the discharge valve on the "A" RB Spray Pump must also be manually opened. If the Train "B" RB Spray manual actuation is NOT attempted then the candidate must manually align flow paths (Spray and Phase B) and start RB Spray pumps. Candidate will then verify RB Spray flow and ensure that all RCPs are stopped. Manual alignment of the required equipment is where the JPM becomes alternate path. This JPM is significantly modified from another JPM in the bank by requiring the manual positioning of the Train "A" RB spray pump discharge valve. Critical steps will be to manually actuate at least one train of containment spray with >2500 gpm per EOP-1.0 and to secure RCPs to prevent damage to RCP motors due to loss of CCW as evident from Motor Bearing temperature exceeding 195°F or Lower Seal Water Bearing temperature exceeding 225°F or Seal Water Outlet temperature exceeding 235°F.

K/A 026000A4.01 Ability to manually operate and/or monitor in the Control Room: CSS controls (RO: 4.5, SRO: 4.3)

NUREG 1122 System Containment Spray System (CSS)

VCS Task: O-026-005-01-01: Manually Initiate Reactor Building Spray per SOP-116/EOP1.0.

e. This a bank JPM. The initial conditions for this JPM have the plant operating at 100% power with normal AC power available to all buses with all systems in automatic. Candidate will be instructed to start the "B" Diesel Generator in the test start mode for purposes of monitoring bearing temperatures while the machine is at full load. All pre-start check steps for the "B" DG will have been completed. The candidate will be directed to start and load "B" D/G per SOP-306, Emergency Diesel Generator, Section IV.B, Steps 2.3 and 2.4. The critical steps will be to place the Diesel Test switch to START, establish proper parameters for parallel and close the Diesel Generator output breaker.

* K/A 064000A401 Ability to manually operate and/or monitor in the control room: Local and remote operation of the ED/G (RO: 4.0, SRO: 4.3)

NUREG 1122 System Emergency Diesel Generators

VCS Task: O-064-003-01-01: Load the Diesel Generator.

f. This is a new JPM. The initial conditions for this JPM have the plant operating at 100% power. The candidate will be directed to respond to plant conditions. The "B" Steam Generator pressure channel PT-485 will fail high. Since the pressure channel compensates the controlling Steam Flow channel this will cause the Steam Flow signal to fail high for the "B" Feed regulating valve. The FRV will then travel open in auto in response to the failed input. The candidate implements AOP-401.3, Steam Flow – Feedwater Flow Protection Channel Failure and performs immediate actions. The operable Steam Flow and Feed Flow channels will be selected; Turbine load will be reduced 40 – 50 MWe, feed flow and Feedwater Pump speed will be adjusted as necessary. Candidate verifies SG level is within band and returns controls to auto. Candidate will identify the failed channel. The critical step will be to restore Feedwater Flow control to "B" SG before reaching turbine trip criteria on high SG level.

K/A 059000A211 Ability to (a) predict the impacts of the following malfunctions or operations on the MFW; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Failure of feedwater control system. (RO: 3.0, SRO: 3.3)

NUREG 1122 System Main Feedwater (MFW) System

VCS Task: O-000-103-05-01: Respond to Excessive Feedwater Increase per AOP-401.3

- g. This is a bank JPM. The initial conditions for this JPM have the plant in Mode 6 with core off load in progress. The 'A' RHR loop is in service providing core cooling. Due to decreasing level in the Spent fuel Pool, AOP-123.1, Decreasing Level in the Spent Fuel Pool or Refueling Cavity During Refueling has been entered. The leakage has been isolated in step 8. The candidate will be directed to respond to a decreasing level in the spent fuel pool in accordance with AOP-123.1. The critical steps are aligning RHR pump suction to the RWST and isolating RHR suction from the RCS.

K/A 033000A203 Ability to (a) predict the impacts of the following malfunctions or operations on the Spent Fuel Pool Cooling System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Abnormal spent fuel pool water level or loss of water level. (RO: 3.1, SRO: 3.5)

NUREG 1122 System

Spent Fuel Pool Cooling System (SFPCS)

VCS Task: O-000-140-05-01: Respond to decreasing Water Level in the Spent Fuel Pool or Refueling Cavity per AOP-123.5/AOP-123.1.

