UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
245 PEACHTREE CENTER AVENUE N.E., SUITE 1200
ATLANTA, GEORGIA 30303-1200

November 10, 2020

Mr. Michael Yox
Regulatory Affairs Director
Southern Nuclear Operating Company
7825 River Road, Bldg. 302, Vogtle 3&4
Waynesboro, GA 30830

SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 – NRC INITIAL TEST PROGRAM AND OPERATIONAL PROGRAMS INTEGRATED INSPECTION REPORTS 05200025/2020009, 05200026/2020009

Dear Mr. Yox:

On September 30, 2020, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Vogtle Electric Generating Plant, Units 3 and 4. The enclosed inspection report documents the inspection results, which the inspectors discussed on October 23, 2020 with you and other members of your staff.

The inspection examined a sample of construction activities conducted under your Combined License (COL) as it relates to safety and compliance with the Commission's rules and regulations and with the conditions of these documents. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

NRC inspectors documented two findings of very low safety significance (Green) in this report. Both of these findings involved a violation of NRC requirements. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

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

Should you have any questions concerning this letter, please contact us.

Sincerely,

/RA/

Bradley J. Davis, Branch Chief
Construction Inspection Branch 2
Division of Construction Oversight

Docket Nos.: 5200025, 5200026
License Nos: NPF-91, NPF-92

Enclosure: NRC Inspection Report (IR) 05200025/2020009, 05200026/2020009

w/attachment: Supplemental Information

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SUBJECT: VOGTLE ELECTRIC GENERATING PLANT, UNITS 3 AND 4 – NRC INITIAL TEST PROGRAM AND OPERATIONAL PROGRAMS INTEGRATED INSPECTION REPORTS 05200025/2020009, 05200026/2020009 DATED: November 10, 2020

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DATE	11/9/2020	11/9/2020	11/9/2020	11/9/2020	11/10/2020

U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Numbers:	5200025 5200026
License Numbers:	NPF-91 NPF-92
Report Numbers:	05200025/2020009 05200026/2020009
Licensee:	Southern Nuclear Operating Company, Inc.
Facility:	Vogtle Unit 3 & 4 Combined License
Location:	Waynesboro, GA
Inspection Dates:	July 1, 2020 through September 30, 2020
Inspectors:	K. Carrington, Resident Inspector, Division of Construction Oversight (DCO) J. Eargle, Senior Resident Inspector-Testing, DCO T. Fanelli, Senior Reactor Inspector, Division of Reactor Safety (DRS) B. Griman, Construction Inspector, DCO P. Heher, Resident Inspector, DCO N. Karlovich, Resident Inspector, DCO R. Mathis, Test Inspector, DCO J. Montgomery, Senior Reactor Inspector, DRS T. Morrissey, Senior Resident Inspector, Division of Reactor Projects (DRP) R. Patterson, Physical Security Inspector, DRS N. Pitoniak, Sr. Fuel Facility Project Inspector, Division of Fuel Facility Inspection (DFFI) M. Tobin, Senior Resident Inspector, DRP T. Vukovinsky, Sr. Fuel Facility Inspector, DFFI J. Walker, Emergency Preparedness Inspector, DRS
Approved by:	Bradley J. Davis, Branch Chief Construction Inspection Branch 2 Division of Construction Oversight

SUMMARY OF FINDINGS

Inspection Report (IR) 05200025/2020009, 05200026/2020009; 07/01/2020 through 09/30/2020; Vogtle Unit 3 Combined License, Vogtle Unit 4 Combined License, initial test program and operational programs integrated inspection report.

This report covers a 3-month period of announced Inspections, Tests, Analysis, and Inspection Criteria (ITAAC), preoperational test program, and operational program inspections by resident and regional inspectors. Two findings of very low safety significance (Green) were identified by the inspectors. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter (IMC) 2519, "Construction Significance Determination Process." Cross-cutting aspects are determined using IMC 0613, Appendix F, "Construction Cross-Cutting Areas and Aspects." All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy and the temporary enforcement guidance outlined in enforcement guidance memorandum (EGM) 11-006. The NRC's program for overseeing the safe construction of commercial nuclear power reactors is described in IMC 2506, "Construction Reactor Oversight Process General Guidance and Basis Document."

A. NRC-Identified and Self Revealed Findings

Green. The inspectors identified a performance deficiency and an ITAAC finding of very low safety significance (Green) and an associated non-cited violation (NCV) of Title 10 of the Code of Federal Regulations (CFR) Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," for the licensee's failure to complete the containment system in accordance with Option B, "Performance-Based Requirements," prior to commencing the Unit 3 Type A containment integrated leak rate test (CILRT). The licensee entered this issue into their corrective action program (CAP) as CR 50061137 with planned corrective actions to complete the containment system and perform additional testing.

The performance deficiency was more than minor because it was material to the acceptance criteria of the ITAAC. The finding was associated with the Construction Reactor Safety – Inspection/Testing Cornerstone. Using IMC 2519, Appendix A, "Construction Significance Determination Process," this finding was determined to be of very low safety significance (Green) because it was associated with the containment system (CNS), which is in the low risk column of the AP1000 Construction Significance Determination Matrix, and was not a repetitive significant condition adverse to quality. In accordance with IMC 0613, Appendix F, "Construction Cross-Cutting Areas and Aspects," the finding was determined to be indicative of present licensee performance and was associated with the cross-cutting aspect of Change Management in the area of Human Performance. Specifically, rather than maintaining nuclear safety as the overriding priority, the design change associated with the new pressure boundary welds on the EPAs was not adequately evaluated to ensure compliance with regulatory requirements [H.3]. (Section 3T05)

Green. The inspectors identified a performance deficiency and a construction finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the licensee's failure to establish an adequate procedure for UFSAR required battery performance testing of the Division B and C, Class 1E, 72-hour batteries.

The licensee entered this issue into their CAP as CRs 50058111, 50057805 and corrected the procedure prior to implementation.

The performance deficiency was determined to be more than minor and a finding because it represented a substantive failure to establish or implement an adequate program, process, procedure, or quality oversight function. The inspectors concluded the finding was associated with the Inspection/Testing cornerstone and assessed the finding in accordance with IMC 2519, "Construction Significance Determination Process," Appendix A, "AP 1000 Construction Significance Determination Process," Section 4. The inspectors determined the finding was of very low safety significance (Green) because the finding was not related to a security or operational program and the test had not been performed. In accordance with IMC 0613 Appendix F, "Construction Cross-Cutting Areas and Aspects," the inspectors determined the finding had a cross-cutting aspect of Avoid Complacency in the area of Human Performance. Specifically, the licensee did not properly proofread following a copy/paste from a previous section that allowed an incorrect number to propagate through the procedure [H.12]. (Section 3T12)

B. Licensee-Identified Violations

None

REPORT DETAILS

Summary of Plant Construction Status

During this report period for Unit 3, the licensee completed various activities to satisfy aspects of the Vogtle Unit 3 operational programs and preoperational testing program. These activities included completion of Unit 3 closed vessel testing, Automatic depressurization system line resistance testing, ADS check and squib valve testing, Appendix J- Type B and Type C containment leak rate tests, completion of the initial Appendix J containment integrated leak rate test, completion of Vogtle Unit 3 structural integrity test,. The licensee also conducted its first NRC-observed Emergency Preparedness Drill for Unit 3, completed installation of the passive containment cooling tank, air operated valves, and motor operated valves; and test calibrations associated with various safety-related and nonsafety-related level transmitters, flow transmitters, pressure transmitters, and temperature elements.

During this report period for Unit 4, the licensee completed installation of various portions of Unit 4, including the Unit 4 conical roof.

1. CONSTRUCTION REACTOR SAFETY

Cornerstones: Design/Engineering, Procurement/Fabrication, Construction/Installation, Inspection/Testing

IMC 2503, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) - Related Work Inspections

1A01 (Unit 3) ITAAC Number 2.1.02.11a.i (46) / Family 10C

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.11a.i (46). The inspectors used the following Nuclear Regulatory Commission (NRC) IPs/sections to perform this inspection:

- 65001.C-02.01 - Program and Procedure Reviews

The inspectors reviewed procedures B-GEN-ITPCI-039, 3-PMS-ITPP-522, 3-PMS-OTS-17-012, associated sub-procedures, and work orders related to testing the remote actuation of squib valves from the main control room and the signal to the squib valve electrical leads to determine if the procedure and work packages contained sufficient information to satisfy the requirements of UFSAR Sections 14.2.9.1.3, 14.2.9.1.1, and 14.2.9.1.12 and the ITAAC acceptance criteria. Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document;
- test objectives were clearly stated;
- UFSAR commitments were included and latest codes and standards were referenced where applicable;

