U.S. Nuclear Regulatory Commission Individual Examination Report					
Applicant's Name: [redacted]			Docket Number [redacted]		
I	R	Examination Type (Initial or Retake)	Facility Name: Vogtle		
X		Reactor Operator	Facility Description	X	Hot
		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
NRC Grader/Reviewer: M. Meeks	Applicant Points 62
Date Administered: April 20, 2012	Applicant Grade (%) 82.66

Operating Test Summary	
Administered by: P. Capehart	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			M. Meeks	05/10/2012
Operating Test	X			P. Capehart	05/10/2012
Final Recommendation	X			M. Bates / M. Meeks	10 MAY 2012 05/10/2012

License Recommendation			
✓	Issue License	Supervisor's Signature Malcolm T. Widmann	Date 05/10/12
	Deny License		

PRIVACY ACT INFORMATION - FOR OFFICIAL USE ONLY

Applicant Docket Number: [redacted]

Walk-Through Grading Details	Evaluation (S or U)	Comment Page Number
Administrative Topics		
a. Perform AFD Monitoring (Administered by M. Meeks)	S	
b. K_{eff} Determination for Shutdown Banks Withdrawn (Administered by M. Meeks)	S	
c. Determine Tagging Requirements (Administered by M. Meeks)	U	4
d. Determine if Task Can Be Completed Without Exceeding any Radiological Limits (Administered by M. Meeks)	U	5, 6
e. N/A	N/A	
Systems: Control Room		
a. Control Rod Operability Test (Administered by M. Meeks)	S	
b. Transfer ECCS Pumps to Cold Leg Recirc (Administered by M. Meeks)	S	
c. Depressurize RCS to Reduce Break Flow to Ruptured SG (Administered by M. Bates)	S*	7
d. Start an RCP with Subsequent Seal Failure	S*	8
e. Transfer AFW Suction Source to CST 2 (Administered by M. Bates)	S*	9
f. Dilute Containment with Service Air (Administered by M. Meeks)	S	
g. Return ESF Bus from Diesel Generator to Normal Supply (Administered by M. Meeks)	S*	10, 11
h. Manually Actuate CRI Due to Smoke	S*	12
Systems: In-Plant		
i. Establish RWST Gravity Drain Through RHR Pumps to HLs (Administered by M. Bates)	S	
j. Establish Local Control of 1E Switchgear	S	
k. Placing the RHR 25kVA Inverter 1DD116 in Service (Administered by M. Bates)	S*	13

Applicant Docket Number: [redacted]

Reactor Operator Simulator Operating Test Grading Details

Competencies/ Rating Factors (RFs)	RF Weights	RF Scores	RF Grades	Comp. Grades	Comment Page No.
1. Interpretation/Diagnosis					
a. Recognize & Verify Status	0.40	3	1.20		
b. Interpret & Diagnose Conditions	0.30	3	0.90	3.00	
c. Prioritize Response	0.30	3	0.90		
2. Procedures/Tech Specs					
a. Reference	0.30	3	0.90		
b. Procedure Compliance	0.40	**2**	**0.80**	**2.60**	14
c. Tech Spec Entry	0.30	3	0.90		
3. Control Board Operations					
a. Locate & Manipulate	0.40	**2**	**0.80**		15
b. Understanding	0.30	**1**	**0.30**	**2.00**	16,17
c. Manual Control	0.30	3	0.90		
4. Communications					
a. Provide Information	0.34	**2**	**0.68**		18
b. Receive Information	0.33	3	0.99	**2.66**	
c. Carry Out Instructions	0.33	3	0.99		

[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.]

CROSS REFERENCE:

Administrative Topic "c"

JPM/TASK:

Determine Tagging Requirements

EXPECTED ACTION/RESPONSE:

Given the appropriate references, the applicant was expected to correctly determine the boundary points and required positions of components to (1) isolate the fluid boundary and (2) drain the "A" Containment Spray Pump (CSP), 1-1206-P6-001, in preparation for maintenance on the pump seals. The applicant was expected to identify 1-1206-U4-108, CSP A Pump Casing Vent Valve, as a required vent path to be tagged in the UNFLANGE/OPEN or UNCAP/OPEN position. The other required vent path was via 1-1206-X4-108, CSP A Header Vent Valve, which was required to be tagged in the UNCAP/OPEN position. Proper tagging of both 1-1206-U4-108 and 1-1206-X4-108 were critical steps in the JPM, because both vents being open were required to completely drain the pump. The applicant was also expected to identify 1-1206-U4-002, CSP A Suction Floor Drain Isolation, as a required drain path to be tagged in the OPEN position. Proper tagging of 1-1206-U4-002 was not a critical step in the JPM.

