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JUN 27 2017

**EXAMINATION SECURITY AND INTEGRITY CONSIDERATIONS – WITHHOLD
UNDER GUIDANCE OF NUREG-1021, ES201**

Donald E. Jackson, Chief
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Docket No. 50-423
License No. NPF-49

DOMINION NUCLEAR CONNECTICUT, INC.
MILLSTONE POWER STATION UNIT 3
SENIOR REACTOR OPERATOR AND REACTOR OPERATOR INITIAL LICENSE
EXAMINATIONS – OPERATING TEST OUTLINES

In a letter dated April 12, 2017, the U.S. Nuclear Regulatory Commission (NRC) requested Dominion Nuclear Connecticut, Inc. (DNC) submit operating test outlines for Senior Reactor Operator and Reactor Operator Initial License Examinations – Millstone Power Station Unit 3 (MPS3), by July 7, 2017, for administration of examinations during the week of December 4, 2017. In addition, the NRC will make an examination validation visit to MPS3 the week of September 25, 2017.

Consistent with guidance contained in NUREG-1021 Examination Standard 201, Attachment 1, "Examination Security and Integrity Considerations," the outlines contained in Enclosure 1 should be withheld from public disclosure until after the examination has been completed. No redacted versions are being supplied.

If you have any questions or require additional information, please contact Jeffrey T. Stafford at (860) 444-4301.

Sincerely,


John R. Daugherty
Site Vice President - Millstone

**NOTE: THE ENCLOSURE TO THIS LETTER CONTAINS REACTOR OPERATOR
EXAMINATION INFORMATION – WITHHOLD UNTIL AFTER THE EXAMINATION HAS
BEEN COMPLETED PER GUIDANCE IN NUREG-1021, ES201**

Enclosure: 1

Commitments made in this letter: None.

cc: (w/o enclosure)
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**EXAMINATION SECURITY AND INTEGRITY CONSIDERATIONS – WITHHOLD
UNDER GUIDANCE OF NUREG-1021, ES201**

Enclosure

**Senior Reactor Operator and Reactor Operator Initial License Examinations
OPERATING TEST OUTLINES**

**MILLSTONE POWER STATION UNIT 3
DOMINION NUCLEAR CONNECTICUT, INC. (DNC)**

Facility: <u>Millstone 3</u>	Date of Examination: <u>12/2/17 – 12/8/17</u>
Examination Level: RO <input checked="" type="checkbox"/> SRO <input type="checkbox"/>	Operating Test Number: <u>2017 NRC</u>

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	D, R	Determine RCS Leakrate, and Determine if the Leakrate is within Limits. KA: GEN.2.1.7 4.4 / 4.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
Conduct of Operations	M, R	Calculate a dilution without the PPC KA: GEN.2.1.43 4.1 / 4.3 Ability to use procedures to determine the effects on reactivity of plant changes, such as reactor coolant system temperature, secondary plant, fuel depletion, etc.
Equipment Control	D, P, S	Perform AC Electrical Source Inoperability Surveillance Requirements. KA: GEN.2.2.12 3.7 / 4.1 Knowledge of surveillance procedures.
Radiation Control	N, R	Determine Dose Limits Under Changing Plant Conditions KA: GEN.2.3.4 3.2 / 3.7 Knowledge of radiation exposure limits under normal or emergency conditions.
Emergency Plan		

NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).

* Type Codes and Criteria:

- (C)ontrol room, (S)imulator, or Class(R)oom
- (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes)
- (N)ew or (M)odified from bank (≥ 1)
- (P)revious 2 exams (≤ 1 , randomly selected)

Facility: Millstone 3Date of Examination: 12/2/17 – 12/8/17Examination Level: RO ☐ SRO ☒Operating Test Number: 2017 NRC

