UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE NE, SUITE 1200
ATLANTA, GEORGIA 30303-1257

July 16, 2014

Southern Nuclear Operating Company, Inc.
Vogtle Electric Generating Plant
ATTN: Mr. Tom E. Tynan
Vice President
7821 River Road
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT UNITS 1 AND 2—NRC OPERATOR LICENSE EXAMINATION REPORT 05000424/2014301 AND 05000425/2014301

Dear Mr. Tynan:

During the period May 12–15, 2014 the Nuclear Regulatory Commission (NRC) administered operating tests to employees of your company who had applied for licenses to operate the Vogtle Electric Generating Plant Units 1 and 2. At the conclusion of the tests, the examiners discussed preliminary findings related to the operating test and the written examination submittal with those members of your staff identified in the enclosed report. The written examination was administered by your staff on May 29, 2014.

All applicants passed both the operating test and written examination. There were 11 post-administration comments concerning the operating test. These comments, and the NRC resolution of these comments, are summarized in Enclosure 2. A Simulator Fidelity Report is included in Enclosure 3.

The initial examination submittal was within the range of acceptability expected for a proposed examination. All examination changes agreed upon between the NRC and your staff were made according to NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of the NRC's document system (ADAMS). ADAMS is accessible from the NRC Website at http://www.nrc.gov/reading-rm.adams.html (the Public Electronic Reading Room).

If you have any questions concerning this letter, please contact me at (404) 997-4662.

Sincerely,

/RA/

Eugene F. Guthrie, Chief
Operations Branch 2
Division of Reactor Safety

Docket Nos: 50-424, 50-425
License Nos: NPF-68, NPF-81

Enclosures: 1. Report Details
2. Facility Comments and NRC Resolution
3. Simulator Fidelity Report

cc: Distribution via Listserv

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Distribution:

Southern Nuclear Operating Company, Inc.
ATTN: Mr. Charlie Nesbitt
Training Director
Vogtle Electric Generating Plant
7821 River Road
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Waynesboro, GA 30830-2965

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U.S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No.:	50-424, 50-425
License No.:	NPF-68, NPF-81
Report No.:	05000424/2014301 and 05000425/2014301
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Electric Generating Plant Units 1 and 2
Location:	Waynesboro, GA 30830
Dates:	Operating Test—May 12–15, 2014 Written Examination—May 29, 2014
Examiners:	J. Amanda Toth, Chief Examiner, Senior Operations Engineer M. Donithan, Operations Engineer A. Goldau, Operations Engineer
Approved by:	Eugene F. Guthrie, Chief Operations Branch 2 Division of Reactor Safety

SUMMARY

ER 05000424/2014301, 05000425/2014301, Operating Test May 12–15, 2014 & Written Exam May 29, 2014; Vogtle Electric Generating Plant Units 1 and 2; Operator License Examinations.

Nuclear Regulatory Commission (NRC) examiners conducted an initial examination in accordance with the guidelines in Revision 9, Supplement 1, of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." This examination implemented the operator licensing requirements identified in 10 CFR §55.41, §55.43, and §55.45, as applicable.

Members of the Vogtle Electric Generating Plant Units 1 and 2 staff developed both the operating test and the written examination. The initial operating test, written RO examination, and written SRO examination submittals met the quality guidelines contained in NUREG-1021.

The NRC administered the operating test during the period of May 12–15, 2014. Members of the Vogtle Electric Generating Plant Units 1 and 2 training staff administered the written examination on May 29, 2014. All applicants passed both the operating test and written examination. All applicants were issued licenses commensurate with the level of examination administered.

There were 11 post-examination comments.

No findings were identified.

REPORT DETAILS

4. OTHER ACTIVITIES

4OA5 Operator Licensing Examinations

a. Inspection Scope

The NRC administered the operating test during the period of May 12–15, 2014. The NRC examiners evaluated one Reactor Operator (RO) and six Senior Reactor Operator (SRO) applicants using the guidelines contained in NUREG-1021. One RO applicant received a waiver of the operating test. Members of the Vogtle Electric Generating Plant Units 1 and 2 training staff administered the written examination on May 29, 2014 to two RO and six SRO applicants. Evaluations of applicants and reviews of associated documentation were performed to determine if the applicants, who applied for licenses to operate Vogtle Electric Generating Plant Units 1 and 2, met the requirements specified in 10 CFR Part 55, "Operators' Licenses."

The NRC evaluated the submitted operating test by combining the scenario events and JPMs in order to determine the percentage of submitted test items that required replacement or significant modification. The NRC also evaluated the submitted written examination questions (RO and SRO questions considered separately) in order to determine the percentage of submitted questions that required replacement or significant modification, or that clearly did not conform with the intent of the approved knowledge and ability (K/A) statement. Any questions that were deleted during the grading process, or for which the answer key had to be changed, were also included in the count of unacceptable questions. The percentage of submitted test items that were unacceptable was compared to the acceptance criteria of NUREG-1021, "Operator Licensing Standards for Power Reactors."

The NRC reviewed the licensee's examination security measures while preparing and administering the examinations in order to ensure compliance with 10 CFR §55.49, "Integrity of examinations and tests."

The NRC evaluated the performance and fidelity of the simulation facility during the preparation and conduct of the operating test.

b. Findings

No findings were identified.

The NRC developed the written examination sample plan outline. Members of the Vogtle Electric Generating Plant Units 1 and 2 training staff developed both the operating test and the written examination. All examination material was developed in accordance with the guidelines contained in Revision 9, Supplement 1, of NUREG-1021. The NRC examination team reviewed the proposed examination. Examination changes agreed upon between the NRC and the licensee were made per NUREG-1021 and incorporated into the final version of the examination materials.