APPLICANT ACTION/RESPONSE:

When the applicant developed the tagout, the applicant incorrectly did not include 1-1206-U4-108 in any position on the tagout. The applicant also did not include 1-1206-U4-002 in any position on the tagout.

During post-JPM discussion with the examiner, the applicant incorrectly stated that 1-1206-X4-108 was the only required vent path for the pump. The applicant did not correctly perform a critical step in the JPM. Therefore, the applicant was evaluated as not successfully completing the JPM.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a lack of knowledge of tagging and clearance procedures.

CROSS REFERENCE:

Administrative Topic "d"

JPM/TASK:

Determine if Task Can Be Completed Without Exceeding any Radiological Limits

EXPECTED ACTION/RESPONSE:

Given a Radiological Work Permit (RWP), a valve map in containment, other appropriate references, and the task to close and danger tag valve 1-1204-U4-111, the applicant was expected to correctly determine (1) the minimum protective clothing requirements for the task, (2) the projected total gamma dose to complete the task, (3) whether the operator could complete the task without exceeding any limits, and (4) the reason for (3), if applicable. All four of the above elements were critical steps in the JPM.

Given that the dose rate at valve 1-1204-U4-111 was 84 mrem/hr, time to complete the task was 5 min, and the total round-trip transit dose was 6 mrem, the applicant was expected to complete the projected total gamma dose as follows:

$$\left(\frac{84\ mrem}{hr}\right)\left(\frac{1\ hr}{60\ min}\right)(5\ min) = 7\ mrem\ \ [at\ the\ valve]$$

$$\therefore\ 7\ mrem + 6\ mrem = 13\ mrem\ \ [total\ projected\ dose].$$

This projected total gamma dose was within the limits authorized on the RWP for total dose (15 mrem); however, the dose rate at the valve (84 mrem/hr) exceeded the allowable RWP dose rate setting of 80 mr/hr. Therefore, the applicant was expected to determine that the operator can NOT perform the task under the current RWP for this reason.

APPLICANT ACTION/RESPONSE:

When the applicant determined the projected total dose, he incorrectly used the dose rate for valve 1-1204-X4-411 (14 mr/hr) instead of the valve that was specified in the cue sheet, 1-1204-U4-111 (84 mr/hr). Based on this error, the applicant calculated the projected dose as follows:

$$\left(\frac{14\ mrem}{hr}\right)\left(\frac{1\ hr}{60\ min}\right)(5\ min) = 1.167\ mrem\ \ [at\ the\ valve]$$

$$\therefore\ 1.167\ mrem + 6\ mrem = 7.167\ mrem\ \ [total\ projected\ dose].$$

Therefore, the applicant incorrectly stated that the operator could perform the task on the current RWP with no other restrictions, and that no radiological limits would be violated. The applicant did not correctly perform a critical step in the JPM. Therefore, the applicant was evaluated as not successfully completing the JPM.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a lack of ability to interpret reference materials, such as graphs, curves, tables, etc. associated with a lack of ability to comply with radiation work permit requirements during normal or abnormal conditions.

CROSS REFERENCE:

Systems – Control Room "c"

JPM/TASK:

Depressurize RCS to Reduce Break Flow to Ruptured SG

EXPECTED ACTION/RESPONSE:

The applicant was expected to open a pressurizer PORV to depressurize the RCS in accordance with procedure 19030-C, "E-3 Steam Generator Tube Rupture," rev 37.1, Step 34. The applicant was then expected to secure the depressurization when pressurizer pressure was less than the ruptured SG pressure. The JPM was designed for subcooling and pressurizer level to be satisfactory throughout the performance of the depressurization.

APPLICANT ACTION/RESPONSE:

The applicant correctly initiated the depressurization by opening a pressurizer PORV. The applicant then secured the depressurization because he thought that subcooling had lowered below 24°F, which was one of the alternate criteria to secure the depressurization. Subcooling remained above 50°F during the entire depressurization. The applicant pulled up a trend of subcooling on the plant computer and realized that subcooling had not lowered below 24°F. The applicant then reinitiated the depressurization and successfully completed the task.

