

U.S. Nuclear Regulatory Commission Individual Examination Report					
Applicant's Name: ██████████			Docket Number 55-██████		
I	R	Examination Type (Initial or Retake)	Facility Name: Vogtle		
		Reactor Operator	Facility Description	X	Hot
X		Senior Reactor Operator (SRO) Instant			Cold
		SRO Upgrade			BWR
		SRO Limited to Fuel Handling		X	PWR

Written Examination Summary	
NRC Author/Reviewer: M. Meeks	RO/SRO/Total Exam Points 75 / 25 / 100
NRC Grader/Reviewer: M. Meeks	Applicant Points 66 / 21 / 87
Date Administered: April 20, 2012	Applicant Grade (%) 88.00 / 84.00 / 87.00

Operating Test Summary	
Administered by: M. Meeks	Date Administered: March 26– April 13, 2012
Walk-Through (Overall)	S
Administrative Topics	S
Simulator Operating Test	S

Examiner Recommendations					
Check Blocks	Pass	Fail	Waive	Signature	Date
Written Examination	X			<i>Michael Meeks</i> M. Meeks	05/10/2012
Operating Test	X			<i>Michael Meeks</i> M. Meeks	05/10/2012
Final Recommendation	X			<i>Mark A. Bates</i> M. Bates	10 MAY 2012

License Recommendation			
<input checked="" type="checkbox"/>	Issue License	Supervisor's Signature Malcolm T. Widmann	Date
<input type="checkbox"/>	Deny License		<i>Malcolm T. Widmann</i> 05/10/12

## PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY

Applicant Docket Number: 55-██████		
Walk-Through Grading Details	Evaluation (S or U)	Comment Page Number
<b>Administrative Topics</b>		
a. Perform AFD Monitoring	S	
b. $K_{eff}$ Determination for Shutdown Banks Withdrawn	S	
c. Determine Tagging Requirements	S	
d. Determine if Task Can Be Completed Without Exceeding any Radiological Limits	S	
e. Emergency Plan Classification and Notification (Administered by M. Bates)	S	
<b>Systems: Control Room</b>		
a. Control Rod Operability Test	S*	4
b. Transfer ECCS Pumps to Cold Leg Recirc	S	
c. Depressurize RCS to Reduce Break Flow to Ruptured SG (Administered by M. Bates)	S	
d. Start an RCP with Subsequent Seal Failure (Administered by P. Capehart)	S*	5
e. Transfer AFW Suction Source to CST 2 (Administered by P. Capehart)	S	
f. Dilute Containment with Service Air	S	
g. Return ESF Bus from Diesel Generator to Normal Supply	S	
h. N/A	N/A	
<b>Systems: In-Plant</b>		
i. Establish RWST Gravity Drain Through RHR Pumps to HLs (Administered by M. Bates)	S*	6
j. Establish Local Control of 1E Switchgear (Administered by P. Capehart)	S	
k. Placing the RHR 25kVA Inverter 1DD116 in Service (Administered by M. Bates)	S	

**PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY**

Applicant Docket Number: 55-██████					
<b>Senior Reactor Operator Simulator Operating Test Grading Details</b>					
Competencies/ Rating Factors (RFs)	RF Weights	RF Scores	RF Grades	Comp. Grades	Comment Page No.
1. Interpretation/Diagnosis a. Recognize & Attend b. Ensure Accuracy c. Understanding d. Diagnose	0.20 0.20 0.30 0.30	3 3 3 3	0.60 0.60 0.90 0.90	3.00	
2. Procedures a. Reference b. EOP Entry c. Correct Use	0.30 0.30 0.40	3 3 2	0.90 0.90 0.80	2.60	7
3. Control Board Operations a. Locate & Manipulate b. Understanding c. Manual Control	0.34 0.33 0.33	3 1 3	1.02 0.33 0.99	2.34	8, 9
4. Communications a. Clarity b. Crew & Others Informed c. Receive Information	0.40 0.40 0.20	3 3 3	1.20 1.20 0.60	3.00	
5. Directing Operations a. Timely & Decisive Action b. Oversight c. Solicit Crew Feedback d. Monitor Crew Activities	0.30 0.30 0.20 0.20	3 3 3 3	0.90 0.90 0.60 0.60	3.00	
6. Technical Specifications a. Recognize and Locate b. Compliance	0.40 0.60	2 3	0.80 1.80	2.60	10