- h. This is a new JPM. The initial conditions for this JPM have the plant in Mode 5 preparing for a refueling outage. The equipment hatch is open. The "B" Reactor Building Purge Exhaust fan is tagged out for corrective maintenance. The candidate will be directed to place Reactor Building purge in service using SOP-114, Reactor Building Ventilation System. After entering SOP-114 section III.C candidate will proceed with placing at least one RB Purge exhaust fan in service. Candidate should then start no more than one Purge supply fan to maintain negative pressure on the RB. The critical steps will be to start the exhaust fan and no more than one supply fan to maintain negative pressure on the RB and prevent an unmonitored release.

K/A 029000A201 Ability to (a) predict the impacts of the following malfunctions or operations on the Containment Purge System; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: Maintenance or other activity taking place inside containment (RO: 2.9, SRO: 3.6)

NUREG 1122 System

Containment Purge System (CPS)

VCS Task: O-088-505-01-04 Perform Line ups of the Reactor Building Ventilation Systems.

- i. This is a bank JPM. The initial conditions for this JPM have the plant shutdown and experiencing a Loss of all Offsite and Onsite AC power. Procedure EOP-6.0 (ECA-0.0) Loss of All ESF AC Power has been implemented. Annunciator panel 613, 4-2, "BAT A TEMP HI/LO" is standing (low setpoint 70°F) and local verification has indicated that temperature is 68°F in 'A' BAT room. The candidate will be directed to dilute the "A" BAT using EOP-6.0, Attachment 6, Locally Diluting the Boric Acid Tanks. The candidate will simulate the following actions; connect the drain rig, open the drain isolation valve, drain the BAT to 50%, close the drain and remove the rig. The candidate then simulates flushing a nearby fire hose to a floor drain and simulates connecting the fill rig and use of the fire hose to restore "A" BAT to 90-95%. The critical step will be assuring that desired volume of fire water is added to the BAT and that the drain is isolated.

K/A 000055K302 Knowledge of the reasons for the following responses as they apply to the Station Blackout: Actions Contained in EOP for loss of offsite and onsite power (RO: 4.3, SRO: 4.6)

NUREG 1122 EPE

Loss of Offsite and Onsite Power (Station Blackout)

VCS Task: O-000-055-05-01 Respond to loss of offsite and on site ESF power per EOP-6.0/EOP-1.0

- j. This is a bank JPM that was last used on the 2011 License exam. The initial conditions for this JPM have the reactor tripped due to the need to evacuate the control room. Evacuation is necessary due to a bomb threat and no equipment will have been tripped from the MCB. Both ESF busses are energized from offsite power. The "A" and "C" RCP will have been tripped at the onset of the event. The candidate will be directed to take actions in accordance with AOP-600.1, Control Room Evacuation, Attachment 2 Duties of the BOP Operator. Candidate will simulate locally tripping the Main Feedwater pumps and the "B" Rod Drive MG set. Using a photograph of the inside of a 7.2 Kv breaker the candidate will simulate stopping two Condensate pumps by opening the breakers and three of four Feedwater Booster pumps by opening the breakers. The candidate will NOT trip "B" RCP as "A" and "C" are already off. The alternate path for the RO is that the "A" RCP is tripped and so "B" RCP will have to be left running. The critical step is not tripping the "B" RCP.

K/A 0000682130 Conduct of Operations: Ability to locate and operate components, including local controls (RO: 4.4, SRO: 4.0)

NUREG 1122 APE

Control Room Evacuation

VCS Task: O-000-068-05-01 Perform Control Room Evacuation per AOP-600.1.

- k. This is a bank JPM. The initial conditions for this JPM have the plant at 100% power. Vital AC Inverter, XIT-5901 is scheduled for preventive maintenance. The candidate is directed to remove XIT-5901 from service and place Vital AC distribution panel, APN-5901 on its alternate power source in accordance with SOP-310, Engineered Safety Features 120 VAC Instrumentation and Control Power System, Section IV.I. Initial conditions have been completed through step 1.4. Candidate simulates placing the Test Transfer switch to the ALT position and verifies ON Alternate light illuminates and the ON Inverter light goes out. Candidate simulates depressing the Inverter STOP push button and verifies the SYNCH MONITOR light is lit. Simulates placing the MAN Bypass switch to BYP TO ALT position. Simulates opening the Backup Source breaker and the Normal AC Source breakers. The critical step is to place the Test Transfer switch to the ALT position.

K/A 062000A203 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: Consequences of improper sequencing when transferring to or from an inverter. (RO: 2.9, SRO: 3.4)

NUREG 1122 System

A.C. Electrical Distribution

VCS Task: O-062-010-01-04 Remove Engineering Safety Features Vital Inverter from Service.