- all required testing prerequisites were identified, including:
    - required plant systems availability was specified;
    - any associated facility procedures were specified;
    - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
    - special supplies and test equipment needs were specified;
    - special environmental conditions and hold times, if any, were identified;
    - test precautions and limitations were specified; and
    - test acceptance criteria and source of the acceptance criteria were clearly identified;
    - required plant systems availability was specified;
    - any associated facility procedures were specified;
    - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
    - software received the appropriate validation and verification.
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - electrical power and control requirements;
    - temporary installations or equipment modifications (instrumentation, electrical, and piping); and
    - necessary special conditions e.g. temperatures, humidity.
- procedures included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements, as applicable;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed, and the test objectives are met;
- blank spaces were provided for initialing that test items, including prerequisites, are verified as having been performed;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures required that all temporary connections, blind flanges, disconnections or jumpers be restored to normal at the end of the test, or references their control by another procedure;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

1A02 (Unit 3) ITAAC Number 2.1.02.11b.i (48) / Family 10C

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.11b.i (48). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.C-02.01 - Program and Procedure Reviews

The inspectors reviewed procedures B-GEN-ITPCI-039, 3-PMS-ITPP-522, 3-PMS-OTS-17-012, associated sub-procedures, and work orders related testing squib valve performance following receipt of a Protection and Safety Monitoring System (PMS) signal to determine if they contained sufficient information to meet the requirements of UFSAR Sections 14.2.9.1.12, 14.2.9.1.3, and 14.2.9.1.1, and the ITAAC acceptance criteria. Specifically, the inspectors reviewed the procedure for the following attributes:

- appropriate licensee staff and management approval were indicated on the documents;
- test objectives were clearly stated;
- UFSAR commitments were included and latest codes and standards were referenced where applicable;
- required testing prerequisites were identified, including:
    - required plant systems availability was specified;
    - any associated facility procedures were specified;
    - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
    - special supplies and test equipment needs were specified;
    - special environmental conditions and hold times, if any, were identified;
    - test precautions and limitations were specified; and
    - software received the appropriate validation and verification.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- procedures were reflective of the PMS initial test plan;
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - valve lineups;
    - electrical power and control requirements;
    - temporary installations or equipment modifications (instrumentation, electrical, and piping); and
    - necessary special conditions e.g. temperatures, pressures, flows, water chemistry;
- the procedure included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed, and the test objectives are met;
- blank spaces were provided for initialing that test items, including prerequisites, are verified as having been performed;

- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedure required that all temporary connections, blind flanges, disconnections or jumpers be restored to normal at the end of the test, or references their control by another procedure;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

1A03 (Unit 3) ITAAC Number 2.2.01.09 (110) / Family 10A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.09 (110). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.C-02.01 - Program and Procedure Reviews

The inspectors reviewed procedure B-GEN-ITPCI-039, associated sub-procedures, and work orders related to testing the ability of remotely operated valves to perform their active function following receipt of a PMS signal to determine if the procedures and work packages contained sufficient information to satisfy the requirements of the ITAAC acceptance criteria. Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document.
- test objectives were clearly stated;
- related UFSAR commitments were included and latest codes and standards were referenced where applicable;
- required testing prerequisites were identified, including:
  - required plant systems availability was specified;
  - any associated facility procedures were specified;
  - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
  - special supplies and test equipment needs were specified;
  - special environmental conditions and hold times, if any, were identified;

    - test precautions and limitations were specified; and
    - test acceptance criteria and source of the acceptance criteria were clearly identified.
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - electrical power and control requirements;
    - temporary installations or equipment modifications (instrumentation, electrical, and piping); and
    - necessary special conditions e.g. temperatures, humidity.
- procedures included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed, and the test objectives are met;
- blank spaces were provided for initialing that all items, including prerequisites, are verified as having been performed;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures required that all temporary connections, blind flanges, disconnections or jumpers be restored to normal at the end of the test, or references their control by another procedure;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

1A04 (Unit 3) ITAAC Number C.2.6.09.02 (659) / Family 17A

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number C.2.6.09.02 (659). The inspectors used the following NRC IPs/sections to perform this inspection:

The inspector performed a walk-down of the protected area perimeter to verify if the physical barrier at the perimeter of the protected area was separated from any barriers designated as a vital area.

b. Findings

No findings were identified.

IMC 2504, Construction Inspection Program – Inspection of Construction and Operational Programs

1P01 Construction QA Criterion 13

- 35007-A13.04.01 - Inspection of QA Implementing Documents
- 35007-A13.04.02 - Inspection of QA Program Implementation

a. Inspection Scope

The inspectors reviewed surveillance records for selected safety related components to determine if adequate preservation maintenance was being established and performed in accordance with the vendor technical manual and licensee procedures. Specifically, the inspectors reviewed Equipment Preservation Check Records to determine if the recommended maintenance activities specified in the technical manual were being established in accordance with the licensee procedure for the following components:

Air Operated Valves:
- Acc Discharge Valves: PXS-PLV-14A/B, 15A/B
- PRHRHX outlet: PXS-PLV-108A/B

Motor Operated Valves:
- Stage 4 isolation: RCS-PLV-0014A/B/C/D
- Stages 1, 2, & 3 ADS: RCS-PLV-001A/B, 2A/B, 3A/B

Squib valves:
- IRWST: PXS-PLV-123A/B, 125A/B
- Containment Recirculation: PXS-PLV-118A/B, 120A/B
- Stage 4: RCS-PLV-004A/B/C/D

Also, the inspectors reviewed these records to determine if the maintenance activities were being performed at their prescribed frequencies specified by the technical manual. The inspectors reviewed the licensee's procedure to determine if provisions were made to establish requirements for periodic maintenance. The inspectors conducted a walkdown of the accessible components to review cleanliness, environmental controls, coverings, and preservatives to verify if periodic maintenance was being maintained per site procedures.

b. Findings

No findings were identified.

2. SAFEGUARDS PROGRAMS

Cornerstones: Security Programs for Construction Inspection and Operations

IMC 2504, Construction Inspection Program – Inspection of Construction and Operational Programs

2P01 Security (operational)

a. Inspection Scope

The inspector reviewed 34 samples across the licensee's access control program to verify if the licensee had developed and was prepared to implement its access control program for personnel, materials, and vehicles in accordance with the regulatory requirements and NRC- approved security plans. The inspector reviewed the control measures and equipment used by the licensee to detect and prevent the introduction of firearms, explosives, incendiary devices, or other items which could be used to commit radiological sabotage into the protected area (PA) to verify if they were in accordance with the security plan. The inspector reviewed the licensee's identification and authorization processes to verify if only those who have been properly screened are granted unescorted access to the PA and vital areas (VA).

The inspector reviewed the licensee's physical protection program associated with this sample to verify if the program was designed to meet the general performance objective of 10 CFR 73.55(b).

The inspector reviewed 38 samples across the licensee's security training program to verify if the licensee had developed and was prepared to implement its nuclear security training program in accordance with regulatory requirements and NRC-approved security plans. The inspector assessed security-personnel knowledge, skills and abilities to verify if they conformed with the licensee's Training and Qualification Plan and regulatory requirements. The inspector reviewed equipment assigned to security personnel to verify if the equipment conformed to the licensee's Training and Qualification Plan and regulatory requirements.

The inspector reviewed 26 samples across the licensee's security organization to verify if the licensee's security organization and chain of command were in conformance with the approved Physical Security Plan, Training and Qualification Plan, Safeguards Contingency Plan, Cyber Security Plan, and licensee procedures. The inspector reviewed the licensee's security management system to verify if the licensee had developed an adequate management system that provides for adequate development, implementation, revision, and oversight of security procedures that implement Commission requirements and the commitments contained in the licensee's security plan. The inspector reviewed the security organization to verify if the licensee had established a security organization that is designed, staffed, trained, qualified, and equipped to implement the physical protection program in accordance with the NRC-approved security plan. The inspector reviewed the security audit process to verify if the licensee has established a process, where it reviews and audits the security program to include all elements of the physical protection program for effectiveness in implementation and problem identification. The inspector also determined if the licensee had established a CAP to address deficiencies in the physical protection program and ensure that comprehensive actions are taken to correct any non-conformance that was identified.

b. Findings

No findings were identified.

3. OPERATIONAL READINESS

Cornerstones: Operational Programs

IMC 2503, Inspections, Tests, Analyses, and Acceptance Criteria (ITAAC) - Related Work Inspections

3T01 (Unit 3) ITAAC Number 2.1.02.08b (30) / Family 06D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.08b (30). The inspectors used the following NRC inspection procedures (IPs)/sections to perform this inspection:

- 65001.D-02.01-Procedure Review
- 65001.D-02.03-Test Results Review

The inspectors reviewed procedure 3-RCS-ITPP-506 related to preoperational testing of reactor coolant pump (RCP) performance and capability including flow coastdown following RCP trip to determine if the procedure contained information to meet the ITAAC acceptance criteria. Specifically, the inspectors reviewed the procedure for the following attributes:

- appropriate licensee staff and management approval were indicated on the document;
- test objectives were clearly stated;
- all related UFSAR commitments were included;
- all required testing prerequisites were identified, including:
  - availability of required plant systems;
  - associated facility procedures;
  - prior completion of calibration checks;
  - special supplies and test equipment needs; and
  - test precautions and limitations.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- the procedure required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
  - plant systems availability is specified;
  - all temporary installations or equipment modifications (instrumentation, electrical, and piping); and
  - all necessary special conditions such as temperatures, pressures, and flows.