[Note: Enter RF Weights (nominal, adjusted, or "0" if not observed (N/O)), RF Scores (1, 2, 3, or N/O), and RF Grades from Form ES-303-4 and sum to obtain Competency Grades.]

**PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY**  
**APPLICANT DOCKET NUMBER 55-██████**

**CROSS REFERENCE:**

Systems: Control Room "a"

**JPM/TASK:**

Perform Control Rod Operability Test.

**EXPECTED ACTION/RESPONSE:**

The applicant was expected to correctly perform surveillance procedure 14410-1, "Control Rod Operability Test," for control banks A, B, C, and D. Step 5.1.7 of this procedure directs the operator to "Record the test IPC Bank Demand reading for the control bank being tested on Data Sheet 1." At this step, the applicant was expected to correctly determine IPC Bank Demand using the plant computer and record the appropriate value on the data sheet. However, properly determining the IPC Bank Demand was not a critical step in the JPM.

**APPLICANT ACTION/RESPONSE:**

At step 5.1.7, the applicant called up IPC screen "ALLRODS" on the main control board, which displayed both IPC Bank Demand information and IPC individual rod position information. However, the applicant incorrectly recorded the IPC individual rod position information (which was at 216 steps) instead of the correct reading for IPC Bank Demand (which was at 218 steps).

During post-JPM questions, the examiner asked the applicant how to determine IPC bank demand. The applicant again incorrectly pointed to the IPC individual rod positions on the computer screen, and stated that these data points were IPC Bank Demand. Although the applicant did not correctly perform this specific portion of the surveillance, the applicant did correctly perform all of the critical steps in the JPM. In this case, incorrectly recording IPC Bank Demand did not impact any Technical Specification requirements. Therefore, the applicant was evaluated as successfully completing the JPM.

**LACK OF ABILITY/KNOWLEDGE:**

The applicant demonstrated a lack of ability to use plant computers to evaluate system or component status.

**CROSS REFERENCE:**

Systems – Control Room JPM “d”

**JPM/TASK:**

Start an RCP with Subsequent Seal Failure

**EXPECTED ACTION/RESPONSE:**

The applicant was expected to perform alarm panel checks as part of verifying no applicable alarms being lit prior to starting the RCP.

**APPLICANT ACTION/RESPONSE:**

The applicant did not perform alarm panel checks as part of verifying applicable alarms not lit.

The applicant’s performance was rated as satisfactory because performing alarm panel checks was not a critical step.

**LACK OF ABILITY/KNOWLEDGE:**

The applicant demonstrated a weakness in thoroughly performing a procedure step that required a verification of applicable alarms not being lit.

**PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY**  
**APPLICANT DOCKET NUMBER 55-██████████**

**CROSS REFERENCE:**

Systems – In-Plant JPM “I”

**JPM/TASK:**

Establish RWST Gravity Drain Through RHR Pumps to HLs

**EXPECTED ACTION/RESPONSE:**

The applicant was expected to locate in a timely manner and locally close 2-HV-8809A, RHR PMP-A TO COLD LEG ISO VLV.

**APPLICANT ACTION/RESPONSE:**

The applicant spent approximately 20 minutes to locate 2-HV-8809A. He then correctly closed the valve. A comment was warranted due to the excessive amount of time to locate the valve.

The applicant’s performance was rated as satisfactory because he completed all critical steps correctly.

**LACK OF ABILITY/KNOWLEDGE:**

The applicant demonstrated a weakness in his ability to locate components in the plant.

**PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY**  
**APPLICANT DOCKET NUMBER 55-██████**

**CROSS REFERENCE:**

2.c: Procedures – Correct Use

**SCENARIO/EVENT:**

Scenario 7, Event 1: Reactor Power Ascension From 29% In Accordance With UOP 12004-C, Power Operation (Mode 1)

**EXPECTED ACTION/RESPONSE:**

During the power ascension, the applicant, as Senior Reactor Operator (SRO), was expected to control Reactor Coolant System (RCS) average temperature (Tave) with control rods in manual based on the Tave deviation from measured Reference Temperature (Tref) as shown on control board instrument TI-412B. Measured Tref values as given on TI-412B would have become meaningful during the plant startup once the main turbine generator was synchronized to the electrical grid (at approximately 25% reactor power). When the applicants assumed the watch, the turbine was synchronized to the grid at approximately 29% power and TI-412B was correctly indicating Tref.

**APPLICANT ACTION/RESPONSE:**

When the operators began to raise power, instead of reading Tref from the TI-412B gage, the team incorrectly used program Tave based on an operator aid that gave reference values of Tave as a function of power. In this case, the team used delta-T power to determine the program Tave. The program Tave as determined by the Reactor Operator (RO) was higher than the actual Tref value, and the applicant accordingly directed multiple rod withdrawals to raise actual Tave to the determined program Tave value. At one point, the RO reported to the applicant that "Tave is less than program," when, in fact, Tave was 0.9 °F higher than Tref at that time. After the rod withdrawals, Tave stabilized at approximately 2.0 °F higher than Tref before the applicant directed the team to begin raising turbine load. Approximately one hour into the simulator scenario, the applicant recognized this error, and correctly directed the RO to use the Tref instrument (TI-412B) to calculate Tave-to-Tref deviation.

During post-scenario follow-up questions, the applicant stated that during the team's pre-scenario briefing, he had incorrectly applied step 4.1.15 of UOP 12004-C, which directs the operators to use program Tave as a substitute for Tref during the power ascension. However, step 4.1.15 is only valid for conditions before the turbine was placed in service and synchronized to the grid. The operators were briefed before the scenario that UOP 12004-C step 4.1.41 was the step in effect—with power at 29% and the turbine already on the grid. The applicant made one non-critical error associated with this rating factor, and was therefore evaluated with a score of "2" for this rating factor.

**LACK OF ABILITY/KNOWLEDGE:**

The applicant demonstrated a lack of ability to interpret and execute procedure steps (K/A G2.1.20).

**PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY****APPLICANT DOCKET NUMBER 55-██████████****CROSS REFERENCE:**

3.c: Control Board Operations – Understanding

**SCENARIO/EVENT:**

Scenario 6, Event 4: Pressurizer (PRZR) Level Channel LT-459 Slowly Failed Low

**EXPECTED ACTION/RESPONSE:**

The applicant, as Reactor Operator (RO), was expected to correctly understand the operational implications of selecting an unaffected PRZR level channel with the charging controller in automatic. The applicant was also expected to correctly understand the impacts of “saturation” on the PRZR level control system/charging flow controller when returning the charging flow controller (FIC-121) to automatic operation.

**APPLICANT ACTION/RESPONSE:**

At the direction of the Senior Reactor Operator (SRO), the applicant selected an unaffected PRZR level channel on LS-459D in accordance with AOP 18001-C. When the unaffected channel was selected, charging flow rapidly lowered due to the charging controller sensing actual PRZR levels greater than program. At this point, the applicant was directed by the SRO to take manual control of charging and restore charging to approximately 130 gpm (the previous value). The applicant was then directed by the SRO to return FIC-121 to automatic after approximately 7 minutes in manual. When the applicant agreed with the SRO and placed FIC-121 to auto, the valve -121 again went closed, again charging flow rapidly lowered, but the applicant was able to go back to manual on FIC-121 and re-open the valve before letdown had to be isolated. The applicant then stated that he believed that there was a failure in FIC-121.