Using NUREG-1021, the NRC determined that the licensee's initial examination submittal was within the range of acceptability expected for a proposed examination.

One RO applicant and six SRO applicants passed both the operating test and written examination. One RO applicant received a waiver of the operating test and passed the written examination. All applicants were issued licenses.

Copies of all individual examination reports were sent to the facility Training Director for evaluation of weaknesses and determination of appropriate remedial training.
The licensee submitted 11 post-examination comments concerning the operating test. A copy of the final written examination and answer key may be accessed not earlier than May 31, 2016 in the ADAMS system (ADAMS Accession Numbers ML14170A742, ML14170B026). A complete text of the licensee's post-examination comments can be found in ADAMS under Accession Number ML14170A073.

4OA6 Meetings, Including Exit

Exit Meeting Summary

On May 15, 2014, the NRC examination team discussed generic issues associated with the operating test with Mr. Charlie Nesbitt, Training Director, and members of the Vogtle Electric Generating Plant Units 1 and 2 staff. The examiners asked the licensee if any of the examination material was proprietary. No proprietary information was identified.

KEY POINTS OF CONTACT

Licensee personnel
J. Acree, Operations Training Manager
M. Brown, Assistant Training Director
R. Dorman, Operations Shift Manager, ILT-19 Class Mentor
T. Harris, Initial License Training Supervisor
F. Howard, ILT-19 Class Mentor
K. Jenkins, Exam Writer
K. Lewis, Operations Training Coordinator
K. Morrow, Licensing Engineer
C. Nesbitt, Training Director
A. Sweat, Lead Exam Writer
J. Todd, Operations Director

FACILITY POST-EXAMINATION COMMENTS AND NRC RESOLUTIONS

A complete text of the licensee's post-examination comments can be found in ADAMS under Accession Number ML14170A073.

Post Exam Comment #1

Item

Scenario 2, Event 1: Atmospheric Relief Valve (ARV), 1PV-3030 fails open on Loop #4

Scenario 2, Event 6: Loss of 1AA02 due to fault on bus

Licensee Comment

In Simulator Scenario #2, while in Mode 1, Loop #4 ARV, 1PV-3030, failed open and was manually closed by the crew. Subsequently, 1AA02 de-energized due to a fault on the bus.

The Scenario Guide states the following Tech Specs are required to be entered when 1AA02 is de-energized and DG1A is emergency tripped:

Tech Spec LCO 3.8.1, AC Electrical Sources—Operating, Cond. A, B, and E Tech Spec LCO 3.8.9, Distribution Systems—Operating, Cond. A

Based on the given conditions, is Tech Spec LCD 3.7.4, Atmospheric Relief Valves (ARVs), Cond B, required to be entered?

Licensee Discussion / Justification

Candidates are expected to address only base LCO entries and not to perform an extensive LOSF evaluation during simulator scenarios. The ability to perform formal LOSF evaluations is tested using Admin JPMs and the candidate would be provided 10008-C, "Recording Limiting Conditions for Operation." Candidates are expected to recognize the existence of a significant LOSF due to multiple failures in the simulator and ensure LCO completion times more conservative than the base LCO are met.

Per Tech Spec LCO 3.0.6, when a supported system LCO is not met solely due to a support system LCO not being met, the Conditions and Required Actions associated with this supported system are not required to be entered. Only the support system LCO ACTIONS are required to be entered. This is an exception to LCO 3.0.2 for the supported system. In this event, additional evaluations and limitations may be required in accordance with Tech Spec 5.5.15, "Safety Function Determination Program (SFDP)." If a loss of safety function is determined to exist by this program, the appropriate Conditions and Required Actions of the LCO in which the loss of safety function exists are required to be entered.

Per Tech Spec LCO 3.7.4, Atmospheric Relief Valves (ARVs), Bases, the analysis assumes three ARVs are OPERABLE at the start of the event. One of the ARVs is on the ruptured SG, another ARV is assumed to fail to open, and the remaining ARV is used to perform the RCS cooldown. However, there is also a scenario where the limiting single failure is the loss of control power for the two remaining ARVs. In this case, the ARVs cannot be controlled from the control room to initiate cooldown. The ARVs are equipped with local hand pumps that can be used to open them manually. Given a tube rupture on one of the steam generators with an operable ARV, and the limiting single failure being a loss of control power to the remaining operable ARVs, only one ARV must be capable of being manually actuated using its hand pump. If the ARV on the ruptured generator also has one of the functional

hand pumps, then only one of the remaining ARVs needs have a functional hand pump in order to meet the safety analysis.

Since the electrical failure is bounded by LCO 3.7.4 Bases and the hand pump operation was unaffected, no LOSF exists as a result of this failure. Therefore, the ARV is declared inoperable, but the actions for LCO 3.7.4 are not taken as stated in LCO 3.0.6. The support system LCO completion times are more conservative and bound the supported system. It is consistent with training and simulator performance on similar failures to not list the supported LCOs as described above. Candidates are not expected to list nor take the actions of these supported system LCOs. If a candidate lists these supported system LCOs, it is not incorrect—it is simply not necessary.

Licensee Recommendation

Based on the discussion above, the licensee does NOT recommend adding Tech Spec LCO 3.7.4, Atmospheric Relief Valves (ARVs), Cond. B, to the Scenario #2 Guide list of Tech Specs required to be entered. Additionally, add a note to the examiner to indicate that supported systems are inoperable, but their associated required action statements are not required to be entered.