- the procedure included a section listing references to appropriate ITAAC, Updated Final Safety Analysis Report (UFSAR) sections, technical specifications, drawings, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points, were included to the extent necessary to ensure that the tests objectives will be met;
- the procedure included blank spaces for initialing that all items, including prerequisites, are verified as having been performed;
- provisions were made for recording details of the conduct of the test, including any test anomalies;
- the procedure required that all temporary connections or blind flanges be restored to normal at the end of the test;
- provisions were made for the evaluators to document acceptability of the data;
- provisions were made for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- provisions were made for verification of calibration of M&TE and recording of any temporarily installed or used measuring and test equipment (M&TE), equipment identification, and calibration date.

Additionally, the inspectors reviewed procedure 3-RCS-ITPP-506, relevant calculations, and other test supporting documentation to verify if testing methodology supported meeting the test objectives and acceptance criteria.

b. Findings

No findings were identified.

3T02 (Unit 3) ITAAC Number 2.1.02.08d.i (32) / Family 03D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.08d.i (32). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.02-Test Witnessing
- 65001.D-02.06-Quality Assurance Program (Problem Identification and Resolution)

The inspectors observed the field use and implementation of procedure 3-PXS-ITPP-503 related to testing the flow resistance of the B automatic depressurization system (ADS) Stage 1-3 valves. The inspectors observed this activity to determine if the test satisfied Chapter 14 of the UFSAR, the ITAAC acceptance criteria, and the licensee's program requirements. The inspectors attended the pre-job test brief and witnessed the test for the following attributes:

- test personnel minimum staffing and qualification requirements were met;

- test prerequisites (pump and valve alignments) and initial conditions for reactor coolant system and other systems were met;
- latest procedural revisions were approved and used during test;
- M&TE required by the procedure were calibrated and in service at the time of the test;
- testing personnel maintained the required level of training necessary to conduct the test;
- pretest briefings were conducted in accordance with procedures and appropriate shift turnover performed to ensure continuity in ongoing activities;
- test personnel actions and coordination activities were adequately performed;
- test was performed in accordance with procedure and Chapter 14 of the UFSAR;
- time sequencing, when required, was performed;
- test equipment (including ultrasonic flow sensors) were setup and placed in accordance with procedure;
- test personnel adhered to procedural limitations and precautions, and individual test steps;
- in-containment refueling water storage tank and core makeup tanks levels were monitored, and trended as expected;
- normal residual heat removal system flowrate and pump differential pressures were monitored, and trended as expected;
- pump runout limits were not exceeded;
- systems were free of alarms and/or faults;
- test equipment was located within range to transmit/receive signals;
- jumpers, flanges, and/or temporary test connections were installed in the correct location and appropriately controlled;
- controls were in place to restrict personnel within test area;
- test anomalies, problems, interruptions, and/or deficiencies were recorded in the test narrative logs and reviewed for inclusion in the licensee's corrective action program;
- test personnel performed a preliminary review of results to determine that the observed results met the established acceptance criteria and that an activity or test did not warrant repeating or if repeating was warranted, measures would be taken to ensure the activity recurred; and
- acceptance criteria for line resistance be less than 2.91 x 10^-6 ft/gpm^2 for each ADS stage 1, 2, 3 group with all valves open, was clearly stated in the procedure.

The inspectors reviewed completed portions of procedure 3-PXS-ITPP-503, relevant calculations, corrective action documents, and other test results documentation to determine if they contained sufficient information to meet the requirements of Chapter 14 of the UFSAR, the ITAAC acceptance criteria, and the licensee's program requirements. Specifically, the inspectors reviewed these documents for the following attributes:

- test data packages were assembled;
- testing methodology supported meeting the test objectives and acceptance criteria;
- completed portions of the "as-run" test procedure included:
    - individual test steps and data sheets were properly initialed and dated;

    - data sheets were completed;
    - all data had been recorded where required and was within acceptance tolerances;
    - test deficiencies and test procedure changes were properly identified in accordance with established administrative procedures;
- test changes made during the performance of the test, including testing deletions was approved in accordance with the pertinent administrative procedures;
- procedure had been annotated to identify test changes;
- none of the changes had altered the basic objectives of the test;
- personnel performing test summary and results evaluations applied independent technical analysis and judgment to ensure that the evaluation of test results were performed correctly;
- personnel, responsible for review and acceptance of test results, had documented their review and acceptance of the data package and the results evaluation;
- engineering staff had evaluated the test results and concluded that the testing demonstrated that the equipment met design requirements;
- test results evaluations compared test results with established acceptance criteria;
- the test results were examined in accordance with established administrative requirements;
- test results reviews were accomplished as prescribed in the FSAR and licensee commitments;
- adequate implementation of quality assurance program requirements related to operational testing;
- problems identified associated with operational testing were entered into the corrective action program in accordance with program requirements;
- test anomalies and deficiencies were documented, resolved, resolution had been accepted by appropriate management, and that retest requirements, if any, had been completed; and
- corrective actions addressed extent of condition.

b. Findings

No findings were identified.

3T03 (Unit 3) ITAAC Number 2.1.02.09a (41) / Family 14D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.09a (41). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review
- 65001.D-02.03-Test Results Review

The inspectors reviewed procedure 3-RCS-ITPP-506, related to preoperational testing of RCP performance and capability including flow coastdown following RCP trip to determine if the procedure contained information to meet the ITAAC acceptance criteria. The inspectors reviewed the procedure for the following attributes:

- appropriate licensee staff and management approval were indicated on the document;
- test objectives were clearly stated;
- all related UFSAR commitments were included;
- all required testing prerequisites were identified, including:
    - availability of required plant systems;
    - associated facility procedures;
    - prior completion of calibration checks;
    - special supplies and test equipment; and
    - test precautions and limitations.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- the procedure required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - plant systems availability is specified;
    - all temporary installations or equipment modifications (instrumentation, electrical, and piping); and
    - all necessary special conditions such as temperatures, pressures, and flows.
- the procedure included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points, were included to the extent necessary to ensure that the tests objectives will be met;
- the procedure included blank spaces for initialing that all items, including prerequisites, are verified as having been performed;
- provisions were made for recording details of the conduct of the test, including any test anomalies;
- the procedure required that all temporary connections or blind flanges be restored to normal at the end of the test;
- provisions were made for the evaluators to document acceptability of the data;
- provisions were made for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- provisions were made for verification of calibration of M&TE and recording of any temporarily installed or used M&TE, equipment identification, and calibration date.

Additionally, the inspectors reviewed procedure 3-RCS-ITPP-506, relevant calculations, and other test supporting documentation to verify testing methodology supported meeting the test objectives and acceptance criteria.

b. Findings

No findings were identified.

3T04 (Unit 3) ITAAC Number 2.1.02.13b (64) / Family 10D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.1.02.13b (64). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review

The inspectors reviewed procedure B-GEN-ITPCI-039, B-GEN-ITPCI-039-F026, and B-GEN-ITPCI-039-F031 related to testing the tripping capabilities of the 1A and 2B reactor coolant pumps from the RCP switchgear to determine if the procedures contained sufficient information to meet the requirements of the ITAAC acceptance criteria. Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document;
- test objectives were clearly stated;
- required testing prerequisites were identified, including:
  - required plant systems availability was specified;
  - any associated facility procedures were specified;
  - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
  - special supplies and test equipment needs were specified;
  - special environmental conditions and hold times, if any, were identified;
  - test precautions and limitations were specified;
  - test acceptance criteria and source of the acceptance criteria were clearly identified; and
- procedures required comparison of results with acceptance criteria.
- initial test conditions were specified, including:
  - valve lineups;
  - electrical power and control requirements;
  - temporary installations or equipment modifications (instrumentation, electrical, and piping); and
  - necessary special conditions e.g. temperatures, pressures, flows, water chemistry.
- procedures included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- procedures reflected information provided in UFSAR Table 15.0-4a;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed correctly, and the test objectives are met;

- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

3T05 (Unit 3) ITAAC Number 2.2.01.07.i (107) / Family 11D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.01.07.i (107). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.02-Test Witnessing

The inspectors performed interviews, walkdowns, direct testing observations, and documentation reviews of the CILRT procedures and associated documents to verify that the testing performed for the CILRT met the requirements in the licensee's containment leak rate test program, 10 CFR Part 50 Appendix J, NEI 94-01, and ANSI/ANS-56.8-1994.

The inspectors observed portions of the test for the following attributes:

- latest version of the test procedure was at the test location and in use by test personnel;
- minimum crew requirements were met;
- responsibilities and qualification requirements of test personnel were met;
- test prerequisites and initial conditions were met;
- testing was executed and coordinated properly;
- M&TE required by the procedure was calibrated and in service at the time of the test; and
- administrative test controls were properly followed.