During post-scenario follow-up questions, the applicant correctly stated that on the initial transient, the team did not discuss the effects of selecting a good channel and did not anticipate the plant response. The applicant further stated (incorrectly) that the team determined there was an additional problem with the FIC-121 controller. The applicant made two non-critical errors associated with this rating factor, and was therefore evaluated with a score of “1” for this rating factor.

**LACK OF ABILITY/KNOWLEDGE:**

The applicant demonstrated a lack of ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation (K/A G2.1.7).



**PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY**  
**APPLICANT DOCKET NUMBER 55-██████**

**CROSS REFERENCE:**

3.c: Control Board Operations – Understanding

**SCENARIO/EVENT:**

Scenario 6, Event 7: Following the ATWT, SG Safeties Lifted on all SGs and #4 SG Safety Failed to Close

**EXPECTED ACTION/RESPONSE:**

The applicant, as Reactor Operator (RO) was expected to correctly understand that manual operation of the charging flow controller (FIC-121) after Safety Injection (SI) actuation would be ineffective in controlling emergency boration flow.

**APPLICANT ACTION/RESPONSE:**

At the direction of the Senior Reactor Operator (SRO), the applicant commenced emergency boration and verified boric acid flow rates greater than 30 GPM in accordance with procedure 19211-C, "FR-S.1 Response to Nuclear Power Generation/ATWT." After exiting the 19211-C procedure, a SI signal actuated, which realigned the output of the CCPs from the normal charging system to the ECCS cold leg injection flow path. During the subsequent actions of the EOPs, the applicant placed the charging flow controller to manual and attempted to raise charging flow to keep emergency boration flow rate above 30 gpm. However, based on the SI realignment, the only change that these actions accomplished was to increase seal injection flow rates to the RCP seal package. Furthermore, because the ECCS system was injecting highly borated water from the RWST at flow rates greater than 200 gpm, the previous 30 gpm emergency boration flow rate was no longer an operational concern.

During post-scenario follow-up questions, the applicant correctly stated that by manipulating the FIC-121 controller all he had done was change flow rates to the RCP seals, and that ultimately he did not need to manipulate the controller following the SI actuation. The applicant made two non-critical errors associated with this rating factor, and was therefore evaluated with a score of "1" for this rating factor.

**LACK OF ABILITY/KNOWLEDGE:**

The applicant demonstrated a lack of ability to evaluate plant performance and make operational judgments based on operating characteristics, reactor behavior, and instrument interpretation (K/A G2.1.7).

**PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY****APPLICANT DOCKET NUMBER 55-XXXXXXXXXX****CROSS REFERENCE:**

6.a: Technical Specifications – Recognize and Locate

**SCENARIO/EVENT:**

Scenario 7, Event 5: Pressurizer (PRZR) Pressure Channel PI-456 Failed High, PORV Block Valve HV-8000B Failed to Close in Automatic

**EXPECTED ACTION/RESPONSE:**

The LCO bases of Technical Specification (TS) 3.4.11, "Pressurizer PORVs," states the following:

The LCO requires the PORVs and their associated block valves to be OPERABLE for manual operation to mitigate the effects associated with an SGTR, or loss of heat sink, and to achieve safety grade cold shutdown. The PORVs are considered OPERABLE in either the manual or automatic mode. [...] An OPERABLE PORV is required to be capable of manually opening and closing, and not experiencing excessive seat leakage. [...] An OPERABLE block valve may be either open and energized, or closed and energized with the capability to be opened, since the required safety function is accomplished by manual operation.

In accordance with the above, the applicant, as Senior Reactor Operator (SRO), was expected to correctly recognize that LCO 3.4.11 was met following the PI-456 failure and failure of the PORV block valve HV-8000B to close. Because both the PORV and the block valve were capable of being cycled in manual operation, both valves remained OPERABLE.