NRC Discussion

The first event in the scenario resulted in a failure of the Loop #4 ARV. Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.4 was met, because the requirement to have three operable ARVs was still met. Later in the scenario, the loss of 1AA02 resulted in entry into action statements for TS LCO 3.8.1 Conditions A/B/C and 3.8.9 Condition A. The impact of the loss of 1AA02 on the ARVs was that ARVs #1 and #4 no longer had 480V power to their motor operated valves (MOVs), and therefore could not be operated from the control room. However, while ARV #4 was still inoperable as a result of scenario 2 event 1, ARV #1 was still operable per the Basis for TS 3.7.4, in that it still had the ability to be manually cycled via local hand pump operation. Thus, there were still three operable ARVs, two of which had the ability to be manually cycled from the control room.

NRC Resolution

The NRC agrees with the facility recommendation to leave TS 3.7.4 Cond B off the list of those TS requiring entry. However, the NRC finds that entry into TS 3.7.4 Cond B would be wrong for this scenario.

Post Exam Comment #2

Item

Scenario 2, Event 6: Loss of 1AA02 due to fault on bus

Licensee Comment

In Simulator Scenario #2, while in Mode 1, 1AA02 de-energizes due to a fault on the bus. The Scenario Guide and 18031-C, "Loss of Class 1E Electrical Systems," Step A17 state:

A17. Verify battery charger in service for non-1E batteries:

- ND1
- ND2
- ND3A
- ND3B

The Scenario Guide states ND1 and ND3A will not have battery chargers in service and that the crew will dispatch operators to place the required ND1 and ND3A battery chargers in service.

Based on the given conditions, what are the primary loads supplied by ND1 and ND3A, and what are the potential consequences if the battery chargers are not placed in service? Additionally, would this constitute a critical task per NUREG 1021, Appendix D, which states, "Examples of CTs involving essential safety actions include those for which a crew demonstrates the following abilities: take one or more actions that would prevent a challenge to plant safety?"

Licensee Discussion / Justification

An extensive review of all loads associated with 1ND1 and 1ND3A was made on one-line drawings 1X3D-AA-H03A, H03C, H07A, H07B, F28A, G02B, and G058, and utilizing Switchgear Notes. No supplied equipment was found that would place the plant in a significant transient or significantly challenge power operation.

- 1ND1 provides power to the Turbine Generator backup seal oil pump.
- 1ND3A loads all have redundant power supplies from regulating transformers that auctioneer with the exception on 1ND31 and 1ND33.
- 1ND31 loads:
  - Control power to non-1E switchgear.
  - Various non-1E air operated valves that fail closed.
  - Some non-1E alarms functions.
- 1ND33 loads:
  - Control power to non-1E switchgear.

Licensee Recommendation

Based on review of the associated load, the licensee does NOT recommend revising the Scenario #2 Guide to indicate placing the ND1 and ND3A battery chargers in service is a critical task.

NRC Discussion

18031-C, “Loss of Class 1E Electrical Systems,” step A17 requires battery chargers be placed in service for non-1E batteries. In the scenario, the battery chargers for 1ND1 and 1ND3A were not in service, and the batteries were discharging to maintain the loads they supplied.

NUREG 1021, Appendix D (“Simulator Testing Guidelines”), D.1.a (“Critical Task Methodology, Identification of Critical Tasks—Safety Significance”) states:

> In reviewing each proposed CT, assess the task to ensure that it is essential to safety. A task is essential to safety if its improper performance or omission by an operator will result in direct adverse consequences or significant degradation in the mitigative capability of the plant.

The loss of the loads that are supplied by batteries 1ND1 and 1ND3A would not significantly complicate the recovery effort if batteries 1ND1 and 1ND3A fully discharged. Additionally, the batteries would not be expected to fully discharge during the time-frame of the scenario. The NRC agrees with the licensee that placing the battery chargers in service for 1ND1 and 1ND3A does not meet the criteria specified in Appendix D of NUREG 1021 for classification as a critical task.

NRC Resolution

The NRC accepts the licensee's comment, and the guide for Scenario #2 will remain unchanged with respect to performance of step A17 of 18031-C.

Post Exam Comment #3

Item

Scenario 2, Event 6: Loss of 1AA02 due to fault on bus

Licensee Comment

In Simulator Scenario #2, while in Mode 1, 1AA02 de-energizes due to a fault on the bus. DG1A starts, but its output breaker does not close due to the 1AA02 bus fault.

The Scenario Guide states the crew will emergency trip DG1A at Step 4 of 18031-C, "Loss of Class 1E Electrical Systems."

Based on the given conditions, what are the potential consequences of allowing DG1A to run with its output breaker open until ALB35-C04, DG1A HI TEMP JACKET WATER OUT, is received? Additionally, would this constitute a critical task per NUREG 1021, Appendix D, which states, "Examples of CTs involving essential safety actions include those for which operation or correct performance prevents the following: degraded emergency core cooling system (ECCS) or emergency power?"

Licensee Discussion / Justification

Per the System Engineer, the EDGs are designed to operate for 3 minutes, fully loaded, with no NSCW flow through the jacket water heat exchanger without exceeding any temperature limitations. Per ARP 17035-1, ALB35-C04 alarms at 195F, and a NOTE for the annunciator indicates the EDG will trip at 200F if in normal mode. If an emergency start signal is present, ALB35-C05, DG1A TRIP HI TEMP JACKET WATER, will annunciate, but the EDG will not trip.

Since the EDG output breaker was open, the EDG was running unloaded. The minimal heat input would greatly extend the allowable run time, although no calculations exist to determine the exact time/temperature relationship. Since the EDG was stopped prior to ALB35-C05 alarming, the automatic trip setpoint had not been reached.