In addition, the inspectors observed the following activities:

- pre-job briefs were performed for multiple shifts and work disciplines that discussed critical aspects of the task, safety concerns and precautions, and series of actions that would occur if leaks were identified;
- the test was performed such that hold times and pressures were in accordance with required regulations and commitments;
- the containment structure was closed out and a general inspection of the accessible portions of interior and exterior containment surfaces was performed in accordance with procedures;
- the test pressure and hold time used, maximum rate of pressurization, including pressurization increments, and depressurization of the containment were adhered to;
- logging of required test parameters, leakage rates, and observations, which included atmospheric and containment pressure, temperature, dew point temperature, and liquid level (e.g., sump levels, pressurizer level) was performed as required;
- test anomalies, problems, interruptions, and/or deficiencies were recorded in logs and reviewed for inclusion in the licensee's corrective action program;
- proper system alignment and configuration control for testing criteria was performed in accordance with procedure and work order instructions;
- the test crews were evaluated to verify that the test performance was coordinated and the crews were knowledgeable of the test program and procedures and the application and reading of instrumentation; and
- the inspectors verified that no adverse environmental conditions, such as high wind or extreme temperature differentials, could potentially impact the pressurization and stabilization for the CILRT;
- the inspectors reviewed the containment area temperature surveys and verified that the instrument strings were operational and adequately covered the volumes covered by the area surveys;
- the inspectors verified that the applicant utilized an NRC accepted method of analysis for the CILRT computer program to determine the overall leak rate; and
- the inspectors also reviewed the preliminary CILRT results to determine if they were satisfactory for the as-left containment conditions.

b. Findings

Introduction

NRC inspectors identified a performance deficiency and an ITAAC finding of very low safety significance (Green), and associated non-cited violation (NCV) of 10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," for the licensee's failure to complete the containment system prior to commencing the Type A containment integrated leak rate test (CILRT).

Description

Type A containment ILRTs are intended to measure the primary reactor containment overall integrated leakage through all potential leakage paths. Primary reactor containments for all water-cooled power reactors that have a combined license under 10 CFR Part 52 are required to meet the containment leakage test requirements set forth in 10 CFR Part 50, Appendix J. In the licensee's UFSAR, the licensee was committed to implementing a containment leak rate test program compliant with the Option B requirements defined in 10 CFR Part 50, Appendix J. Option B required, in part, that the Type A containment ILRT "must be conducted after the containment system has been completed and is ready for operation."

On June 18, 2020, the licensee approved an Engineering and Design Coordination Report (E&DCR) to change the ASME Section III jurisdictional pressure boundary of the containment system (CNS) related to the electrical penetration assemblies (EPAs). Specifically, this change moves the pressure boundary from the EPA extension sleeve – to – containment penetration sleeve weld to new welds associated with a retaining ring. The new welds that attach the retaining ring were to be installed at a later, unspecified date and were designed to cover the non-pressure boundary EPA extension sleeve – to – containment penetration sleeve welds. This change was designed to comply with the ASME code during the containment vessel structural integrity test, which was performed in conjunction with and just prior to the Type A containment ILRT.

On July 9, 2020, the licensee began pressurization of containment for the Type A CILRT, following a 24 hour hold after completion of the structural integrity test. The inspectors noted that the new pressure boundary welds described in the E&DCR had not been installed prior to the start of the Type A containment ILRT and required Type B local leak rate testing associated with the new welds had not been incorporated in the testing procedures. The inspectors questioned the licensee's ability to satisfy 10 CFR Part 50, Appendix J, Option B having started the Type A containment ILRT without the containment system complete and ready for operation. Subsequent to the inspectors' questions, the licensee documented this issue in their corrective action program as CR 50061137.

Analysis

The inspectors determined that the failure to complete the containment system prior to commencing the Type A containment ILRT, as required by 10 CFR Part 50, Appendix J, Option B, was a performance deficiency. The performance deficiency was determined to be an ITAAC finding because it was material to the acceptance criteria of ITAAC 2.2.01.07.i (107) in that a valid leak rate less than L_a cannot be obtained until subsequent Type B local leak rate testing is performed on the retaining ring pressure boundary welds associated with the EPAs, which had not been incorporated in the testing procedures prior to NRC questions. Additionally, the performance deficiency was more than minor because it was material to the acceptance criteria of the ITAAC.

The finding was associated with the Construction Reactor Safety – Inspection/Testing Cornerstone. Using IMC 2519, Appendix A, "Construction Significance Determination Process," this finding was determined to be of very low safety significance (Green) because it was associated with the containment system (CNS), which is in the low risk column of the AP1000 Construction Significance Determination Matrix, and was not a repetitive significant condition adverse to quality.

In accordance with IMC 0613, Appendix F, "Construction Cross-Cutting Areas and Aspects," the finding was determined to be indicative of present licensee performance and was associated with the cross-cutting aspect of Change Management in the area of Human Performance. Specifically, rather than maintaining nuclear safety as the overriding priority, the design change associated with the new pressure boundary welds on the EPAs was not adequately evaluated to ensure compliance with regulatory requirements [H.3].

Enforcement

10 CFR Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," Option B, "Performance-Based Requirements," requires, in part, that the Type A containment ILRT "must be conducted after the containment system has been completed and is ready for operation."

Contrary to the above, the licensee began the Type A containment ILRT on July 9, 2020, prior to the containment system being complete and ready for operation.

The licensee entered this issue into its corrective action program as CR 50061137 with planned corrective actions to complete the additional pressure retaining welds described in the E&DCR along with the necessary testing to calculate an accurate L_a. This violation is being treated as an NCV consistent with Section 2.3.2.a of the NRC Enforcement Policy (NCV 05200025/2020009-01, Failure to Complete Containment Prior to Unit 3 ILRT).

3T06 (Unit 3) ITAAC Number 2.2.03.08c.ii (181) / Family 06D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.08c.ii (181). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.03-Test Results Review
- 65001.D-02.06-Quality Assurance Program (Problem Identification and Resolution)

The inspectors witnessed the use and implementation of procedure 3-PXS-ITPP-503 related to piping flow resistance from the cold leg to the CMT to verify that the requirements of Chapter 14 of the UFSAR, the ITAAC acceptance criteria, and the licensee's program requirements were met. Specifically, the inspector attended pre-job/pre-test briefings and witnessed the test for the following attributes:

- test personnel used the current procedure revision and were familiar with the procedural requirements;
- test personnel minimum staffing requirements and the responsibilities and qualification requirements of test personnel were met;
- test prerequisites and initial conditions were met;
- measuring and test equipment required by the procedure was calibrated and in service at the time of the test;
- test engineers' logs documented any test anomalies, problems, interruptions, and/or deficiencies, and were included in the licensee's corrective action program; and
- test personnel performed a preliminary review of test results to determine that the observed test results meet the established acceptance criteria.

The inspectors reviewed completed portions of procedure 3-PXS-ITPP-503, relevant calculations, corrective action documents, and other test results documentation to determine if they contained sufficient information to meet the requirements of Chapter 14 of the UFSAR, the ITAAC acceptance criteria, and the licensee's program requirements. Specifically, the inspectors reviewed these documents for the following attributes:

- test data packages were assembled;
- testing methodology supported meeting the test objectives and acceptance criteria;
- completed portions of the "as-run" test procedure included:
    - individual test steps and data sheets were properly initialed and dated;
    - data sheets were completed;
    - all data had been recorded where required and was within acceptance tolerances; and
    - test deficiencies and test procedure changes were properly identified in accordance with established administrative procedures.
- test changes made during the performance of the test, including testing deletions was approved in accordance with the pertinent administrative procedures;
- procedures had been annotated to identify test changes;
- none of the changes had altered the basic objectives of the test;
- personnel performing test summary and results evaluations applied independent technical analysis and judgment to ensure that the evaluation of test results were performed correctly;
- personnel, responsible for review and acceptance of test results, had documented their review and acceptance of the data package and the results evaluation;
- engineering staff had evaluated the test results and concluded that the testing demonstrated that the equipment met design requirements;
- test results evaluations compared test results with established acceptance criteria;
- the test results were examined in accordance with established administrative requirements;
- test results reviews were accomplished as prescribed in the FSAR and licensee commitments;

- adequate implementation of quality assurance program requirements related to operational testing;
- problems identified associated with operational testing were entered into the corrective action program in accordance with program requirements;
- test anomalies and deficiencies were documented, resolved, resolution had been accepted by appropriate management, and that retest requirements, if any, had been completed; and
- corrective actions addressed extent of condition.

b. Findings

No findings were identified.