**APPLICANT ACTION/RESPONSE:**

When the applicant performed step C9 of AOP 18001-C, which directs placing the PORVs in AUTO, the applicant directed the Reactor Operator to maintain the PORV in manual and closed per the Tech Specs.

During post-scenario follow-up questions, the applicant incorrectly stated that he had entered Condition C of LCO 3.4.11 for an inoperable PORV block valve. The applicant made one non-critical error associated with this rating factor, and was therefore evaluated with a score of "2" for this rating factor.

**LACK OF ABILITY/KNOWLEDGE:**

The applicant demonstrated a lack of ability to determine operability and/or availability of safety related equipment (K/A G2.2.37).

**PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY**

**Appendix D Scenario Outline Form ES-D-1**

Facility: Vogtle Scenario No.: 2 Op-Test No.: 2012-301

Examiners: Michael Meeks Operators: [Redacted] (SR) R  
Mark Bates [Redacted] (ORT) J  
Phil Capehart [Redacted] (UO) I

**Initial Conditions:** The plant is at 100% power, MOL, steady state operations.  
 (Base IC # 14, snapped to IC # 182 for HL17 NRC Exam.)

**Equipment OOS:** Safety Injection Pump "A" is tagged out for motor repair.

**Turnover:** Maintain 100% power. Containment mini-purge is in service for a Containment entry on the next shift.

**Preloaded Malfunctions:**

**GE12A - PCB 161710 Auto Trip Failure**  
**GE12B - PCB 161810 Auto Trip Failure**  
**SI06B - Block Auto Start on SI Pump B**

**Overrides**

**1HV-8801A BIT Discharge Valve - SHUT**  
**1HV-8801B BIT Discharge Valve - SHUT**

**NOTE to Simbooth: Place Containment Mini-Purge in service.**

Event No.	Malif. No.	Event Type*	Event Description
T1	TU19A @ 0%	I-OATC I-SS TS-SS	Main Turbine Impulse Pressure Transmitter - PT505 fails low. <b>LCO 3.3.1, Condition A, FU 16b, 16f Condition S (1 hour Tech Spec actions)</b>
T2	RD13D	R-OATC N-UO R-SS TS-SS	Dropped Rod K-14 in Control Bank B, reduces power to < 75 in 1 hour. <b>LCO 3.1.4 Condition B</b>
T3	FW02C @ 0%	C-UO C-SS	Controlling SG # 3 feed flow channel (FI-530A) fails low.
T4	NS02B NS04C	C-UO C-SS TS-SS	NSCW pump # 3 locked rotor, NSCW pump # 5 shaft shears on start. <b>LCO 3.7.8 Condition A, LCO 3.8.1 Condition B</b>
T5	CV07	C-OATC C-SS TS-SS	Normal Charging Pump (NCP) trips. <b>LCO TR 13.1.5 Condition A, LCO TR 13.1.3 Condition A</b>

<b>Appendix D</b>	<b>Scenario Outline</b>	<b>Form ES-D-1</b>
-------------------	-------------------------	--------------------

6	N/A	N-OATC N-SS	Places CVCS Charging and Letdown in service.
T7	RC16 @ 0.6%	M-ALL  OATC UO Critical	RCS Head LOCA (Small Break LOCA just large enough to reach RCP Trip Criteria over time).  Trips RCPs with RCS pressure < 1375 psig and ECCS flow present.
8	Preloaded	C-OATC C-SS Critical	SIP B auto start failure requiring manual start.
9	Preloaded	I-UO I-SS	Main Generator Output Breakers fail to automatically trip open.
<b>Event No.</b>	<b>Malif. No.</b>	<b>Event Type*</b>	<b>Event Description</b>
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

**Event 1:**

Main Turbine Impulse Pressure PT-505 fails low (Tref) resulting in inward rod motion.

**Verifiable Actions:**

**OATC** – Performs IOA of 18001-C, section H and places control rods in manual to stop uncontrolled inward rod motion.

**OATC** – Restores Tavg to program band to maintain Tavg and Tref matched.

**UO** – Verifies PIC-507 Steam Dump Control Pot at 7.28 (1092 psig) and in AUTO, then place Steam Dumps in the Steam Pressure Mode.