Furthermore, since 1AA02 was faulted, it would not have constituted a possible recovery path. If the EDG were allowed to run until damage had occurred, the loss of the EDG would not increase the degradation of the ECCS or Electrical system because that portion of the Electrical system was already lost. Therefore, stopping the EDG does not constitute a critical task per NUREG 1021, Appendix D.

Licensee Recommendation

Based on the discussion above, the licensee does NOT recommend revising the Scenario #2 Guide to designate tripping DG1A by the crew to be a critical task.

NRC Discussion

18031-C, "Loss of Class 1E Electrical Systems," step 4RNO requires the affected emergency diesel generator (DG1A) to be emergency tripped, since it started but did not tie to the bus due to a fault on the bus. Additionally, since an emergency start signal was present, the EDG would have been prevented from automatically tripping upon receipt of ALB35-C05.

> NUREG 1021, Appendix D ("Simulator Testing Guidelines"), D.1.a ("Critical Task Methodology, Identification of Critical Tasks-Safety Significance") states:
> In reviewing each proposed CT, assess the task to ensure that it is essential to safety. A task is essential to safety if its improper performance or omission by an operator will result in direct adverse consequences or significant degradation in the mitigative capability of the plant.

Additionally, NUREG 1021, Appendix D, D.1.a states:

> Examples of CTs involving essential safety actions include those for which operation or correct performance prevents the following:
>
> - degraded emergency core cooling system (ECCS) or emergency power capacity

The loss of an EDG, in general, would be safety significant. Reaching the 200F trip setpoint without operator action to emergency trip the EDG (because with an emergency start signal present, the EDG will not automatically secure) could result in damage to the EDG, and would normally meet the criteria in Appendix D for a critical task. However, *in this scenario*, the fault was on 1AA02, and DG1A could not have supplied power to the bus. Thus, even if DG1A had reached 200F, the loss of DG1A would not have complicated the recovery effort *in this specific scenario*.

NRC Resolution

The NRC accepts the licensee's comment, and the guide for Scenario #2 will remain unchanged with respect to emergency tripping DG1A.

Post Exam Comment #4

Item

Scenario 4, Event 5: SG Pressure Instrument PI-525A fails low

Licensee Comment

In Simulator Scenario #4, while in Mode 1, 1PT-525, Steam Generator Pressure, fails low. This is the only steam generator pressure instrument failed.

The Scenario Guide states the following Tech Specs are required to be entered for this instrument failure:

3.3.2, ESFAS Instrumentation, Fu 1.e, Cond. D.
3.3.3, Post Accident Monitoring Instrumentation, Fu 8, Cond. 8, G, H, I. (INFO only)
3.3.4, Remote Shutdown System, Fu 13, Cond A

Based on the given conditions, is Tech Spec LCD 3.3.2, ESFAS Instrumentation, Fu 4.d.(1), Cond. D, and Fu 4.d.(2), Cond. D, required to be entered?

Licensee Discussion / Justification

A review of the scenario indicates that all the correct Tech Specs were listed for the specific event on Form ES-D-2, but not all were included in the Scenario Outline, Form ES-0-1.

On Page 2 of 2 of Form ES-D-2 for Event #5 (Step # F8):

- Reference Tech Specs for ESFAS Instrumentation, PAMS Instrumentation, and Remote Shutdown Instrumentation.
  - LCO 3.3.2, Fu 1e, Condition D

- LCO 3.3.2, Fu 4d(1), Condition D
- LCO 3.3.2, Fu 4d(2), Condition D
- LCO 3.3.3, Fu 8, Condition B
- LCO 3.3.4, Fu 13, Condition A

Licensee Recommendation

The licensee recommends adding Tech Spec LCO 3.3.2, ESFAS Instrumentation, Fu 4.d.(1), Cond. D, and Fu 4.d.(2), Cond. D, to the Scenario #4 Outline, Form ES-D-1, list of Tech Specs required to be entered for Event 5.

NRC Discussion

NUREG 1021 Appendix D ("Simulator Testing Guidelines"), B.3 ("Integrated Scenario Development—Select and Document Events") states:

> For each event listed on Form ES-D-1, prepare a Form ES-D-2, "Required Operator Actions" (or equivalent), by entering the scenario, event, and page numbers and a brief description of the event at the top of the form.
>
> Every required operator action should be included on Form ES-D-2; this is particularly important for the critical tasks (refer to Section D, "Critical Task Methodology") and other verifiable actions and behaviors that will provide a useful basis for evaluating the operators' competence.

The inclusion of an event's TS on the D-1 form, while helpful, is not required. The NRC recognizes that the licensee included TS 3.3.2, ESFAS Instrumentation, Fu 4.d.(1) Condition D, and Fu 4.d.(2) Condition D on the D-2 form for Event #5, but did not include them on the D-1 form. This oversight is administrative in nature, and administratively adding them to the D-1 form does not constitute a change in the scenario guide. However, while reviewing the modes of applicability for Fu 4.d.(2), it was determined that Fu 4.d.(2) did not apply due to the event being outside the mode of applicability.

NRC Resolution

The NRC accepts a portion of the licensee's comment: LCO 3.3.2, Fu 4d(1), Condition D will be administratively added to the D-1 form (pen-and-ink change) for consistency, and LCO 3.3.2, Fu 4d(2), Condition D will be removed from the D-2 form (pen-and-ink change).

Post Exam Comment #5

Item

Scenario 4, Event 7: Loop #4 Bypass Feed Regulating Valve (BFRV) fails closed

Licensee Comment

In Simulator Scenario #4, while in Mode 1, the Loop #4 BFRV fails to control in automatic. The BFRV can be controlled successfully when taken to manual.