The applicant's performance was rated as satisfactory because he successfully completed all critical steps.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a weakness in the ability to locate control room instrumentation.

CROSS REFERENCE:

Systems – Control Room "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.

CROSS REFERENCE:

Systems – Control Room "e"

JPM/TASK:

Transfer AFW Suction Source to CST 2

EXPECTED ACTION/RESPONSE:

The applicant was expected direct a System Operator (SO) to unlock, open, and relock 1-1302-U4-185, MDAFW PUMP A RECIRC TO CST-2, in accordance with procedure 13610-1, "Auxiliary Feedwater System," rev 49.0, Step 4.4.1.1 (a).

APPLICANT ACTION/RESPONSE:

The applicant initially incorrectly directed the SO to unlock and close 1-1302-U4-185. After all other critical steps had been completed the applicant went back to Step 4.4.1.1 (a) and corrected his error by directing the SO to unlock, open, and relock 1-1302-U4-185.

The applicant's performance was rated as satisfactory because he completed all critical steps correctly. Opening the recirculation valve was not critical because MDAFW pump "A" was pumping forward during the period in question.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a weakness in his ability to correctly complete a procedure step.

CROSS REFERENCE:

Systems: Control Room "g"

JPM/TASK:

Returning ESF Bus from Diesel Generator (DG) to Normal Supply

EXPECTED ACTION/RESPONSE:

The applicant was directed to parallel Reserve Auxiliary Transformer (RAT) "B" to bus 1BA03, and then remove DG1B from bus 1BA03 in accordance with procedure 13427B-1, "4160V AC BUS 1BA03 1E ELECTRICAL DISTRIBUTION SYSTEM." At step 4.2.2.10 of this procedure, with the DG loaded to approximately 3250 kW, the applicant was expected to properly set the DSL GEN 1B LOADING SET PT CONTROL to the current DG load as follows:

$$\frac{Diesel\ Load\ [kW]}{700} = LOAD\ POT\ SETTING$$

$$\therefore \frac{\sim 3250\ kW}{700} = \sim 4.6$$

The purpose of this step was to ensure the D/G does not pick up excess load when RAT "B" was paralleled to bus 1BA03. When the applicant reached step 4.2.5.1, the diesel would be running with ~3250 kW load and ~300 kVARs lagging. At step 4.2.5.1, the applicant was expected to lower DG1B load to 3000 kW in maximum increments of 1000 kW and 500 kVAR in time increments of 5 minutes. Step 4.2.5.2 of the procedure directs the operator to concurrently unload the D/G to 700 kW and 200-300 kVARs lagging after the diesel load has been stable at 3000 kW for a 5 minute period. None of the above-mentioned steps in the procedure were critical steps in the JPM.

APPLICANT ACTION/RESPONSE:

During the JPM, at step 4.2.2.10 of the procedure the applicant incorrectly read the load on the DG1B as ~4250 kW, instead of the correct reading of ~3250 kW, and accordingly set the potentiometer as follows:

$$\therefore \frac{\sim 4250\ kW}{700} = \sim 6.0.$$

Therefore, when the applicant paralleled RAT "B" with the D/G an excessively large transient was placed on the diesel, which went to ~4600 kW loading nearly instantaneously. When the applicant performed step 4.2.5.1 of the procedure to unload the diesel, he lowered load from 4600 kW-4000 kW-3000 kW-2000 kW in 5 minute increments, which was incorrect as he continued to lower load past 3000 kW.

During post-JPM questions with the examiner, the examiner asked the applicant to go back over the calculation for the pot setting. The applicant [incorrectly] stated that DG load had been ~4200 kW, and the pot setting of 6.0 was correct. When the examiner asked the applicant to go back through the procedural steps of 4.2.5.1 and 4.2.5.2, the applicant again [incorrectly] stated

that he had performed the sequence correctly. However, the applicant correctly performed all critical steps in the JPM. Therefore, the applicant was evaluated as successfully completing the JPM.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a lack of ability to interpret and execute procedure steps, and a lack of ability to interpret control room indications to verify the status and operation of a system, and understand how operator actions affect plant and system conditions.