Facility: VC Summer		Date of Examination: 5/4/2015
Exam Level (circle one): RO / SRO(I) / SRO(U)		Operating Test No.: NRC-ILO-13-01
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. Not selected for SRO-U		
b. System 010 [NJPSF-007A] Steam Generator Tube Rupture (Depressurize RCS to < Ruptured S/G pressure). (EOP-4.0, E-3)	M,A,L,S	3
c. Not selected for SRO-U		
d. System 026 [NJPSF-019A] Manually initiate Reactor Building Spray. (EOP-1.0, E-0)	M,A,L,S,EN	5
e. Not selected for SRO-U		
f. Not selected for SRO-U		
g. Not selected for SRO-U		
h. Not selected for SRO-U		
In-Plant Systems [®] (3 for RO); (3 for SRO-I); (3 or 2 for SRO-U)		
i. Generic Emergency Plant Evolution 055 [NJPP-402] Locally Dilute the Boric Acid Tanks (EOP-6.0, ECA-0.0)	D,L,E,R	1
j. Generic Abnormal Plant Evolution 068 [NJPPF-049] Control Room evacuation (duties of BOP operator) (AOP-600.1)	P,D,A,L,E	4S
k. System 062 [NJPP-040] Transfer a Vital 120 volt Instrument Power Supply (SOP-310)	D	6

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

VC SUMMER 2015 NRC JPM SUMMARY

- a. Not selected for SRO-U
- b. This JPM is modified from a bank JPM. The candidate will take actions to depressurize the RCS to less than the pressure of the ruptured steam generator in accordance with EOP-4.0 (E-3), Steam Generator Tube Rupture. The candidate will attempt to open the only available pressurizer spray valve to depressurize the RCS but the valve will fail to open. This leads to the alternate path for this JPM. In order to accomplish the depressurization, the applicant will have to utilize a Pressurizer PORV. When criteria to stop the depressurization are met the chosen PORV will not shut. The candidate must then close the associate PORV block valve. This JPM is significantly modified from another JPM in the bank by failing the spray valve closed and by the failure of the selected PORV to close when demanded. The critical step is closing the PORV block valve to terminate the RCS depressurization.

K/A 010000A203: Pressurizer Pressure Control System (PZR PCS). Ability to (a) predict the impacts of PORV failures on the PZR PCS; and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those malfunctions or operations: PORV failures. (RO: 4.1, SRO: 4.2)

NUREG 1122 System: Pressurizer Pressure Control System (PZR PCS)

VCS Task: O-000-038-05-01: Respond to Steam Tube Rupture per EOP-4.0.

- c. Not selected for SRO-U

- d. This JPM is modified from a bank JPM. The initial conditions for this JPM are a Reactor Trip from 100% power with Safety Injection actuated. Neither train of Reactor Building spray will have auto actuated and RB pressure will be greater than 12.0 psig. The Candidate will be directed to perform Step 8 of EOP-1.0 (E-0), Reactor Trip/Safety Injection Actuation. The Train "A" RB Spray manual actuation will fail to operate. If Train "B" RB Spray is manually actuated then the discharge valve on the "A" RB Spray Pump must also be manually opened. If the Train "B" RB Spray manual actuation is NOT attempted then the candidate must manually align flow paths (Spray and Phase B) and start RB Spray pumps. Candidate will then verify RB Spray flow and ensure that all RCPs are stopped. Manual alignment of the required equipment is where the JPM becomes alternate path. This JPM is significantly modified from another JPM in the bank by requiring the manual positioning of the Train "A" RB spray pump discharge valve. Critical steps will be to manually actuate at least one train of containment spray with >2500 gpm per EOP-1.0 and to secure RCPs to prevent damage to RCP motors due to loss of CCW as evident from Motor Bearing temperature exceeding 195°F or Lower Seal Water Bearing temperature exceeding 225°F or Seal Water Outlet temperature exceeding 235°F.

K/A 026000A4.01 Ability to manually operate and/or monitor in the Control Room: CSS controls (RO: 4.5, SRO: 4.3)

NUREG 1122 System Containment Spray System (CSS)

VCS Task: O-026-005-01-01: Manually Initiate Reactor Building Spray per SOP-116/EOP1.0.