**Technical Specifications:**

LCO 3.3.1 Reactor Trip System (RTS) Instrumentation Condition A

LCO 3.3.1 Reactor Trip System (RTS) Instrumentation FU 16b, 16f Condition S.  
(1 hour Tech Spec actions)

**Appendix D**

**Scenario Outline**

**Form ES-D-1**

Facility: Vogtle Scenario No.: 6 Op-Test No.: 2012-301

Examiners: Mark Bates Operators: [Redacted] (SRO) Q  
Michael Meeks [Redacted] (OATC) R  
Phil Capelhart [Redacted] (uo) L

**Initial Conditions:** The plant is at 100% power, BOL, steady state operations, control rods in automatic. (Base IC # 10, snapped to IC # 186 for HL17 NRC Exam)

**Equipment OOS:** Safety Injection Pump "A" is tagged out for motor repair.

**Turnover:** The plant is at 100% power, Containment mini-purge is in service for a Containment entry on the next shift.

**Preloaded Malfunctions:**

- AC03B - ACCW Pump-2 Hand switch Auto Contact Failure
- AF05A, B, C Failure of all AFW pumps to automatically start
- ES01- Failure of Automatic Reactor Trip
- ES02 - Failure of Manual Reactor Trip
- TU18 - Auto Turbine Trip Failure

**Overrides**

**Note to Simbooth:** Place Containment Mini-Purge in service.

Event No.	Malif. No.	Event Type*	Event Description
T1	AC02A	C-UO C-SS	ACCW Pump # 1 locked rotor with failure of the standby ACCW pump to automatically start.
T2	RC08A @ 100%	I-OATC I-SS TS-SS	RCP Loop 1 HL NR RTD fails high resulting in inward rod motion. <b>LCO 3.3.1, Condition A, FU 6, 7 Condition E and LCO 3.3.2 Condition A, FU 5b Condition I</b>
T3	RM-006	TS-SS	Cnmt Bldg Oper Lev Rad – hi Range, RE-006 fails to 100%. <b>LCO 3.3.3 Condition A, FU 14, Condition B</b>

<b>Appendix D</b>	<b>Scenario Outline</b>	<b>Form ES-D-1</b>
-------------------	-------------------------	--------------------

Event No.	Malfunction No.	Event Type*	Event Description
T4	PR03A (56.5-0%) Ramp 600 sec	I-OATC I-SS  TS-SS	Controlling PRZR level channel LT-459 fails low over 10 minutes resulting in FIC-0121 raising charging flow.  <b>LCO 3.3.1 Condition A, FU 9, Condition M</b> <b>INFO LCO 3.3.3 FU 8</b> <b>LCO 3.3.4 Condition A, FU 8</b>
T5	FW14 @100% Ramp 60 Seconds	I-UO I-SS	FW pressure transmitter PT-508 fails slowly high resulting in MFPT speed reducing and lowering FW flows and SG levels.
6	N/A	R-OATC N-UO R-SS	Power reduction due to MFPT B high vibrations.
T7	EL06A	M-ALL	Loss of 13.8kV bus 1NAA resulting in loss of 2 RCPs and 2 Condensate Pumps, 1 circulating water pump - ATWT.
T8	RD07 with 69 sec delay	C-OATC C-SS Critical	ATWT - Auto rod motion fails after ~ 1 minute.
9	Preload	C-UO C-SS Critical	Turbine Auto Trip failure requiring Manual Trip.
10	Preload	C-UO C-SS Critical	MDAFW and TDAFW pumps fail to automatically start.
T11	MS06D @50%	CREW	Main Steam Safety for Loop # 4 fails 50% open requiring an eventual transition to E-2 to attempt to isolate the faulted SG # 4.
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			

**Event 1:**

ACCW pump # 1 will trip due to a locked rotor and ACCW pump # 2 will fail to automatically start.