3T07 (Unit 3) ITAAC Number 2.2.03.11b.i (209) / Family 10D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.11b.i (209). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review

The inspectors reviewed procedures- B-GEN-ITPCI-039, 3-PMS-ITPP-522, 3-PMS-OTS-17-012, and associated procedures related to testing the function of PMS-controlled squib valves to determine if they contained sufficient information to meet the requirements of the ITAAC acceptance criteria and UFSAR Sections 14.2.9.1.12, 14.2.9.1.3, and 14.2.9.1.1. Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document;
- test objectives were clearly stated;
- UFSAR commitments were included and latest codes and standards were referenced where applicable;
- required testing prerequisites were identified, including:
  - required plant systems availability was specified;
  - associated facility procedures were specified;
  - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
  - special supplies and test equipment needs were specified;
  - special environmental conditions and hold times, if any, were identified;
  - test precautions and limitations were specified; and
  - software received the appropriate validation and verification.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- test procedure was consistent with protection and safety monitoring system (PMS) initial test program test plan B-GEN-ITPA-019;
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:

    - valve lineups;
    - electrical power and control requirements;
    - all temporary installations or equipment modifications (instrumentation, electrical, and piping); and
    - all necessary special conditions e.g. temperatures, humidity, flow.
- the procedures included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed, and the test objectives are met;
- blank spaces were provided for initialing that test items, including prerequisites, are verified as having been performed;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- acceptance criteria for resistance and voltage was specified in the procedure;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

3T08 (Unit 3) ITAAC Number 2.2.03.12a.iv (216) / Family 07D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.2.03.12a.iv (216). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.07-02.05 - Problem Identification and Resolution
- 65001.D-02.03-Test Results Review

The inspectors reviewed completed portions of procedures 3-PXS-ITPP-502, 503, 506, and 507, relevant calculations, corrective action documents, and other test results documentation to determine if they contained sufficient information to meet the requirements of Chapter 14 of the UFSAR, the ITAAC acceptance criteria, and the licensee's program requirements. Specifically, the inspectors reviewed these documents for the following attributes:

- test data packages were assembled;
- testing methodology supported meeting the test objectives and acceptance criteria;
- completed portions of the “as-run” test procedure included:
    - individual test steps and data sheets were properly initialed and dated;
    - data sheets were completed;
    - all data had been recorded where required and was within acceptance tolerances; and
    - test deficiencies and test procedure changes were properly identified in accordance with established administrative procedures.
- test changes made during the performance of the test, including testing deletions was approved in accordance with the pertinent administrative procedures;
- procedure had been annotated to identify test changes;
- none of the changes had altered the basic objectives of the test;
- personnel performing test summary and results evaluations applied independent technical analysis and judgment to ensure that the evaluation of test results were performed correctly;
- personnel, responsible for review and acceptance of test results, had documented their review and acceptance of the data package and the results evaluation;
- engineering staff had evaluated the test results and concluded that the testing demonstrated that the equipment met design requirements;
- test results evaluations compared test results with established acceptance criteria;
- the test results were examined in accordance with established administrative requirements;
- test results reviews were accomplished as prescribed in the FSAR and licensee commitments;
- adequate implementation of quality assurance program requirements related to operational testing;
- problems identified associated with testing were entered into the corrective action program in accordance with program requirements;
- test anomalies and deficiencies were documented, resolved, resolution had been accepted by appropriate management, and that retest requirements, if any, had been completed; and
- corrective actions addressed extent of condition.

b. Findings

No findings were identified.

3T09 (Unit 3) ITAAC Number 2.5.02.06a.i (529) / Family 10D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.06a.i (529). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review

The inspectors reviewed procedure 3-PMS-ITPP-504 related to testing of the PMS control over the Reactor Trip Breakers (RTBs) after receipt of a test signal to determine if the procedure contained sufficient information to meet the requirements of UFSAR Sections 14.2.7.2, 14.2.9.1.12, and 14.2.10.1.15, and the ITAAC acceptance criteria. Specifically, the inspectors reviewed the procedure for the following attributes:

- appropriate licensee staff and management approval were indicated on the document.
- test objectives were clearly stated;
- all related UFSAR commitments were included and latest codes and standards were referenced where applicable;
- all required testing prerequisites were identified, including:
    - required plant systems availability was specified;
    - associated facility procedures were specified;
    - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
    - special supplies and test equipment needs were specified;
    - special environmental conditions and hold times, if any, were identified; and
    - test precautions and limitations were specified.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - electrical power and control requirements;
    - temporary installations or equipment modifications (instrumentation and electrical); and
    - necessary special conditions e.g. temperatures and humidity.
- the procedure included a section listing references to appropriate documents for ITAAC, FSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed correctly, and the test objectives are met;
- blank spaces were provided for initialing that all items, including prerequisites, are verified as having been performed;
- procedures required that all temporary connections, blind flanges, disconnections or jumpers be restored to normal at the end of the test, or references their control by another procedure;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and

- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

3T10 (Unit 3) ITAAC Number 2.5.02.06a.ii (530) / Family 10D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.06a.ii (530). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review

The inspectors reviewed procedure 3-PMS-ITPP-504 related to testing the PMS manual initiation of a reactor trip and engineered safety features, and procedure 3-PMS-ITPP-521 related to testing retrieval of PMS main control alarms, alerts, and displays to determine if they contained sufficient information to meet the requirements of UFSAR Sections 14.2.7.2, 14.2.9.1.12, 14.2.10.1.15 and the ITAAC acceptance criterion. Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document.
- test objectives were clearly stated;
- the procedures were written as in accordance with the initial test program test plan;
- all related UFSAR commitments were included and latest codes and standards were referenced where applicable;
- all required testing prerequisites were identified, including:
  - required plant systems availability was specified;
  - any associated facility procedures were specified;
  - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
  - all special supplies and test equipment needs were specified;
  - special environmental conditions and hold times, if any, were identified;
  - test precautions and limitations were specified; and
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
  - electrical power and control requirements;
  - all temporary installations or equipment modifications (instrumentation and electrical); and
  - all necessary special conditions e.g. temperatures and humidity etc;

- the procedures included a section listing references to appropriate documents for ITAAC, FSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed correctly, and the test objectives are met;
- blank spaces were provided for initialing that all items, including prerequisites, are verified as having been performed;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

3T11 (Unit 3) ITAAC Number 2.5.02.06c.i (532) / Family 10D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.5.02.06c.i (532). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review

The inspectors reviewed procedures 3-PMS-ITPP-504 and 3-DDS-ITPP-520 related to the Protection and Safety Monitoring System manual initiation of a reactor trip and selected engineering safety features to determine if the procedures contained sufficient information to meet the requirements of UFSAR Sections 14.2.7.2, 14.2.9.1.12, 14.2.10.1.15, and the ITAAC acceptance criteria. Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document.
- test objectives were clearly stated;
- UFSAR commitments were included and latest codes and standards were referenced where applicable;
- required testing prerequisites were identified, including:
    - required plant systems availability was specified;

    - associated facility procedures were specified;
    - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
    - special supplies and test equipment needs were specified;
    - special environmental conditions and hold times, if any, were identified; and
    - test precautions and limitations were specified.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - electrical power and control requirements;
    - temporary installations or equipment modifications (instrumentation and electrical); and
    - necessary special conditions e.g. temperatures and humidity.
- procedures included a section listing references to appropriate documents for ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed correctly, and the test objectives are met;
- blank spaces were provided for initialing that all items, including prerequisites, are verified as having been performed;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

3T12 (Unit 3) ITAAC Number 2.6.03.04c (603) / Family 08D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.03.04c (603). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review

The inspectors reviewed procedure 3-IDS-ITPP-501 related to service, discharge, and performance test of the Class 1E Direct Current system to determine if it contained sufficient information to meet the requirements of UFSAR Section 14.2.9.1.4 and the ITAAC acceptance criteria.

Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document.
- test objectives were clearly stated;
- all required testing prerequisites were identified, including:
    - required plant systems availability was specified;
    - any associated facility procedures were specified;
    - prior completion of calibration checks, load settings, protective device settings, etc. were included where applicable;
    - all special supplies and test equipment needs were specified;
    - special environmental conditions and hold times, if any, were identified; and
    - test precautions and limitations were specified.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- procedure required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - electrical power and control requirements;
    - all temporary installations or equipment modifications (instrumentation and electrical power); and
    - all necessary special conditions e.g. temperatures and humidity;
- the procedure included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed correctly, and the test objectives are met;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedure required that all temporary connections, disconnections or jumpers be restored to normal at the end of the test, or references their control by another procedure;
- procedure provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provision was made for the evaluator to document acceptability of the data;
- procedure provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and

- procedure provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

Introduction

The NRC inspectors identified a performance deficiency and construction finding of very low safety significance (Green) and an associated NCV of 10 CFR Part 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings,” for the licensee’s failure to establish an adequate procedure to verify the test method and acceptance criteria prescribed in UFSAR Section 14.2.9.1.14. Specifically, the licensee failed to ensure that preoperational test procedure 3-IDS-ITPP-501 would adequately verify by a battery performance test that the capacity of the Class 1E, Division B and Division C, 72-hour batteries (3-IDSB-DB-2A, 3-IDSB-DB-2B, 3-IDSC-DB-2A, 3-IDSC-DB-2B) meets or exceeds the required battery ampere-hour rating and that following a discharge test the voltage of each battery cell is verified to be greater than or equal to the specified minimum cell voltage.

Description

On August 4, 2020, the inspectors reviewed preoperational test procedure 3-IDS-ITPP-501, “Class 1E DC and UPS Preoperational Test,” to verify if the procedure would demonstrate the test method and acceptance criteria prescribed in UFSAR section 14.2.9.1.14 was met. During their review, the inspectors identified that procedure sections 4.2.4 and 4.3.3 only required a test duration of 21.6-hours. The inspectors questioned the licensee to determine if 24-hour test durations would adequately verify the UFSAR requirements for the 72-hour batteries. Upon review, the licensee stated that they used the wrong test duration in the procedure and that the correct test duration should have been 72 hours. The inspectors noted that if the procedure were completed as written, the licensee would not have been able to verify the acceptance criteria in UFSAR section 14.2.9.1.14 for the 72-hour batteries. The licensee entered this issue into the CAP as CRs 50058111 and 50057805 and corrected the procedure.