Administrative Topic (see Note)	Type Code*	Describe activity to be performed
Conduct of Operations	N, R	Determine Effects on Calorimetric of Removing Instruments from Service, and Determine Required Actions KA: GEN.2.1.7 4.4 / 4.7 Ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation.
Conduct of Operations	N, R	Check Refueling Admin Requirements KA: GEN. 2.1.40 2.8 / 3.9 Knowledge of refueling administrative requirements.
Equipment Control	D, R	Complete a Shutdown Safety Assessment Checklist KA: GEN. 2.2.18 2.6 / 3.9 Knowledge of the process for managing maintenance activities during shutdown operations, such as risk assessments, work prioritization, etc.
Radiation Control	D, R	Evaluation of an Unplanned Gaseous Release KA: GEN. 2.3.11 3.8 / 4.3 Ability to control radiation releases.
Emergency Plan	D, P, R	Emergency Plan Classification and PAR KA: GEN. 2.4.44 2.4 / 4.4 Knowledge of emergency plan protective action recommendations.
NOTE: All items (five total) are required for SROs. RO applicants require only four items unless they are retaking only the administrative topics (which would require all five items).		
* Type Codes and Criteria: (C)ontrol room, (S)imulator, or Class(R)oom (D)irect from bank (≤ 3 for ROs; ≤ 4 for SROs and RO retakes) (N)ew or (M)odified from bank (≥ 1) (P)revious 2 exams (≤ 1 , randomly selected)		

Facility: <u>Millstone 3</u>		Date of Examination: <u>12/2/17 – 12/8/17</u>	
Exam Level: RO <input checked="" type="checkbox"/> SRO-I <input type="checkbox"/> SRO-U <input type="checkbox"/>		Operating Test Number: <u>2017 NRC</u>	
Control Room Systems: 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U			
System/JPM Title	Type Code*	Safety Function	
a. Initiate Immediate Boration (004.A2.14 3.8 / 3.9)	D, S, E, A	1	
b. Establish Feed and Bleed Cooling of the RCS (W/E05.EK2.2 3.9 / 4.2)	N, S, E, A	2	
c. Depressurize the RCS During a SG Tube Rupture (EPE.038.EA1.04 4.3 / 4.1)	D, S, E, A	3	
d. Shifting the RHR System During Single Loop Operation (005.A4.01 3.6 / 3.4)	D, S, L	4 primary	
e. Shift to SG Feedwater Flow Control Valves (059.A4.03 2.9 / 2.9)	N, S	4 secondary	
f. Manual CIA (103.A2.03 3.5 / 3.8)	D, P, S, E, EN, A	5	
g. Test Start The "B" EDG From MB8 (064.A4.06 3.9 / 3.9)	D, S	6	
h. Starting Control Building Ventilation on Filtered Outside Air (071.A2.09 3.0 / 3.5)	D, S, E	9	
In-Plant Systems: 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U			
i. Establishing Charging Pump Cooling (076.A2.01 3.5 / 3.7)	D, R, E	4 secondary	
j. Energizing MCC 32-3T following CDA (062.A2.01 3.4 / 3.9)	M, E, A	6	
k. Align "C" CCW Pump and Heat Exchanger to the "A" Train (008.A2.01 3.3 / 3.6)	D, P, R, E	8	
<p>* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.</p>			
* Type Codes	Criteria for R /SRO-I/SRO-U		
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power/Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4-6/4-6 /2-3 $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ $\geq 1 / \geq 1 / \geq 1$ (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$		