- e. Not selected for SRO-U
- f. Not selected for SRO-U
- g. Not selected for SRO-U
- h. Not selected for SRO-U

- i. This is a bank JPM. The initial conditions for this JPM have the plant shutdown and experiencing a Loss of all Offsite and Onsite AC power. Procedure EOP-6.0 (ECA-0.0) Loss of All ESF AC Power has been implemented. Annunciator panel 613, 4-2, "BAT A TEMP HI/LO" is standing (low setpoint 70°F) and local verification has indicated that temperature is 68°F in 'A' BAT room. The candidate will be directed to dilute the "A" BAT using EOP-6.0, Attachment 6, Locally Diluting the Boric Acid Tanks. The candidate will simulate the following actions; connect the drain rig, open the drain isolation valve, drain the BAT to 50%, close the drain and remove the rig. The candidate then simulates flushing a nearby fire hose to a floor drain and simulates connecting the fill rig and use of the fire hose to restore "A" BAT to 90-95%. The critical step will be assuring that desired volume of fire water is added to the BAT and that the drain is isolated.

K/A 000055K302 Knowledge of the reasons for the following responses as they apply to the Station Blackout: Actions Contained in EOP for loss of offsite and onsite power (RO: 4.3, SRO: 4.6)

NUREG 1122 EPE

Loss of Offsite and Onsite Power (Station Blackout)

VCS Task: O-000-055-05-01 Respond to loss of offsite and on site ESF power per EOP-6.0/EOP-1.0

- j. This is a bank JPM that was last used on the 2011 License exam. The initial conditions for this JPM have the reactor tripped due to the need to evacuate the control room. Evacuation is necessary due to a bomb threat and no equipment will have been tripped from the MCB. Both ESF busses are energized from offsite power. The "A" and "C" RCP will have been tripped at the onset of the event. The candidate will be directed to take actions in accordance with AOP-600.1, Control Room Evacuation, Attachment 2 Duties of the BOP Operator. Candidate will simulate locally tripping the Main Feedwater pumps and the "B" Rod Drive MG set. Using a photograph of the inside of a 7.2 Kv breaker the candidate will simulate stopping two Condensate pumps by opening the breakers and three of four Feedwater Booster pumps by opening the breakers. The candidate will NOT trip "B" RCP as "A" and "C" are already off. The alternate path for the RO is that the "A" RCP is tripped and so "B" RCP will have to be left running. The critical step is not tripping the "B" RCP.

K/A 0000682130 Conduct of Operations: Ability to locate and operate components, including local controls (RO: 4.4, SRO: 4.0)

NUREG 1122 APE

Control Room Evacuation

VCS Task: O-000-068-05-01 Perform Control Room Evacuation per AOP-600.1.

- k. This is a bank JPM. The initial conditions for this JPM have the plant at 100% power. Vital AC Inverter, XIT-5901 is scheduled for preventive maintenance. The candidate is directed to remove XIT-5901 from service and place Vital AC distribution panel, APN-5901 on its alternate power source in accordance with SOP-310, Engineered Safety Features 120 VAC Instrumentation and Control Power System, Section IV.I. Initial conditions have been completed through step 1.4. Candidate simulates placing the Test Transfer switch to the ALT position and verifies ON Alternate light illuminates and the ON Inverter light goes out. Candidate simulates depressing the Inverter STOP push button and verifies the SYNCH MONITOR light is lit. Simulates placing the MAN Bypass switch to BYP TO ALT position. Simulates opening the Backup Source breaker and the Normal AC Source breakers. The critical step is to place the Test Transfer switch to the ALT position.

K/A 062000A203 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: Consequences of improper sequencing when transferring to or from an inverter. (RO: 2.9, SRO: 3.4)

NUREG 1122 System

A.C. Electrical Distribution

VCS Task: O-062-010-01-04 Remove Engineering Safety Features Vital Inverter from Service.