Analysis

The inspectors determined the failure to establish an adequate procedure to verify the acceptance criteria in UFSAR section 14.2.9.1.14 for the 72-hour batteries was contrary to the requirements of 10 CFR Part 50, Appendix B, Criterion V and was a performance deficiency. The performance deficiency was determined to be more than minor and a finding because it represented a substantive failure to establish or implement an adequate program, process, procedure, or quality oversight function. Specifically, preoperational test procedure 3-IDS-ITPP-501 allowed a 24-hour test duration for a performance test of the 72-hour batteries (3-IDSB-DB-2A, 3-IDSB-DB-2B, 3-IDSC-DB-2A, 3-IDSC-DB-2B) rather than a 72-hour test duration to meet the test method and acceptance criteria specified UFSAR section 14.2.9.1.14.

The inspectors concluded the finding was associated with the Inspection/Testing cornerstone and assessed the finding in accordance with IMC 2519, "Construction Significance Determination Process," Appendix A, "AP 1000 Construction Significance Determination Process," Section 4. The inspectors determined the finding was of very low safety significance (Green) because the finding was not related to a security or operational program and the test had not been performed.

In accordance with IMC 0613 Appendix F, "Construction Cross-Cutting Areas and Aspects," the inspectors determined the finding had a cross-cutting aspect of Avoid Complacency in the area of Human Performance. Specifically, the licensee did not properly proofread following a copy/paste from a previous section that allowed an incorrect number to propagate through the procedure [H.12].

Enforcement

Title 10 of the *Code of Federal Regulations* (CFR) Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," states, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances. UFSAR Section 14.2.9.1.14 requires, in part, that "the capacity of each of the seven Class 1E batteries is verified to meet or exceed the required ampere-hour rating by a battery performance test in accordance with IEEE 450 and following discharge testing, the voltage of each cell is verified to be greater than or equal to the specified minimum cell voltage."

Contrary to the above, since July 22, 2020, the licensee failed to have an adequate procedure for activities affecting quality that was appropriate to the circumstances. Specifically, the licensee failed to establish an adequate procedure to verify the test method and acceptance criteria prescribed in UFSAR Section 14.2.9.1.14 because the procedure allowed for a 24-hour test duration instead of a 72-hour test duration for the performance testing of the 3-IDSB-DB-2A, 3-IDSB-DB-2B, 3-IDSC-DB-2A, and 3-IDSC-DB-2B 72 hour batteries. The licensee entered this issue into its corrective action program and corrected the procedure.

Because this violation was not repetitive or willful, was of very low safety significance (Green), and was entered into the licensee's CAP as CRs 50058111 and 50057805, this violation is being treated as a non-cited violation (NCV 05200025/2020009-02, Failure to Establish Adequate Procedure for Unit 3 72-hour Battery Performance Test) consistent with Section 2.3.2.a of the NRC Enforcement Policy.

3T13 (Unit 3) ITAAC Number 2.6.03.04i (609) / Family 08D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.6.03.04i (609). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review

The inspectors reviewed procedure 3-IDS-ITPP-503 related to testing the ability of the Class 1E Direct Current system to supply a minimum voltage to motor-operated valves during operation to determine if it contained sufficient information to meet the requirements of UFSAR Section 14.2.9.1.4 and the ITAAC acceptance criteria.

Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document;
- test objectives were clearly stated;
- required testing prerequisites were identified, including:
    - required plant systems availability was specified;
    - associated facility procedures were specified;
    - prior completion of calibration checks, load settings, protective device settings, etc. were included where applicable;
    - all special supplies and test equipment needs were specified;
    - special environmental conditions and hold times, if any, were identified; and
    - test precautions and limitations were specified.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - electrical power and control requirements;
    - temporary installations or equipment modifications (instrumentation and electrical power); and
    - necessary special conditions e.g. temperatures and humidity.
- procedures included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed correctly, and the test objectives are met;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures required that all temporary connections, disconnections or jumpers be restored to normal at the end of the test, or references their control by another procedure;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

3T14 (Unit 3) ITAAC Number 2.7.06.02.ii (725) / Family 07D

a. Inspection Scope

The inspectors performed a direct inspection of construction activities associated with ITAAC Number 2.7.06.02.ii (725). The inspectors used the following NRC IPs/sections to perform this inspection:

- 65001.D-02.01-Procedure Review
- 65001.D-02.02-Test Witnessing
- 65001.D-02.03-Test Results Review

The inspectors reviewed procedure B-GEN-ITPCI-039, associated sub-procedures, and work orders related to testing of the safety function of the remotely-operated containment vacuum relief isolation valves (VFS) VFS-PL-V800A/B to determine if the procedures and work packages contained sufficient information to satisfy the requirements of the ITAAC acceptance criteria. Specifically, the inspectors reviewed the procedures for the following attributes:

- the procedure adequately included and referenced acceptable testing configurations and objectives;
- adequate test prerequisites and suitable environmental conditions would be met, adequate instrumentation used, appropriate tests and equipment used, and necessary monitoring would be performed;
- prerequisites included calibrated instrumentation, trained personnel, conditions of test equipment, items to be tested, suitable environmental conditions, and appropriate data acquisition equipment;
- the test requirements and acceptance criteria were accurate and were approved by the responsible design organization and are in accordance with applicable design documents and construction specifications;
- appropriate licensee staff and management approval were indicated on the document.
- procedures required comparison of the test results to the acceptance criteria and provisions were made for the evaluator to indicate whether test data is acceptable or not acceptable;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed, and the test objectives are met;
- provisions were made for recording details of conduct of the test, including any observed deficiencies, their resolution, and any necessary retesting
- provisions for isolating the equipment during testing would be properly controlled;
- the procedure and work control instructions provide for trained personnel conducting and evaluating the test data;

- test equipment range and accuracy were consistent with the application and comply with applicable licensing basis design calculations or code requirements;
- procedures provide for quality control verification (or independent verification) of critical steps or parameters as required by the licensee's administrative or quality assurance program requirements; and
- equipment would be properly restored upon test completion, including the removal of installed jumpers and test equipment, and landing of lifted leads; or the procedure referenced their control by another procedure.

The inspectors witnessed the use and implementation of procedure B-GEN-ITPCI-039-F239 associated with testing the open/closed functions of the vacuum relief containment isolation motor operated valve VFS-PL-V800B. Specifically, the inspectors attended pre-job test briefings and witnessed the test for the following attributes:

- the testing was conducted in accordance with approved procedures, and applicable quality, technical, and regulatory requirements;
- test personnel used the current procedure revision and were familiar with the procedural requirements;
- test personnel minimum staffing requirements and the responsibilities and qualification requirements of test personnel were met;
- test prerequisites and initial conditions were met;
- measuring and test equipment required by the procedure was calibrated and in service at the time of the test;
- briefings were conducted and appropriate shift turnover was performed;
- test engineer's logs documented any test anomalies, problems, interruptions, and/or deficiencies, and were included in the licensee's corrective action program; and
- test personnel performed a preliminary review of test results to determine that the observed test results meet the established acceptance criteria.

The inspectors reviewed completed portions of procedures B-GEN-ITPCI-039-F239 associated with testing the open/closed functions of the vacuum relief containment isolation motor operated valve VFS-PL-V800A/B, corrective action documents, and other test results documentation to determine if they contained sufficient information to meet the requirements of Chapter 14 of the UFSAR, the ITAAC acceptance criteria, and the licensee's program requirements. Specifically, the inspectors reviewed these documents for the following attributes:

- test records were adequate to furnish identifiable and retrievable evidence of activities affecting quality;
- test records were completed per the licensee's procedures;
- test records met the requirements prescribed by the licensee's record management program; and
- corrective actions associated with unacceptable test results were consistent with applicable quality and technical requirements.

b. Findings

No findings were identified.

IMC 2504, Construction Inspection Program – Inspection of Construction and Operational Programs

3P01 Emergency Preparedness

- 82002-Att1 - Facilities and Equipment
- 82002-Att3 - Exercise Objectives and Exercise Scenario for Power Reactors
- 82002-Att4 - Emergency Preparedness Exercises
- 82002-Att5 - Emergency Response Organization On-Shift Staffing and Augmentation Drills
- 82002-Att7 - Operational Status of the Emergency Preparedness Program

a. Inspection Scope

Attachment 1

The inspectors performed a direct inspection of the emergency preparedness facilities and equipment.

The inspectors performed walkdowns of the emergency response facilities (ERFs) described in the emergency plan (E-Plan), which are the technical support center (TSC), operation support center (OSC), and the emergency operations center (EOF). The inspectors reviewed various types of emergency preparedness equipment typical in currently operating reactors. Some examples of the type of equipment used in the ERFs were facility workstations, ERF layout, facility displays, and area radiation monitors. Items unique to the AP1000, such as digital layout of the control room, were also inspected by the team.