**Verifiable Actions:**

**UO** - Starts standby ACCW pump # 2.

**Technical Specifications:**

None

**Appendix D Scenario Outline Form ES-D-1**

Facility: Vogtle Scenario No.: 7 Op-Test No.: 2012-301

Examiners: Michael Meeks Operators: [REDACTED] (SRo) R  
Mark Bates [REDACTED] (OFTL) Q  
Phil Capehart [REDACTED] (UO) L

**Initial Conditions:** The plant is at 29% power, BOL, steady state operations, control rods in manual. (Base IC # 36, snapped to IC # 187 for HL17 NRC Exam)

**Equipment OOS:** Safety Injection Pump "A" is tagged out for motor repair.

**Turnover:** The plant is at 29% power, Containment mini-purge is in service for a Containment entry on the next shift, raise power at < 8% per hour.

**Preloaded Malfunctions:**

**ES19A – Block CVI Actuation Train A**

**ES19B - Block CVI Actuation Train B**

**ES10 - Train A Main Steam Line Isol Auto Actuation Failure**

**ES11 - Train B Main Steam line Isol Auto Actuation Failure**

**SI08A - RWST Sludge Mixing Valve 10957 Failure**

**SI08B - RWST Sludge Mixing Valve 10958 Failure**

**RD17D - (K-14) @ 36 steps**

**RD17H - (D-4) @ 24 steps**

**RD17L - (G-13) @ 30 steps**

**PR12B PORV 456 Block Valve 8000B Auto Closure Failure**

**Overrides**

**HV-8104 Emergency Borate valve shut.**

**Note to Simbooth:** Place Containment Mini-Purge in service.

Event No.	Malif. No.	Event Type*	Event Description
1	N/A	R-OATC R-SS N-UO	Raises power in accordance with UOP-12004-C.
T2	SG05D @100%	C-UO C-SS	SG # 4 Steam Flow indicator fails high.

## Appendix D

## Scenario Outline

Form ES-D-1

Event No.	Malf. No.	Event Type*	Event Description
T3	CV04	I-OATC I-SS	Loss of Cooling to Letdown Heat Exchanger (TE-0130 fails low)
T4	new malf (9)	TS-SS	NSCW Cooling Tower Fan # 1 on Train A trips with ambient wet-bulb temperature > 63°F  <b>LCO 3.7.9 Ultimate Heat Sink (UHS) Condition B</b>
T5	PR02B @100%	I-OATC I-SS  TS-SS	PRZR PT-456 fails high resulting in PORV 456 failing open and block valve HV-8000B failure to auto close.  <b>LCO 3.3.1 Condition A, FU 6 Condition E, LCO 3.3.1 FU 8a Condition M, LCO 3.3.1 FU 8b Condition E LCO 3.3.2 Condition A, FU 1d Condition D, LCO 3.3.2 FU 8b Condition L, LCO 3.4.1 Condition A</b>
T6	RF TK02 95-88% 1200 sec ramp	C-UO C-SS TS-SS	RWST sludge mixing line pipe break with auto closure failure.  <b>LCO 3.5.4 Condition B and Condition D (1 hour action) TR 13.1.7 Condition D (Immediate TR action)</b>
T7 10	FW04C  Preload	C-OATC  C-OATC C-SS	MFRV # 3 fails shut, requiring reactor trip, 3 stuck rods.  Emergency borate due to 3 stuck rods with failure of HV-8104 to open.
T8	SG01C @45%	M-ALL	Ruptured Faulted SG IRC with failure of CVI to occur.
T9	FW06C @40%	M-ALL	Ruptured Faulted SG IRC with failure of CVI to occur.
11	Preload	C-UO C-SS <b>Critical</b>	CVI actuation failure requiring manual alignment.
12	Preload	C-UO C-SS <b>Critical</b>	Main Steam Line Auto Actuation Failure
* (N)ormal, (R)eactivity, (I)nstrument, (C)omponent, (M)ajor			