Facility: <u>Millstone 3</u> Date of Examination: <u>12/2/17 – 12/8/17</u>		
Exam Level: RO <input type="checkbox"/> SRO-I <input checked="" type="checkbox"/> SRO-U <input type="checkbox"/> Operating Test Number: <u>2017 NRC</u>		
Control Room Systems: 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U		
System/JPM Title	Type Code*	Safety Function
a. Initiate Immediate Boration (004.A2.14 3.8 / 3.9)	D, S, E, A	1
b. Establish Feed and Bleed Cooling of the RCS (W/E05.EK2.2 3.9 / 4.2)	N, S, E, A	2
c. Depressurize the RCS During a SG Tube Rupture (EPE.038.EA1.04 4.3 / 4.1)	D, S, E, A	3
d. Shifting the RHR System During Single Loop Operation (005.A4.01 3.6 / 3.4)	D, S, L	4 primary
e. Manual CIA (103.A2.03 3.5 / 3.8)	D, P, S, E, EN, A	5
f. Test Start The "B" EDG From MB8 (064.A4.06 3.9 / 3.9)	D, S	6
g. Starting Control Building Ventilation on Filtered Outside Air (071.A2.09 3.0 / 3.5)	D, S, E	9
h.		
In-Plant Systems: 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U		
i. Establishing Charging Pump Cooling (076.A2.01 3.5 / 3.7)	D, R, E	4 secondary
j. Energizing MCC 32-3T following CDA (062.A2.01 3.4 / 3.9)	M, E, A	6
k. Align "C" CCW Pump and Heat Exchanger to the "A" Train (008.A2.01 3.3 / 3.6)	D, P, R, E	8
<p>* All RO and SRO-I control room (and in-plant) systems must be different and serve different safety functions, all five SRO-U systems must serve different safety functions, and in-plant systems and functions may overlap those tested in the control room.</p>		
* Type Codes	Criteria for R /SRO-I/SRO-U	
(A)lternate path (C)ontrol room (D)irect from bank (E)mergency or abnormal in-plant (EN)gineered safety feature (L)ow-Power/Shutdown (N)ew or (M)odified from bank including 1(A) (P)revious 2 exams (R)CA (S)imulator	4–6/4–6 /2–3 $\leq 9 / \leq 8 / \leq 4$ $\geq 1 / \geq 1 / \geq 1$ $\geq 1 / \geq 1 / \geq 1$ (control room system) $\geq 1 / \geq 1 / \geq 1$ $\geq 2 / \geq 2 / \geq 1$ $\leq 3 / \leq 3 / \leq 2$ (randomly selected) $\geq 1 / \geq 1 / \geq 1$	

Facility: Millstone 3Date of Examination: 12/2/17 – 12/8/17Exam Level: RO ☐ SRO-I ☐ SRO-U ☒ Operating Test Number: 2017 NRC

Control Room Systems: 8 for RO, 7 for SRO-I, and 2 or 3 for SRO-U

System/JPM Title	Type Code*	Safety Function
a. Establish Feed and Bleed Cooling of the RCS (W/E05.EK2.2 3.9 / 4.2)	N, S, E, A	2
b. Shifting the RHR System During Single Loop Operation (005.A4.01 3.6 / 3.4)	D, S, L	4 primary
c. Manual CIA (103.A2.03 3.5 / 3.8)	D, P, S, E, EN, A	5
d.		
e.		
f.		
g.		
h.		

In-Plant Systems: 3 for RO, 3 for SRO-I, and 3 or 2 for SRO-U

i. Energizing MCC 32-3T following CDA (062.A2.01 3.4 / 3.9)	M, E, A	6
j. Align "C" CCW Pump and Heat Exchanger to the "A" Train (008.A2.01 3.3 / 3.6)	D, P, R, E	8
k.		

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

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

Facility: Millstone 3 Scenario No.: 2K17 NRC-01(Rev 0) Op-Test No.: 2K17

Examiners: _____ Operators: _____

Initial Conditions: IC-29, 100% Power, Middle of life, Equilibrium Xe

Turnover: The plant is at 100% power and at middle of life. The 'A' EDG is out of service for planned maintenance.

Critical Tasks:

1. Manually actuate at least one train of SIS-actuated safeguards before transition out of E-0. (CT-2)
2. Establish 530 Gpm AFW flow to the SGs before transition out of E-0. (CT-4)
3. Establish at least one train of quench spray flow before an extreme challenge to the CTMT critical safety function exists. (CT-3)

Event No.	Malf. No	Event Type*	Event Description
1	RX09A	I (RO)	Controlling channel of PZR pressure (3RCS*PT455) fails high. (AOP 3571) <i>(Tech Spec entry)</i>
2	RX16A	I (RO) I (BOP)	Turbine Impulse pressure instrument (3MSS-PT505) fails low. (AOP 3571) <i>(Tech Spec entry)</i>
3	CV11A	C (RO)	'A' Charging pump trip. (AOP 3580) <i>(Tech Spec entry)</i>
4	CV13C CV14C	R (SRO) R (RO) N (BOP)	'C' RCP seal degradation. Rapid Downpower (1%/min) to take the unit offline. (Annunciator Response, AOP 3575)
5	RX10A	I (RO)	Controlling channel of PZR level (3RCS*L459) fails 'as is' in conjunction with downpower. (AOP 3571) <i>(Tech Spec entry)</i>
6	CV13C CV14C		'C' RCP seal continues to degrade, resulting in high seal leakoff and a procedurally required reactor trip. (Annunciator Response)
7	RC03C	M (All)	Small break LOCA inside CTMT (catastrophic loss of 'C' RCP seal package).
8	RP07A/B	C (RO)	Safety Injection fails to automatically actuate.
9	FW20	C (BOP)	AFW pumps fail to auto start.
10	RP06A/B RPDI0004 RPDI0006	C (RO) C (BOP)	Large break LOCA inside CTMT. CDA fails to automatically or manually actuate. (FR-Z.1)