CROSS REFERENCE:

Systems – Control Room "h"

JPM/TASK:

Manually Align CRI Due to Smoke Entering MCR air intakes

EXPECTED ACTION/RESPONSE:

The applicant was expected to manually actuate control room isolation per procedure 13301-C, "CBCR Normal HVAC and Emergency Filtration System." Specifically, at step 4.4.1.7, the applicant was expected to "Verify that the CR FILTER UNIT OUTLET AIR DMPR on the **running** train (Train B: 1-HV-12129) was open". Train "B" was the only running train.

APPLICANT ACTION/RESPONSE:

At step 4.4.1.7, the applicant asked for indications for both Train A and Train B, as opposed to asking for indications only for the "B" train as expected. When asked, the applicant was given the cue that Train A CR FILTER UNIT OUTLET AIR DMPR indicated closed. The applicant failed to properly identify the **running** train.

The applicant's performance was rated as satisfactory because he successfully completed all critical steps.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a weakness in the ability to correctly use procedures.

CROSS REFERENCE:

Systems – In-Plant "k"

JPM/TASK:

Placing the RHR 25kVA Inverter 1DD116 in Service

EXPECTED ACTION/RESPONSE:

The applicant was expected to check proper inverter operation by observing 60 Hz on the inverter output frequency meter in accordance with step 4.1.11.2(g) of procedure 13405-1, "125V DC 1E Electrical Distribution System," Rev 41.2.

APPLICANT ACTION/RESPONSE:

The applicant initially looked at AC Output Current (Amps) to verify inverter output frequency of 60 Hz. The applicant was provided the cue that the meters were reading as they were at that time (~38 amps). The applicant then continued to search for the correct indication and was able to correctly verify 60 Hz.

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 local the inverter output frequency meter.

CROSS REFERENCE:

2.b: Procedures/Tech Specs – Procedure Compliance

SCENARIO/EVENT:

Scenario 7, Event 6: RWST Sludge Mixing Line Pipe Break With Failure to Automatically Isolate

EXPECTED ACTION/RESPONSE:

The applicant, as Unit Operator (UO), was expected to respond to an RWST Low Level Alarm in accordance with alarm response procedure ALB06-E04, recognize that the automatic action for the RWST Sludge Mixing Tank did not occur, and take manual action to shut the RWST Sludge Mixing Isolation Valve(s) on the QPCP.

APPLICANT ACTION/RESPONSE:

The applicant pulled the associated alarm response procedure for ALB06-E04 but failed to recognize that the associated valves listed to close as an automatic action were located in the Control Room on the QPCP. The entire crew, including the applicant, allowed the RWST leak to continue for approximately 19 minutes when the only action required to isolate the leak was closing the sludge mixing isolation valves, which should have been verified closed as part of performing the alarm response procedure associated with ALB06-E04.

Later, the Senior Reactor Operator (SRO) directed the UO to review the SI OP (Operation Procedure), 131050-1, for guidance steps on how to secure the RWST Sludge Mixing Tank System. The UO reviewed procedure 131050-1, Rev. 52, section 4.2.7 for "Operating the RWST Sludge Mixing System" and incorrectly informed the SS that the SI OP did not give any direction for isolating the sludge mixing tank. In fact, procedure 13105-1, Steps 4.2.7.3 – 4.2.7.5, gave direction to stop the sludge mixing pump and then close the sludge mixing isolation valves.

The SRO identified that the valves were located on the QPCP by using the P&ID prints and informed the UO to secure the isolation valves. The UO at that time closed the sludge mixing tank valves at the QPCP. Subsequently, the sludge mixing tank pump automatically tripped. The UO failed to recognize that the steps for isolating the RWST Sludge Mixing Tank were in the SI OP procedure.

The applicant made one non-critical error in this rating factor; therefore, a score of "2" was assigned.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a weakness in locating the appropriate SI OPS procedure section for isolating the sludge mixing tank system.

CROSS REFERENCE:

3.a: Control Board Operations – Locate & Manipulate

SCENARIO/EVENT:

Scenario 7, Event 6: RWST Sludge Mixing Line Pipe Break With Failure to Automatically Isolate

EXPECTED ACTION/RESPONSE:

The applicant, as Unit Operator (UO), was expected to respond to a RWST Low Level Alarm in accordance with alarm response procedure ALB06-E04, recognize that the automatic action for the RWST Sludge Mixing Tank did not occur and take manual action to shut the RWST Sludge Mixing Isolation Valve(s) on the QPCP.