Tier / Group	Randomly Selected K/A	Reason for Rejection
T1/G1	008AA2.06	<p>Unable to write an appropriate question to the proposed K/A. Chief Examiner randomly and systematically selected new K/A:</p> <p>008AA2.29—PZR Vapor Space Accident, Ability to determine and interpret the following: The effects of bubble in reactor vessel.</p>
T1/G1	026AA2.06	<p>Unable to write an appropriate question to the proposed K/A. Chief Examiner randomly and systematically selected new K/A:</p> <p>065AA2.08—Loss of Instrument Air, Ability to determine and interpret the following: Failure modes of air-operated equipment.</p>
T1/G1	057AK3.01	<p>Unable to write an appropriate question to the proposed K/A. Chief Examiner randomly and systematically selected new K/A:</p> <p>056AK3.02—Loss of Offsite Power, Knowledge of the reasons for the following responses as they apply to Loss of Offsite Power: Actions contained in EOP for loss of offsite power.</p>
T2/G1	007K5.02	<p>Unable to write an appropriate question to the proposed K/A. Chief Examiner randomly and systematically selected new K/A:</p> <p>007A1.01—PZR Relief/Quench Tank, Vapor Space Accident, Ability to predict and/or monitor changes in parameters (to prevent exceeding design limits) associated with operating the PRTS controls including: Maintaining quench tank water level within limits.</p>
T2/G2	002K6.04	<p>Unable to write an appropriate question to the proposed K/A. Chief Examiner randomly and systematically selected new K/A:</p> <p>002K6.12—Reactor Coolant System (RCS), Knowledge of the effect of a loss or malfunction on the following RCS components: Code Safety Valves.</p>
T2/G2	072A4.01	<p>Unable to write an appropriate question to the proposed K/A. Chief Examiner randomly and systematically selected new K/A:</p> <p>011A4.01—PZR Level Control System, Ability to manually operate and/or monitor in the control room: Charging pump and flow controls.</p>

- FINAL EXAM APPROVAL -

ES-401

Written Examination Quality Checklist

Form ES-401-6

Facility: <u>V.C. SUMMER (UNIT 1)</u>		Date of Exam: <u>05/20/15</u>		Exam Level: RO <input checked="" type="checkbox"/>	SRO <input checked="" type="checkbox"/>	
Item Description	Initial					
	a	b*	c*			
1. Questions and answers are technically accurate and applicable to the facility.	JWS	N/A	MM			
2. a. NRC K/As are referenced for all questions. b. Facility learning objectives are referenced as available.	JWS	N/A	MM			
3. SRO questions are appropriate in accordance with Section D.2.d of ES-401	JWS	N/A	MM			
4. The sampling process was random and systematic (If more than 4 RO or 2 SRO questions were repeated from the last 2 NRC licensing exams, consult the NRR OL program office).			MM			
5. Question duplication from the license screening/audit exam was controlled as indicated below (check the item that applies) and appears appropriate: ___ the audit exam was systematically and randomly developed; or ___ the audit exam was completed before the license exam was started; or <input checked="" type="checkbox"/> the examinations were developed independently; or ___ the licensee certifies that there is no duplication; or ___ other (explain)	JWS	N/A	MM			
6. Bank use meets limits (no more than 75 percent from the bank, at least 10 percent new, and the rest new or modified); enter the actual RO / SRO-only question distribution(s) at right.	Bank	Modified	New	JWS	N/A	MM
	7 ' 2	16 ' 5	52 ' 18			
7. Between 50 and 60 percent of the questions on the RO exam are written at the comprehension/ analysis level; the SRO exam may exceed 60 percent if the randomly selected K/As support the higher cognitive levels; enter the actual RO / SRO question distribution(s) at right.	Memory	C/A		JWS	N/A	MM
	35 ' 6	40 ' 19				
8. References/handouts provided do not give away answers or aid in the elimination of distractors.	JWS	N/A	MM			
9. Question content conforms with specific K/A statements in the previously approved examination outline and is appropriate for the tier to which they are assigned; deviations are justified.	JWS	N/A	MM			
10. Question psychometric quality and format meet the guidelines in ES Appendix B.	JWS	N/A	MM			
11. The exam contains the required number of one-point, multiple choice items; the total is correct and agrees with the value on the cover sheet.	JWS	N/A	MM			
a. Author b. Facility Reviewer (*) c. NRC Chief Examiner (#) d. NRC Regional Supervisor		Printed Name / Signature <u>J. Amanda Toth</u> / <u>[Signature]</u> <u>MICHAEL MEEKS</u> / <u>[Signature]</u> <u>GERALD McCoy</u> / <u>[Signature]</u>		Date <u>5/10/15</u> <u>N/A</u> <u>05/18/2015</u> <u>5/14/2015</u>		
Note: * The facility reviewer's initials/signature are not applicable for NRC-developed examinations. # Independent NRC reviewer initial items in Column "c"; chief examiner concurrence required.						

- FINAL EXAM APPROVAL -

The 2015 V.C. Summer written exam was drafted by the NRC utilizing various exam authors. The ES-401-9 Form was not submitted for retention in ADAMS.