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

SECTION 3

EXAM OVERVIEW

Title: **Large Break LOCA**

1. The crew takes the shift with the plant at 100% power and at middle of life. The 'A' EDG is out of service for planned maintenance.

Event 1: The controlling channel of pressurizer pressure (3RCS*PT455) fails high. Pressurizer spray valves will open and RCS pressure will lower. The RO will perform immediate actions of AOP 3581, *Immediate Actions*, to place the master pressure controller in manual and return the output to $\geq 50\%$ to stabilize pressure. The US will enter AOP 3581, confirm immediate actions are complete and transition to AOP 3571, *Instrument Failure Response*. The crew will defeat the failed pressure channel, restore pressurizer pressure to setpoint, and request I&C to trip bistables. The SRO will refer to Technical Specifications 3.3.1 Action 6 (FU# 7, 9 & 10) and 3.3.2 Action 20 (FU# 1.d) and Action 21 (FU# 9.a). The SRO will refer to TRM 3.3.2.1 Action 27.

Event 2: Turbine Impulse pressure instrument (3MSS-PT505) fails low. Control rods will automatically insert. The RO should note that no runback is in progress, respond to the rapid inward rod motion by taking immediate actions in accordance with AOP-3581, *Immediate Actions*, to place rod control in manual. The US will enter AOP 3581, confirm immediate actions are complete and transition to AOP 3571, *Instrument Failure Response*. The crew will select the unaffected channel of turbine impulse pressure, place the Steam Dump system in the steam pressure mode and place rod control back in automatic. AMSAC will be placed in 'Bypass'. The SRO will refer to TRM 7.2, AMSAC. The SRO will refer to Technical Specification 3.3.1, Action 8, Functional Unit 17.

Event 3: 'A' Charging pump trip. The "A" charging (CHS) pump will trip due to a motor problem. The RO will perform immediate actions of AOP 3581, *Immediate Actions*, to simultaneously close the letdown orifice isolation valves and the charging flow control valve. The US will enter AOP 3581, confirm immediate actions are complete, and transition to AOP 3580, *Loss Of All Charging Pumps*. Actions in AOP 3580 will include a verification that pump parameters were stable prior to the trip, a check for proper CHS System valve lineup, proper RCP seal temperatures and flows, and then a start of the standby charging pump ('B'). Normal charging and letdown will be reestablished by the RO. The SRO will refer to TS 3.5.2, Action a and TRM 3.1.2.4. This event is the precursor for a subsequent RCP seal problem.

Event 4: 'C' RCP seal degradation. The Lower Seal on the "C" RCP will degrade prompting entry into Annunciator Response Procedures. The leak will be slowly increasing and significant enough to procedurally require the crew to begin a plant shutdown. Station management will direct a downpower at 1% per minute. The crew will enter AOP 3575, *Rapid Downpower*, and perform the downpower.

Event 5: Controlling channel of PZR level fails 'as is'. During the downpower, the controlling PZR Level transmitter, 3RCS-L459, will fail as is. Once identified, the crew will enter AOP 3571, *Response to an Instrument Failure*, to address the problem. The crew will defeat the failed level channel, restore pressurizer level to setpoint, and request I&C to trip bistables. The SRO should enter TS 3.3.1, Functional Unit 11, Action 6.

Event 6: 'C' RCP seal continues to degrade. The crew will return to the Annunciator response for high seal leakoff flow (MB3B 2-10) and based on RCP seal package parameters determine that a reactor trip is required. The US will direct a reactor trip, a trip of the 'C' RCP and transition to E-0, *Reactor Trip and Safety Injection*.

Event 7: Small break LOCA inside CTMT. At the time of the reactor trip a small break LOCA on loop 3 occurs (catastrophic loss of 'C' RCP seal package). The crew will carry out the immediate actions of E-0, *Reactor Trip and Safety Injection*, and continue in E-0 to step 16 (Check If RCS Is Intact.) Events 8 and 9 occur at steps 4 and 7 of E-0 respectively.