The Scenario Guide states no Tech Specs apply for this condition.

Based on the given conditions, is Tech Spec LCO 3.7.3, MFIVs and MFRVs and Associated Bypass Valves, Cond. C, *required to be entered?*

Licensee Discussion / Justification

The solenoid valve that vents air and allows the BFRV valves to close automatically on a FWI signal is upstream of the control air functions. Therefore, the isolation function will still occur. However, the specific knowledge of the failure mechanism is not known to the candidate at the time of failure. As such, the Operability Determination process is entered per NMP-AD-012, "Operability Determinations and Functionality Assessments." A component remains operable as long as a reasonable expectation of operability remains.

NMP-AD-012 states a subsequent determination of operability should be based on the licensee's "reasonable expectation," from the evidence collected, that the Systems, Structures, or Components (SSCs) are operable and that the Operability Determination will support that expectation. Reasonable expectation does not mean absolute assurance that the SSCs are operable. The SSCs may be considered operable when there is evidence that the possibility of failure of an SSC has increased, but not to the point of eroding confidence in the reasonable expectation that the SSC remains operable. The supporting basis for the reasonable expectation of SSC operability should provide a high degree of confidence that the SSCs remain operable. It should be noted that the standard of "reasonable expectation" is a high standard, and that there is no such thing as an indeterminate state of operability; an SSC is either operable or inoperable.

Without the specific information needed for the operability call and the BFRV control failure, it is understandable that a candidate would conclude that reasonable expectation of operability no longer existed, and concurrent with NMP-AD-012 guidance, immediately declare the BFRV inoperable.

Licensee Recommendation

The licensee recommends adding Tech Spec LCO 3.7.3, MFIVs and MFRVs and Associated Bypass Valves, Cond. C, to the Scenario #4 Guide list of Tech Specs with a note to the examiner indicating the candidate may enter LCO 3.7.3 if the operability of the BFRV is in question (awaiting an operability determination).

NRC Discussion

Event 7 of the scenario resulted in Loop #4 BFRV failing to control in automatic with the valve travelling in the shut direction (the malfunction was that the valve failed closed while the controller was selected to “Automatic”). The failure mechanism was such that the BFRV could be controlled successfully in manual. According to the basis for TS 3.7.3, the Main Feed Isolation Valves (MFIVs) and Main Feed Regulating Valves (MFRVs), and their associated bypass valves, are considered OPERABLE when isolation times are within limits and capable of closing on an isolation actuation signal. The Loop #4 BFRV still operated in manual, and the solenoid valve that vents air and allows the BFRV to isolate on a Feedwater Isolation (FWI) signal is separate from the control air function for the BFRV. Since NMP-AD-012 states that determination of operability should be based on the licensee’s “reasonable expectation” from the evidence collected, it would not be reasonable to conclude that both the control air valve and the solenoid valve associated with FWI failed, especially given indication that the Loop #4 BFRV operated in manual.

NRC Resolution

The NRC rejects the licensee’s comment, and the guide for Scenario #4 will remain unchanged with respect to entry into TS 3.7.3 Condition C.

Post Exam Comment #6

Item

Simulator JPM 'a': Perform a Manual Makeup to the VCT

Licensee Comment

In Simulator JPM 'a', "Perform a Manual Makeup to the VCT," the candidate is directed to raise VCT level from 32% to 50%. JPM 'a', Step 2, is a critical step that reads:

> NOTE
> Volumetric change in VCT is equal to 19.2 gallons per percent change in level.

4.6.1.1 Set TOTAL MAKEUP Integrator 1-FQI-0111 to the desired amount of Total Makeup Water.

Standard: Candidate reviews CAUTIONS and NOTE and calculates the total makeup required to raise VCT level from 32% to 50% (18%) using: (19.2 gallons / % x 18% = 345.6 gallons) and sets 1-FQI-0111 to 345 – 346 gallons by depressing the gray pushbutton under the digit to be changed (red pushbutton will reset reading to all zeros).

Based on the given conditions, does rounding the calculated value to 350 gallons meet the expectation for completion of this step?

Licensee Discussion / Justification

Rounding the total required makeup up to 350 gallons is an acceptable practice. The additional 4.4 gallons would have resulted in a VCT level change from 50% to 50.2%, which is neither significant nor detectable using QMCB indication.

Licensee Recommendation

To more closely represent the initiating cue of raising VCT level from 32% to 50%, the licensee recommends revising Simulator JPM 'a', Step 2, Standard to a new range of 326.4–364.8 gallons of makeup to be added, which is equivalent to 50±1% VCT level change.

NRC Discussion

NUREG 1021 Appendix C ("Job Performance Measure Guidelines"), B.3 ("Developing and Reviewing JPMs—Develop Performance Criteria") states:

> The JPM must clearly identify the task standard (i.e., the predetermined qualitative and/or quantitative outcome) against which task performance will be measured. Every procedural step that the examinee must perform correctly (i.e., accurately, in the proper sequence, and at the proper time) in order to accomplish the task standard shall be identified as a critical step and shall have an associated performance standard.

The task standard for Simulator JPM 'a', "Perform a Manual Makeup to the VCT," JPM step 2 directs the applicant to raise VCT level from 32% to 50%, and the standard includes a calculated value of 345.6 gallons as being required to accomplish the desired change in volume. The NRC understands that, if given the direction in the Control Room to raise VCT level to 50% (as given in the initiating cue), it would not be against the expectation of the Operations Department for the final volume of the VCT to be between 49% and 51%. The NRC agrees with

the facility that it is acceptable for the total allowable calculated volume for this step, in gallons, to reflect a VCT final volume in the range of 49–51%.