The inspectors observed the use of the ERFs by the emergency response organization (ERO) during a limited scope drill, a full scope drill, and the evaluated exercise to determine if the ERFs could support operational readiness.

Inspectors reviewed the essential emergency facilities, equipment, instrumentation, and supplies to determine if they were being maintained in a state of operational readiness by the licensee. Specifically, the inspectors evaluated the ERFs, equipment, instrumentation, and supplies to determine if they were in a state of operational readiness in accordance with 10 CFR 50.47(b), 10 CFR Part 50, Appendix E, Technical Specifications, NUREG-0737, “Clarification of TMI Action Plan Requirements,” and Supplement 1 to NUREG-0737, “Clarification of TMI Action Plan Requirements - Requirements for Emergency Response Capability.” Inspectors reviewed the radiological survey equipment to verify if the types of equipment for the respective purpose was available, operating, and within the calibration time period. The inspectors also reviewed the communications equipment to verify if the equipment was available, operating, and capable for offsite communication via phone/fax/email. The inspectors also reviewed whether the communication of the ERO between facilities had been established.

The inspectors observed the use of the emergency facilities, equipment, instrumentation, and supplies by the emergency response organization (ERO) during a limited scope drill, a full scope drill, and the evaluated exercise to determine the ERFs operational readiness.

Units 3 and 4 will use the existing Alert and Notification System (ANS) used for site's operating units. The inspectors determined that no changes have been made to the existing physical design of the system. In addition, the existing ANS design, and any changes made, are reviewed as part of the operating baseline inspections (Inspection Procedure 71114.02).

The inspectors reviewed the licensee's corrective actions associated with the emergency response facilities that were entered into the CAP to determine whether actions taken to address the issues were effective and were in accordance with procedures.

Attachment 3

The inspectors were provided with the licensee's scenario package in accordance with the recommended guidance in Interim Radiological Emergency Preparedness (REP) Program Manual and regulations. The inspectors reviewed the scenario to determine if the onsite elements to be exercised were included in the objectives in accordance with the "Southern Nuclear Operating Company - Standard Emergency Plan, Standard Emergency Plan Annex for Vogtle Electric Generating Plant Units 3 and 4" (which combined make up the E-Plan), and NUREG/FEMA-REP-1, Revision 1. Specifically, the inspectors reviewed the:

- direction in the scenario package to the exercise staff prohibiting interaction by those administering the exercise;
- detailed description of the predicted behavior of the simulator from the start of the exercise until the end, as well as the anticipated behavior of the ERO during the exercise;
- time schedule of the real and simulated initiating events, and the expected actions for each;
- narrative summary describing the conduct of the exercise including such things (where applicable) as simulated employee exposures, any offsite assistance, rescue of personnel, use of protective clothing, deployment of radiological monitoring teams;
- ERFs, as described in the E-Plan, were included within the context of the scenario;
- description of the arrangements for materials to be provided to official observers, such as scenario books, pre-exercise briefings, communication devices, guidance for how and when to communicate within the evaluators or the players,
- list of objectives and that those objectives specified measurable and/or observable criteria for evaluators; and
- onsite objectives for a demonstration of the correction of previously identified drill or exercise weaknesses.

The inspectors observed the implementation of the scenario elements described above during the graded exercise. Offsite communication for the exercise was coordinated with the state and local agencies. Credit for the offsite response was established during the Federal Emergency Management Agency (FEMA) graded exercise on May 15, 2018. The results of FEMA's observations are documented in the Final After Action Report, dated August 2, 2018.

The inspectors reviewed the scenario to determine if the objectives were commensurate with the type and scope of exercise proposed, and whether the licensee's emergency response personnel are familiar with their emergency response duties. The inspectors reviewed the scenario to determine if it sufficiently tested the licensee's integrated capabilities for timely response to a radiological accident, the content of selected implementing procedures and methods, the emergency equipment, and the communications networks. The inspectors reviewed the scenario to determine if it was in accordance with the NUREG/FEMA-REP-1, Revision 1, and 10 CFR 50, Appendix E, Part IV.F. The inspection included evaluation of the following:

- the objective scope included performance of the ERO to appropriately classify the event within the regulatory time frame, notify the appropriate offsite authorities within the regulatory time frame, assess the radiological release using the appropriate mechanisms, and provide the appropriate recommended protective actions to the offsite authorities within the regulatory time frame,
- the objective scope included performance of ERO, during the critique process that identifies weaknesses/issues and enters those items into a corrective action process for resolution,
- the scenario allowed for performance of the ERO in each of the emergency response facilities, and
- the conduct of the evaluators and controllers during the exercise.

The inspectors observed the ERO's performance, and the implementation of the scenario elements described above during the graded exercise.

The inspectors reviewed the scenario package to determine the organization and outline of the contents and to determine if the following were included in the scenario in accordance with NUREG/FEMA-REP-1, Revision 1:

- exercise objectives that support demonstration of key skills in principle functional areas,
- the timeline of exercise events that described anticipated plant responses and ERO actions, anticipated time frames to meet regulatory requirements for classification, notification, and protective action recommendations,
- descriptions of any imbedded drills were sufficient to understand potential ERO response(s),
- a description of key injects and messages,
- the expected ERO (by position) and outside response organization participation, and
- plant and player safety considerations.

The inspectors observed the ERO's performance, and the implementation of the scenario elements described above during the graded exercise.

Attachment 4

The inspectors performed direct inspection of the Unit 3 graded exercise to verify if licensee performance in classification, notification, protective action recommendation development, dose assessment activities and other selected areas was in accordance with 10 CFR 50.47(b)(14), and 10 CFR Part 50, Appendix E, Part IV.F.

Demonstration of the offsite response organizations was not a part of the exercise. The inspectors performed a direct inspection of the onsite ERO performance. Credit for the offsite response was established during the FEMA graded exercise on May 15, 2018. The results of FEMA's observations were documented in the Final After Action Report, dated August 2, 2018.

The inspectors evaluated the licensee's process to determine if the conduct of the exercise supported the finding that the emergency preparedness program demonstrated reasonable assurance exists that the licensee can effectively implement its E-Plan to adequately protect the public health and safety in the event of a radiological emergency. Specifically, the inspectors observed various aspects of the licensee's performance to determine whether the licensee's performance of the emergency preparedness program during the exercise was in accordance with the E-Plan, and 10 CFR 50.47(b). The inspectors reviewed the following aspects:

- the scenario was detailed, accurately presented plant performance and ERO anticipated actions, provided opportunity for demonstration of ERO performance, and provided measurable objectives to enable the assessment of performance,
- the ERO's performance during the exercise demonstrated familiarity with the ERFs, procedures, and the ability to perform classifications, notifications, dose assessments of radiological conditions, and provide protective recommendations to offsite authorities,
- the identification of weaknesses and issues during the critique process, and how those items were captured, and
- plant management's awareness of the performance of the ERO during the exercise, and the weaknesses and issues discovered during the exercise.

The inspectors performed a direct inspection of the control room/simulator during the licensees fourth ERO drill and during the onsite evaluated exercise. The inspectors observed the operating crew's performance in the control room, and the implementation of the scenario described above as a part of the pre-operational testing to verify if the exercise was conducted in accordance with the E-Plan, and 10 CFR 50 Appendix E. The inspectors reviewed whether the:

- operators were familiar with control room computer interface, able to determine the appropriate plant status and develop appropriate strategies to bring the plant to a safe state,
- actions performed were in accordance with the applicable procedures,
- managers communicated expected behavior, transferred emergency director responsibilities, and dispatched response teams to address plant events,
- analysis of plant conditions was accurate and timely and corrective actions (as necessary) were communicated appropriately and concisely within the facility or to the other ERFs,

- events during the exercise were detected then classified accurately, and within the regulatory time frame,
- notifications were made to the appropriate offsite authorities within the regulatory time frame, and
- emergency director was assisted with technical assistance throughout exercise, providing confirmation of EAL classifications, direction of teams through plant during radiological release.

The inspectors performed a direct inspection of the TSC during the licensees fourth ERO drill and during the onsite evaluated exercise. The inspectors observed the ERO's performance in the TSC and the implementation of the scenario described above as a part of the pre-operational testing program to verify if the licensee's ERO performance in the TSC during the exercise was in accordance with the E-Plan, and 10 CFR 50 Appendix E. The inspectors reviewed whether the:

- staffing and activation of the TSC were timely and adequate,
- ERO actions performed were in accordance with applicable procedures and the E-Plan,
- TSC was managed appropriately and expectations were communicated adequately,
- analysis of plant conditions was accurate and timely, and corrective actions (as necessary) were communicated appropriately and concisely within the facility or to the other facilities,
- events during the exercise were adequately detected then classified accurately, and within the regulatory timeframe,
- notifications were made to the appropriate offsite authorities within the regulatory timeframe,
- assistance to the EOF dose assessors was appropriate;
- TSC management appropriately and adequately provided backup for protective action decision making and recommendations,
- TSC management appropriately and adequately provided assistance and support to the simulator control room, and
- dispatch, coordination, and prioritization of repair/monitoring teams was adequately demonstrated.