Event 8: Safety Injection fails to automatically actuate. A Safety Injection is expected to automatically occur from low PZR pressure. Both trains of Safety Injection failed to automatically actuate requiring the RO to manually initiate Safety Injection. **[Critical Task]**.

Event 9: AFW pumps fail to auto start. The BOP will have to manually start the 'A' MDAFW and 'B' MDAFW pumps at MB5. Steam supply valves must be opened to start the Turbine Driven AFW pump. **[Critical Task]** – Establish at least 530 gpm AFW flow to the SGs before transition out of E-0.

Event 10: Large break LOCA inside CTMT, CDA fails to automatically or manually actuate. At step 16 of E-0, the crew will transition to E-1, *Loss of Reactor or Secondary Coolant*. The crew will stop the RHR pumps when procedurally directed. After the crew stops the RHR pumps, the LOCA will rapidly increase in severity, requiring the crew to restart the RHR pumps. As the break size increases an "Orange" Path will be generated based on CTMT pressure. The crew should respond by transitioning to FR-Z.1, *Response to high CTMT Pressure*. CDA Train "A" & "B" will fail to automatically or manually actuate. This will require the crew to manually manipulate individual components to align CTMT spray **[Critical Task]**. Once FR-Z.1 is complete and the crew transitions back to E-1, the session can be terminated.

2. The SRO candidate (US) should classify this event as an **ALERT Charlie One** based on failure of the RCS barrier.

3. Duration of Exam: 90 minutes

Facility: Millstone 3 Scenario No.: 2K17 NRC-02 (Rev 0) Op-Test No.: 2K17

Examiners: _____ Operators: _____

Initial Conditions: IC-160, 74% Power, Middle of life, Equilibrium Xe

Turnover: The crew will take the shift with reactor power at 74%. The plant is being returned to service following a refueling outage. The crew is to stabilize reactor power at 74% while Reactor Engineering performs EN 31015 "Power Ascension Testing of Millstone Unit 3". The 'C' CCP heat exchanger is out of service for tube leak repair. The 'D' SWP is out of service for corrective maintenance.

Critical Tasks:

1. Manually trip the reactor from the control room with either Main board trip switch or by opening 32B and 32N supply breakers before completing Step 1 of E-0. (CT-1)
2. Isolate the faulted SG(s) before transition out of E-2. (CT-17)

Event No.	Malf. No	Event Type*	Event Description
1	RX12M	I (BOP)	'A' steam generator level transmitter (3FWS-LT551) fails low (AOP 3581 / AOP 3571). (Tech Spec entry)
2	SW01B	C (RO)	'B' Service Water Pump trip on overcurrent. (AOP 3560 / AOP 3561) (Tech Spec entry)
3	SG03C	R (SRO) R (RO) N (BOP)	"C' SG Tube Leak (460 gpd), and subsequent procedurally required rapid downpower. (3%/min). (AOP 3576, AOP 3575) (Tech Spec entry)
4	MS01C	M (ALL)	'C' main steamline break in CTMT. Requires reactor trip and safety injection.
5	RP10A/B RP09B	C (RO)	Automatic and MB7 manual reactor trip switch fail. Successful manual reactor trip MB4.
6	RP11E	C (RO)	Multiple HPSI components fail to automatically actuate.
7	RP11K	C (RO)	CTMT Isolation Phase 'A' fails to automatically actuate.
8	SG01C	M (ALL)	Hot, dry 'C' SG results in a SGTR. Faulted, ruptured SG. (ECA-3.1)

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

SECTION 3

EXAM OVERVIEW

Title: **Faulted, Ruptured Steam Generator**

1. The crew will take the shift with reactor power at 74%. The plant is being returned to service following a refueling outage. The crew is to stabilize reactor power at 74% while Reactor Engineering performs EN 31015 "Power Ascension Testing of Millstone Unit 3". The 'C' CCP heat exchanger is out of service for tube leak repair. The 'D' SWP is out of service for corrective maintenance.