APPLICANT ACTION/RESPONSE:

The applicant pulled the associated alarm response procedure for ALB06-E04 but failed to recognize that the associated valves listed to close as an automatic action were located in the Control Room on the QPCP. The entire crew, including the applicant, allowed the RWST leak to continue for approximately 19 minutes when the only action required to isolate the leak was closing the sludge mixing isolation valves, which should have been verified closed as part of performing the alarm response procedure associated with ALB06-E04.

The SS identified that the valves were located on the QPCP by using the P&ID prints and informed the UO to secure the isolation valves. The UO at that time closed the sludge mixing tank valves at the QPCP. Subsequently, the sludge mixing tank pump automatically tripped.

The applicant made one non-critical error in this rating factor; therefore, a score of "2" was assigned.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a weakness in locating the sludge mixing isolation valve switches.

CROSS REFERENCE:

3.b: Control Board Operation – Understanding

SCENARIO/EVENT:

Scenario 3, Event 4: Controlling Pressurizer Pressure Channel PT-455 Failed High

EXPECTED ACTION/RESPONSE:

The applicant, as Reactor Operator (RO), was expected to perform steps of procedure 18001-C, "Systems Instrumentation Malfunction," Section C, to gain control of pressurizer pressure, select an unaffected channel on PS-455F, and return pressurizer pressure control to automatic. The applicant was not expected to maintain manual control of pressurizer heaters when the pressurizer pressure control system was functioning properly following the selection of an unaffected channel.

APPLICANT ACTION/RESPONSE:

When the Senior Reactor Operator (SRO) directed the applicant to place heaters in automatic, he informed the SRO that he could not maintain his pressure band while in automatic. The SRO stated at this time, "I do not think heaters are operating properly." A few minutes later the SRO again informed the RO that he could place the pressurizer heaters in automatic. Instead, the applicant placed the "A" backup heaters to ON. The applicant controlled pressurizer heaters in manual for the remainder of the scenario. The applicant was downgraded in this competency because the pressurizer pressure control system was functioning properly after the unaffected channel was selected. The applicant chose not to return heaters to automatic per 18001-C, Step C8.b.

The applicant made two non-critical errors in this rating factor; therefore, a score of "1" was assigned.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a weakness in his understanding that the pressure control system, including the pressurizer heaters, were working as designed after the selection of an unaffected channel.

CROSS REFERENCE:

3.b: Control Board Operation – Understanding

SCENARIO/EVENT:

Scenario 3, Event 7: DBA Steam Generator Tube Rupture on SG #1

EXPECTED ACTION/RESPONSE:

The applicant, as Reactor Operator (RO), was expected to block the low steam line pressure SI/SLI when pressurizer pressure was less than 2000 psig as indicated by the P-11 status lights in accordance with procedure 19030-C, "E-3 Steam Generator Tube Rupture," Step 12.

APPLICANT ACTION/RESPONSE:

The applicant was directed by the Senior Reactor Operator (SRO) to block SI/SLI at approximately 2007 psig when pressurizer pressure was still above the required interlock setpoint of ~ 2000 psig. The applicant attempted to block SI/SLI but was not successful. At the time the SRO gave the direction to block SI/SLI, the P-11 status light was lit, indicating that SI/SLI could not be blocked. The applicant failed to recognize that the P-11 status light provided another mechanism to verify if the interlock condition was met to block SI/SLI. A few minutes later, the applicant successfully blocked SI/SLI. The applicant was downgraded in this competency because he did not verify or provide feedback to the SRO that pressurizer pressure was above 2000 psig when first attempting to block SI/SLI.

The applicant made two non-critical errors in this rating factor; therefore, a score of "1" was assigned.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a weakness in his understanding of system operation and interlocks that allow operation of the SI/SLI block.

CROSS REFERENCE:

4.a: Communications – Provide Information

SCENARIO/EVENT:

Scenario 6, Event 1: ACCW Pump #1 Locked Rotor With Failure of the Standby ACCW Pump to Automatically Start

EXPECTED ACTION/RESPONSE:

The applicant, as Unit Operator (UO), was expected to enforce proper three way communication of technical data in accordance with the three-way communication standards stated in procedure 00004-C, "Plant Communications," Revision 9.5. Specifically, during this event, when the applicant stated that alarms were consistent with the failure of the ACCW pump malfunctions, it was expected that the Senior Reactor Operator (SRO) repeat the information and the applicant complete the communication by stating that the repeated information was correct.