NRC Resolution

The NRC accepts the licensee's comment, and the performance standard for JPM step 2 will be revised to allow a range of 326.4–364.8 gallons of makeup water.

Post Exam Comment #7

Item

Simulator JPM 'a': Perform a Manual Makeup to the VCT

Licensee Comment

In Simulator JPM 'a', "Perform a Manual Makeup to the VCT," the candidate is directed to raise VCT level from 32% to 50%. JPM 'a', Step 3, is a critical step that reads:

4.6.1.2 Set BORIC ACID TO BLENDER Integrator 1-FQI-0110 to the amount of boric acid as follows:

a. Calculate estimated volume of boric acid using the following calculation.

Gallons of Boric Acid = $\frac{\text{Total M/U x RCS Cb}}{\text{BAST Cb}}$

Standard: Candidate reviews CAUTION and **correctly calculates amount of boric acid to add using the total makeup number calculated in Step 4.6.1.1 (345 – 346 gallons) and the equation:**

$\frac{\text{345.6 gallons x 907 ppm}}{\text{7000 ppm}}$ = 44.8 gallons (44.7 – 44.9 gallons)

Based on the given conditions and using 350 gallons from the previous step in the equation, is a value of 43.3 gallons of boric acid acceptable if the calculated value should be 45.35 gallons?

Licensee Discussion / Justification

Based on the discussion and recommendation of Post-Exam Comment #6, a value of 326.4 – 364.8 gallons of makeup is acceptable for satisfactory completion of Step 4.6.1.1. Therefore, the acceptable range for the completion of the calculation in Step 4.6.1.2 is ± 0.1 gallon based on the value determined in Step 4.6.1.1. As described in Post-Exam Comment #6, the acceptable range for Step 4.6.1.2 would be 45.35 ± 0.1 gallons using 350 gallons of boric acid in the calculation.

Licensee Recommendation

The licensee recommends revising Simulator JPM 'a', Step 3 Standard to indicate a range of ±0.1 gallons based on the total makeup value determined by the candidate in Step 4.6.1.1.

NRC Discussion

NUREG 1021 Appendix C ("Job Performance Measure Guidelines"), B.3 ("Developing and Reviewing JPMs—Develop Performance Criteria") states:

> The JPM must clearly identify the task standard (i.e., the predetermined qualitative and/or quantitative outcome) against which task performance will be measured. Every procedural step that the examinee must perform correctly (i.e., accurately, in the proper sequence, and at the proper time) in order to accomplish the task standard shall be identified as a critical step and shall have an associated performance standard.

The task standard for Simulator JPM 'a', "Perform a Manual Makeup to the VCT," JPM step 3 directs the applicant to calculate the required volume of boric acid for the total volume of makeup determined from the previous step. The existing standard includes an allowable calculated range of 44.7–44.9 gallons of boric acid, based on a calculation of 345.6 gallons of boric acid in the previous step. Based on the resolution to post exam comment #6, the NRC agrees that the calculated volume of boric acid may change, and the NRC agrees that ±0.1 gallon is an acceptable range for the calculated value. Moreover, in accordance with NMP-OS-006, "Operations Performance Indicators," addition of boric acid outside of this range in the actual plant would require screening in accordance with Attachment 1, "Reactivity Management—PWR," to determine if a Vogtle Performance Indicator threshold was exceeded due to a calculation error; therefore expansion of the boric acid band beyond this range would be unacceptable.

NRC Resolution

The NRC accepts the licensee's comment that a calculated value for volume of boric acid based on the total makeup volume determined in the previous JPM step, including a band of ±0.1 gallons, is acceptable. The task standard in simulator JPM 'a' will be annotated to reflect the allowance of a wider band from the previous JPM step (post exam comment #6). The intent of the JPM step remains unchanged.

Post Exam Comment #8

Item

Simulator JPM 'f': Synchronize Main Generator to the Grid

Licensee Comment

In Simulator JPM 'f', "Synchronize Main Generator to the Grid," the candidate is directed in Step 10 to:

> 4.1.3.8 Adjust Turbine speed using the INCREASE LOAD and DECREASE LOAD Pushbuttons until 1SI-40125 Pointer is rotating very slowly in FAST (clockwise) direction.
>
> **c. Verify the Synchroscope Pointer is rotating very slowly (approximately 10 to 15 second rotation) in the FAST (clockwise) direction.**
>
> ***CUE:*** ***"CV request is noted."***
>
> NOTE TO EXAMINER: Candidate may use INCREASE LOAD and/or DECREASE LOAD pushbuttons to adjust 1SI-40125 rotation speed.
>
> **Standard:** **Candidate verifies 1SI-40125 is rotating very slowly (~ 10 to 15 second rotation) in the FAST (clockwise) direction by adjusting turbine speed using the INCREASE and/or DECREASE LOAD pushbuttons as necessary.**

Simulator JPM 'f', Step 14, is a critical step that reads:

Based on the given conditions, what rotation speed in the FAST (clockwise) direction is acceptable to meet the intent of this step?

Licensee Discussion / Justification

Per NMP-AP-002, "SNC Fleet Procedures Writers' Guide," critical steps are procedure steps, series of steps, or actions that, if performed incorrectly, will cause irreversible, intolerable

harm to plant equipment, people, or significantly impact plant operation. The critical aspect of the task is the direction of rotation and the general speed of rotation. The generator auto-sync circuit is equipped with a sync check relay. When the sync scope rotation is correct and the rotation speed is within an allowable range, the AUTO SYNC PERMISSIVE LIGHT immediately below the sync scope illuminates when the sync scope reaches the 12 o'clock position. If any of the required parameters is not correct, this light will not illuminate and consequentially, the generator output breakers will not automatically close when the AUTO SYNC PERMISSIVE pushbutton is depressed. Since incorrect performance cannot close the generator output breakers, this cannot be a critical step.