Event 1: 'A' steam generator level transmitter (3FWS-LT551) fails low. The BOP will perform immediate actions of AOP 3581, *Immediate Actions*, which include taking manual control the 'A' Feed Reg Valve and matching feed flow to steam flow to stop the level increase. The US will enter AOP 3581, confirm immediate actions are complete and transition to AOP 3571, *Instrument Failure Response*, to address the failed channel. The BOP will restore narrow range level to 50% and defeat the failed level channel. The SRO will direct I&C to trip bistables. The SRO refers to Technical Specification 3.3.1 and logs into Action 6 (FU #13). The SRO refers to Technical Specification 3.3.2 and logs into Actions 20 and 21 (FU #5.b, #6.c). The SRO refers to Technical Specifications 3.3.3.5 and 3.3.3.6, and should verify they do not apply.

Event 2: 'B' Service Water Pump trip on overcurrent. The other Train 'B' Service Water Pump ('D') is out of service, requiring the crew to enter AOP 3560, *Loss of Service Water*, to address the lost pump, and then AOP 3561, *Loss of RPCCW*, to address the loss of service water to the 'B' train of RPCCW. Crew actions include starting a second SWP in the non-affected train, reestablishing SW cooling to TPCCW and cross-connecting the RPCCW CTMT headers to ensure cooling to the RCPs. The SRO refers to Technical Specification 3.7.3, 3.7.4 and 3.8.1.1, all of which have 72 hour allowed outage time.

Event 3: 'C' SG Tube Leak, and subsequent procedurally required rapid downpower. A tube leak will develop on the 'C' SG. First indication will be the N2 Monitoring System going into alarm and increasing radiation levels on radiation monitor 3ARC-RE21. The crew will mitigate the tube leak using AOP 3576, *SG Tube Leak*. The severity of the leak will be such that a Tech Spec power reduction is required to be in MODE 3 within 6 hours. Plant management will direct the crew to conduct a downpower at 3%/minute. The crew will enter AOP 3575, *Rapid Downpower*, and perform the downpower. The SRO refers to Technical Specification 3.4.6.2 for Operational Leakage.

Event 4: 'C' main steamline break in CTMT. A major steam line break will occur in CTMT ('C' SG). The break will be severe enough to require a Reactor Trip and Safety Injection. The crew should diagnose the presence of the steam break and the SRO should direct a reactor trip and main steamline isolation.

Event 5: Automatic and MB7 manual reactor trip switch fail. The steamline break will be severe enough to require a Reactor Trip and Safety Injection, and a Reactor Trip 'First Out' will be received prior to the crew taking action. Automatic and the MB7 manual reactor trip switch are failed requiring the RO to manually trip the reactor from MB4 **[Critical Task]**. The crew will carry out the actions of E-0, *Reactor Trip Or Safety Injection* and transition to E-2, *Faulted Steam Generator Isolation*, to isolate the faulted SG **[Critical Task]**. After isolation the 'C' steam generator will continue to blow down into CTMT and completely depressurize. CTMT will go 'ADVERSE' and CTMT pressure will ultimately reach the CDA setpoint (22.7 psia).

Event 6: Multiple HPSI components fail to automatically actuate. The RO should manually start the SI pumps. In addition, 3SIH*MV8801A and B (Charging Cold Leg Injection valves) will need to be opened.

Event 7: CTMT Isolation Phase 'A' fails to automatically actuate. Containment Isolation Phase 'A' fails to automatically actuate, requiring the RO to manually actuate CI'A' from the main board.

Event 8: Hot, dry 'C' SG results in a SGTR. When the "C" SG tubes become hot and dry, a SG Tube Rupture will occur. The 'C' SG will be faulted and ruptured. The crew will ultimately identify wide range levels and/or pressure going up in 'C' SG and transition to E-3, *Steam Generator Tube Rupture*, from E-2. Once in E-3, the crew will determine that ruptured SG pressure is not sufficient to support the cooldown and depressurization method specified in E-3, and transition to ECA-3.1, *SGTR With Loss of Reactor Coolant - Subcooled Recovery Desired*. The crew will initiate an RCS cooldown as specified in ECA-3.1. Once the crew has shown that the cooldown rate is controlled, the session will end.

2. The SRO candidate (US) should classify this event as an **ALERT- Charlie One**, Barrier Failure, BA1.
3. Duration of Exam: 90 minutes