APPLICANT ACTION/RESPONSE:

The applicant clearly stated to the SRO that the alarms were consistent with the ACCW pump malfunctions, but the SRO did not repeat the information. The applicant did not ensure that the SRO correctly received the information by forcing a repeat back of the information.

The applicant made one non-critical error in this rating factor; therefore, a score of "2" was assigned.

LACK OF ABILITY/KNOWLEDGE:

The applicant demonstrated a weakness in his ability to correctly transmit technical information to the SRO.

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

Facility: Vogtle Scenario No.: 3 Op-Test No.: 2012-301

Examiners: Mark Bates Operators: Marlissa Smith (SRO) T
Phil Capehart [redacted] (OATC) N
N/A [redacted] (BOP)

Initial Conditions: The plant is at 100% power, MOL, steady state operations.
(Base IC # 14, snapped to IC # 183 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:

TU10B Main Turbine EHC Pump B Auto Start Failure

Overrides

HS-3009 OPEN (Panel Map B-Left, HS-3009 LP-1 MS SPLY to AFW TD PMP-1 to OPEN)

Event No.	Malf. No.	Event Type*	Event Description
T1	SG02D @ 100%	I-UO I-SS TS-SS	SG # 4 NR LT fails high (LT-554). **LCO 3.3.1 Condition A** **LCO 3.3.1 Condition A, FU 13 Condition E** **LCO 3.3.2 Condition A** **LCO 3.3.2 Condition A, FU 5c Condition I** **LCO 3.3.2 FU 6b Condition D**
T2	CV08 @ 25%	C-OATC C-SS TS-SS	CVCS Letdown Leak ORC (Aux. Building – Isolable).
3	N/A	N-OATC N-SS	Places Excess Letdown in service.
T4	PR02A @ 100%.	I-OATC I-SS TS-SS	Controlling PRZR Pressure channel PT-455 fails high. **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 (One hour action),** **LCO 3.4.1.a Condition A**
T5	TU11	C-UO C-SS	Main Turbine EHC Pump A trips with failure of standby EHC pump to automatically start.

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

Event No.	Malf. No.	Event Type*	Event Description
T6	SG01A @3%	R-OATC N-UO R-SS TS-SS	Steam Generator # 1 10 gpm SGTL requiring a rapid down power. **LCO 3.4.13 Condition A**
T7	SG01A @ 45% Ramp 180 seconds	M-ALL	DBA SGTR on SG # 1 (~450 gpm)
8	Preload **Critical**	C-UO C-SS	TDAFW steam supply valve from SG # 1 will not manually close requiring closure of TDAFW Trip and Throttle valve to isolate SG # 1.
T9	PR07 @ 80% **Critical**	C-OATC C-SS	PRZR spray valve loop 4 fails 80% open after maximum rate depressurization of RCS when OATC attempts to shut the valve.

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

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

Examiners: MARK BATES
MICHAEL MEEKS
PHIL CAPEHART

Operators: Charlissa Smith (SRO) T
[redacted] (OATC) V
[redacted] (LUO) N

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.	Malf. 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. **LCO 3.3.1, Condition A, FU 6, 7 Condition E and LCO 3.3.2 Condition A, FU 5b Condition I**
T3	RM-006	TS-SS	Cnmt Bldg Oper Lev Rad – hi Range, RE-006 fails to 100%. **LCO 3.3.3 Condition A, FU 14, Condition B**

Event No.	Malf. 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. **LCO 3.3.1 Condition A, FU 9, Condition M** **INFO LCO 3.3.3 FU 6** **LCO 3.3.4 Condition A, FU 8**
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
Mark Bates
Phil Capehart

Operators: [redacted] (SRO) V
[redacted] (OATC) T
[redacted] (UO) N

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.	Malf. 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.

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 **LCO 3.7.9 Ultimate Heat Sink (UHS) Condition 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. **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**
T6	RF TK02 95-88% 1200 sec ramp	C-UO C-SS TS-SS	RWST sludge mixing line pipe break with auto closure failure. **LCO 3.5.4 Condition B and Condition D (1 hour action)** **TR 13.1.7 Condition D (Immediate TR action)**
T7	FW04C	C-OATC	MFRV # 3 fails shut, requiring reactor trip, 3 stuck rods.
10	Preload	C-OATC C-SS	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 **Critical**	CVI actuation failure requiring manual alignment.
12	Preload	C-UO C-SS **Critical**	Main Steam Line Auto Actuation Failure

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