Licensee Recommendation

A procedure revision suggestion for 13830-1/2, Step 4.1.3.10.c., has been submitted to remove the "critical" step designator (CR #822337).

The licensee recommends revising Simulator JPM 'f', Step 14 to remove the Critical Step designation. The licensee also recommends revising Simulator JPM 'f', Step 14, Standard to require rotation in the fast (clockwise) direction. Subsequent steps of the JPM will require checking the auto-sync relay scheme as indicated by the red indicating light lit and the output breaker closure.

NRC Discussion

NUREG 1021 Appendix C ("Job Performance Measure Guidelines"), B.3 ("Developing and Reviewing JPMs—Develop Performance Criteria") states:

> The JPM must clearly identify the task standard (i.e., the predetermined qualitative and/or quantitative outcome) against which task performance will be measured. Every procedural step that the examinee must perform correctly (i.e., accurately, in the proper sequence, and at the proper time) in order to accomplish the task standard shall be identified as a critical step and shall have an associated performance standard.

The NRC understands that the generator auto-sync circuit prevents closure of the generator output breakers if any of the required parameters are outside the range of acceptability. Additionally, since the synchroscope was already rotating in the correct direction, regardless of an applicant's manipulation of the speed of the synchroscope, the auto-sync circuit would prevent them from closing the generator output breaker inappropriately (i.e., if they tried to close the breaker when the required conditions were not met, the breaker would not close). As such, the NRC agrees that JPM step 14 should not be designated as a critical step. However, the procedure specifically gives a band of acceptability of 10–15 seconds per rotation, and regardless of an outstanding procedure revision request to remove the "Critical Step" notation in the procedure, the procedure used by the applicants in the performance of this JPM had the 10–15 second requirement that was annotated as a "Critical Step" in the procedure itself.

NRC Resolution

The NRC accepts the licensee's comment that JPM step 14 should be revised to remove the critical step designation, because there is no way to incorrectly perform the step (i.e., it is not "failable"). However, the NRC rejects the licensee's comment to revise the JPM step 14 task standard to simply require rotation in the fast direction, irrespective of rotation speed. The procedure the applicants were given specifies a rotation speed, and while the speed may not be critical, it is still a procedurally directed action.

Post Exam Comment #9

Item

Simulator JPM 'g': Manually Align Control Room Isolation on High Radiation

Licensee Comment

In Simulator JPM 'g', "Manually Align Control Room Isolation on High Radiation," high radioactivity levels are detected in the incoming duct for the Unit 1 Control Room (1RE-12116 and 1RE-12117 are in high alarm). Normal Control Room HVAC is in service, and an automatic Control Room Isolation does not occur.

1HV-12130, Control Room Return Fan Inlet Air Damper (CREFS 'A'), and 1HV-12131, Control Room Return Fan Inlet Air Damper (CREFS 'B'), are simultaneously opened (manually). The dampers then re-close when the handswitch is released.

Based on the given conditions and with no previous action taken, what are the potential consequences of partially opening 1HV-12130, Control Room Return Fan Inlet Air Damper (CREFS 'A'), *and 1HV-12131, Control Room Return Fan Inlet Air Damper (CREFS 'B'), simultaneously? Would this action increase the radioactivity levels in the Control Room?*

Licensee Discussion / Justification

A review of P&IDs AX4D8206-1, 2, and 3 determined that a backdraft damper exists immediately downstream of both 1HV-12130 and 1HV-12131. These backdraft dampers would prevent any reverse flow through the associated ductwork. Furthermore, both suction paths originate from a common supply header. Having both dampers open simultaneously would not result in a change in the airflow into or out of the control room envelope. Additionally, the flow path created by having both paths open does not create a "short circuit" flow path. Worst case, a parallel flow path could be established that would decrease the Control Room envelope positive pressure slightly due to increasing the amount of recirculation air flow and reducing the amount of makeup air. However, Control Room dose rate calculations take into account the air intakes being completely isolated and therefore this condition is bounded.

Licensee Recommendation

The licensee has determined there were NO negative consequences due to partially opening 1HV-12130, Control Room Return Fan Inlet Air Damper (CREFS 'A'), and 1HV-12131, Control Room Return Fan Inlet Air Damper (CREFS 'B'), simultaneously.

NRC Discussion

The NRC understands that review of the applicable P&ID documents determined that backdraft dampers exist that would prevent reverse flow through the associated ductwork.

NRC Resolution

This comment does not require resolution. The NRC accepts the technical analysis that there are no negative consequences to simultaneously opening 1HV-12130 and 1HV-12131.

Post Exam Comment #10

Item

Admin RO JPM 'e': Perform ERO Recall and ENN Notification

Licensee Comment

In Admin RO JPM 'e', "Perform ERO Recall and ENN Notification," the candidate is directed to notify and confirm receipt of the Emergency Notification Form using the manual method. Admin RO JPM 'e', Step 17, is a critical step that reads:

> **5.0. (Vogtle Only) IF any agency requires message authentication, THEN authenticate the message as follows:**
> **a. Enter the code provided by the requesting agency.**
> **b. Select GET AUTHENTICATION CODE from the ENN Communicator's packet.**
> **c. Provide the authentication code supplied by the system to the agency requiring authentication verbally over the ENN.**
>
> ***CUE:*** ***Simulator Operator will respond on the ENN phone, "South Carolina requests authentication for code word #27."***
>
> **Standard:** **Candidate provides code word from the ENN Communicator's packet (drawer to the left of the phone).** NOTE: The code word will be provided to the examiner prior to the JPM administration.

Based on the given conditions, is *it acceptable for the candidate to wait for an agency to request an authentication code (i.e. ENN communicator does not query the agencies concerning* message *authentication)?*

Licensee Discussion / Justification

During Emergency Notification Form (ENF) transmission, the State of South Carolina typically requires an authentication code early in the communication. ENN Communicators are trained to respond to the authentication code request. The ENN Communicator is permitted to wait for the code to be requested by the state agency to avoid jeopardizing the 15-minute notification time. The authentication code is not a Federal requirement for ENN transmission; it is a requirement of the State of South Carolina EMA. Therefore, it is acceptable for the ENN Communicator to wait for an authentication code to be requested from the state agency. As such, a cue from the Simulator Operator would be necessary.

Licensee Recommendation

The licensee recommends revising Admin RO JPM 'e', Step 17, Standard to provide a note to the examiner indicating that it is acceptable for the candidate to wait for an agency to request authentication. When this occurs, a cue from the Simulator Operator will request an authentication code as the State of South Carolina.

NRC Discussion

The NRC understands that request of an authentication code is a requirement of the State of South Carolina EMA, rather than a Federal requirement for ENN transmission. Additionally, NMP-EP-111-F06, "Manual Emergency Notification Transmission and Confirmation Instructions," does not specifically require the ENN communicator to request authentication. 5.0.c states, "Provide the authentication code supplied by the system to the agency requiring authentication verbally over the ENN." This sentence indicates that a code word will be provided *to the agency that requests authentication*, and NMP-EP-111-F06 is silent on the ENN communicator requesting authentication.

NRC Resolution

The NRC accepts the licensee's comment that it is not critical for the applicant, as ENN communicator, to request authentication, given the wording in step 5.0.c of NMP-EP-111-F06. Based on the lack of an expectation from the Operations Department for the ENN

Communicator to specifically request authentication if a separate agency does not request authentication, and based on the wording in step 5.0.c of NMP-EP-111-F06, the JPM guide for Admin RO JPM ‘e’ does not require revision, because other elements of step 5.0 of NMP-EP-111-F06 are critical.

Post Exam Comment #11

Item

Admin SRO JPM 'e': Classify an Emergency Event and Complete the Emergency Notification Form

Licensee Comment

In Admin SRO JPM 'e', "Classify an Emergency Event and Complete the Emergency Notification Form," the candidate is directed to classify an emergency event and complete the Emergency Notification Form. Admin SRO JPM 'e', Step 10, is a critical step and its Standard reads:

Standard: Candidate marks Block 'A' (DRILL) and enters MESSAGE #1.

Based on the given conditions, is it acceptable for the candidate to mark Block 'B' (ACTUAL EVENT) on Line 1 of the Emergency Notification Form?

Licensee Discussion / Justification

Per NMP-TR-416, "Licensed Operator Continuing Training Program Administration," Step 4.11.11, satisfactory completion of the Emergency Notification Form (ENF) requires correctly declaring the event as either drill or actual event. Unless an actual event is in progress, drill should be selected. This is consistent with the training and evaluation of emergency declarations in both the Initial and Requal training programs.

Licensee Recommendation

The licensee does NOT recommend revising Admin SRO JPM 'e', Step 10, Standard.

NRC Discussion

The NRC understands that the expectation at Vogtle is that, in the absence of an actual event in progress, satisfactory completion of Line 1 on the ENF requires Block ‘A’ (DRILL) to be selected. However, the intent of this JPM on the NRC exam is to determine whether an applicant would correctly complete the ENF form during an actual event. As such, the critical aspect of Line 1 is that the block is not left blank—that is, the applicant understands that Line 1 is required to be filled in completely, and the applicant uses the information they are given in the JPM to decide which block to mark (Block ‘A’ or Block ‘B’).

NRC Resolution

The NRC rejects the licensee’s comment that the guide for SRO Admin JPM ‘e’ should remain unchanged with respect to the applicant marking “Drill” vice “Actual.” The guide for SRO Admin JPM ‘e’ step 10 standard will be revised to state, “Candidate marks Block ‘A’ (DRILL) OR Block ‘B’ (ACTUAL) and enters MESSAGE #1.”

SIMULATOR FIDELITY REPORT

Facility Licensee: Vogtle Nuclear Generating Plant, Unit Nos. 1 & 2

Facility Docket No.: 50-424, 50-425

Operating Test Administered: May 12–15, 2014

This form is to be used only to report observations. These observations do not constitute audit or inspection findings and, without further verification and review in accordance with Inspection Procedure 71111.11 are not indicative of noncompliance with 10 CFR 55.46. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating test, examiners observed the following:

Item	Description
MDAFW-B did not respond properly to an automatic start signal.	During an exam scenario, MDAFW-B unexpectedly failed to start in AUTO. Upon simulator reset, the switch indicated that repositioning was required and then cleared its flashing indication without repositioning the switch. A simulator change request (mod number 2014-05-016) was initiated to replace the switch.
Three MSIVs travelled shut during a simulator scenario without simulator booth operator manipulation.	During an exam scenario, three MSIVs were observed to travel in the shut direction without simulator booth operator manipulation. This resulted in the operating crew manually tripping the reactor and taking actions in accordance with E-0. The simulator anomaly did not impact the major transient, and simulator performance after the manual reactor trip was consistent with other scenarios run that day. A hard-reset of the simulator was performed following the scenario, and the subsequent scenario that day had no issues. A simulator change request (mod number 2014-05-013) was initiated to investigate the anomaly.