The inspectors performed a direct inspection of the emergency operations facility (EOR) during the onsite evaluated exercise. The inspectors observed the ERO performance in the EOF, and the implementation of the scenario described above as a part of the pre-operational testing to verify if the performance of the ERO in the EOF during the exercise was in accordance with the E-Plan, and 10 CFR 50 Appendix E. The inspectors reviewed whether:

- there were any pre-staged exercise participants prior to the exercise,
- the EOF was activated in a timely fashion in accordance with NMP-EP-143, Facility Activation,
- the EOF command and control was adequate, and briefings were held regularly and effectively,
- the Emergency Director stayed engaged throughout the exercise during accident assessment and classification, and
- noise levels were held low which facilitated better communication within the facility.

The inspectors performed a direct inspection of the OSC during the licensee's fourth ERO drill and during the onsite evaluated exercise. The inspectors observed the ERO's performance addressing plant issues, and the implementation of the scenario described above as a part of the pre-operational testing to verify if the licensee's ERO performance in the OSC during the exercise was in accordance with the E-Plan, and 10 CFR 50, Appendix E. The inspectors reviewed whether the operators were familiar with control room computer interface, able to determine the appropriate plant status, and develop appropriate strategies to bring the plant to a safe state.

The inspectors evaluated the licensee's performance regarding offsite monitoring to determine if it was in accordance with the E-Plan. The inspectors reviewed whether:

- vehicles capable of transporting the teams and capable of functioning under adverse weather conditions,
- instruments' calibration was maintained within dates, and equipment was available for monitoring and obtaining samples, and
- teams were equipped with adequate communications system that permitted unimpeded transmission and reception of data and instructions over the entire plume emergency planning zone.

The inspectors evaluated the dose assessment team's interaction with the field monitoring teams in the ERO during the exercise.

The inspectors observed the licensee's performance of the response teams during drill four and the exercise to determine if it was in accordance with the E-Plan. The inspectors reviewed whether:

- briefings to coordinate priorities and goals were provided to teams prior to leaving for a mission to address an issue,
- the communications with the teams were maintained by the OSC (and when applicable the control room or TSC).
- response and rescue teams were monitored for radiation exposure and the teams were briefed prior to their mission to high radiation areas,
- the appropriate process and monitoring equipment were used to prevent contamination within the OSC from returning response teams, and
- team personnel were able to demonstrate proficiency in the use of protective equipment, radiation monitoring equipment, and procedures.

The inspectors reviewed the implementation of site security and accountability in the exercise scenario to determine if field teams were well equipped and sampling data was provide in a timely manner throughout the exercise, and EOF field team management adequately assigned teams in accordance with NUREG/FEMA-REP-1, Revision 1.

The inspectors also observed the licensee's implementation of site security and accountability during drill four and the exercise to verify if the licensee's site security and accountability implementation were in accordance with the E-Plan. The inspectors reviewed whether:

- the site accountability was conducted in a timely manner,

- individuals were unaccounted for the process provided the means to account for them,
- response and rescue teams were monitored for radiation exposure and the teams were briefed prior to their mission to high radiation areas,
- access controls were in place for each of the ERFs,

The inspectors evaluated the performance of the ERO in the Emergency News Center (Joint Public Information Center or JPIC) during the exercise to determine if it was in accordance with the E-Plan, and 10 CFR 50 Appendix E. The inspectors evaluated the following during the exercise:

- the dissemination of news releases from the EOF as the scenario increased in severity,
- timely and accurate release of information describing plant conditions and classification level in accordance with communication procedures, and
- communications with offsite emergency response organizations were performed accurately and made with expected frequency.

Attachment 5

The inspectors performed a direct inspection of the emergency response organization (ERO) on-shift staffing and augmentation drills.

The inspectors reviewed the licensee's on-shift staffing analysis to determine if the licensee appropriately utilized NRC guidance to ensure the scope of scenarios was adequately applied to develop on-shift and augmented staffing levels for Vogtle Unit 3 in accordance with the E-Plan and NUREG-0654, Table B-1.

The inspectors observed the ERO during a limited scope drill, a full scope drill, and the evaluated exercise to determine the adequacy of on-shift and augmentation staffing levels, the activation system, and the timeliness of emergency response facility activation.

The inspectors reviewed several licensee reports to verify if they demonstrated ERO response times and activation results during the fourth ERO drill. The inspectors also observed ERO response times during the onsite evaluated exercise to verify if they were in accordance with the E-Plan.

The inspectors reviewed the licensee's corrective actions associated with emergency preparedness issues entered into the CAP to determine whether actions taken to address the issues in accordance with procedures.

Attachment 7

The inspectors performed a direct inspection of the evaluated Unit 3 emergency preparedness exercise. The inspectors reviewed documentation on organizational structure; responsibilities, authorities and staffing of key emergency response personnel; interfaces and coordination between onsite, offsite, and corporate organizations; and shift staffing to determine if the appropriate organization and management controls are included, and were in accordance with 10 CFR 50.47(b), and 10 CFR 50, Appendix E. The inspectors reviewed whether:

- there was an adequate description of the reporting chain for the ERO, and that the ERO was not assigned additional responsibilities outside the EP area,
- the licensee had organizational and administrative procedures of emergency response personnel,
- memorandums of understanding were consistent with what is described in the E-Plan and that they were being maintained current, and
- the response time described in the E-Plan was satisfied.

The inspectors reviewed the licensee's training of the ERO. Specifically, the inspectors reviewed aspects of the training program to determine if it was in accordance with the requirements found in 10 CFR 50.47(b)(15) and 10 CFR Part 50, Appendix E, Item IV.F. The inspectors reviewed the ERO Training Report for corporate and plant staff to determine that personnel who have emergency planning and response responsibilities have appropriate staff assignments and adequate qualifications. In addition, during the exercise, the inspectors evaluated the emergency director's proficiency in navigating the event. The inspectors observed the emergency director to determine if the director adequately analyzed the conditions, used the appropriate procedures, classified the event accurately and within the regulatory requirements, and provided appropriate protective actions recommendations.

The inspectors reviewed audits of the licensee's emergency preparedness program. Specifically, the inspectors reviewed a sample of internal audits to determine that they adequately assessed the emergency preparedness program and procedures, and that the process was performed in accordance with the E-Plan, and 10 CFR 50.54(t) requirements.

The inspectors reviewed corrective action implementing procedures for the following to determine if effective controls were in place for identifying and mitigating issues:

- appropriate identification of issues, subsequent tracking, and actions taken to resolve the issues (e.g., escalation of issues to management; applicability to other sites as a fleet issue; training of individuals),
- the licensee's approach to resolve issues for corrective actions, and
- the corrective actions taken were commensurate with the significance of the associated conditions.

b. Findings

No findings were identified.

3P02 Fire Protection Program

- 64705-02.01 - Implemented Operational Feature of the FPP

a. Inspection Scope

The inspectors reviewed aspects of the licensee's FPP to determine if reasonable assurance existed at the time of the inspection to verify that the reviewed aspects of the program will meet the requirements of 10 CFR 50.48, Fire Protection, once fully

implemented after the 10 CFR 52.103(g) finding. The inspectors reviewed the site's FPP document, fire hazards analysis (FHA), and fleet and site-specific procedures to determine if the requirements of BTP CMEB 9.5-1 were incorporated into the FPP.

Specifically, the inspectors reviewed various aspects of the FPP to determine if:

- the licensee's administrative procedures control in situ and transient combustible materials, and that the procedures define the use, handling, and storage of flammable and combustible liquids and gases;
- the licensee's administrative procedures control potential ignition sources, especially when the licensee is performing hot work, such as welding, heat treating, grinding, brazing, flame of plasma arc cutting, arc gouging, etc;
- a change evaluation is required to be performed to implement any compensatory measure that differs from what is documented in the licensee's FPP;
- the licensee has identified SSCs important to SSD of the reactor and their demonstrated compliance with 10 CFR 50.48;
- that redundant trains of systems required for hot shutdown, which are located in the same FA, are not subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems;
- the FPP identifies the various positions within the licensee's organization that are responsible for the program;
- general employee fire training includes employee knowledge of combustible and ignition source control procedures, classes of fire (by fuel type), extinguishing agent selection based on fire classification, and site-specific fire reporting procedures;
- the licensee has procedures stating that the licensee will retain the FPP and each change to the FPP as a record until the Commission terminates the reactor license and that the licensee shall retain each superseded revision of the FPP for 3 years from the date it was superseded; and
- the licensee had effectively implemented a QA program that provides assurance that the FP systems are designed, fabricated, erected, tested, maintained, and operated so that they will function as intended.

b. Findings

No findings were identified.

3P03 Pre-operational Testing

- 70702-02.03 - Procedure Review

a. Inspection Scope

The inspectors reviewed procedure B-GEN-ITPCI-019, B-GEN-ITPI-039, and associated procedures related to proper calibration and operation of passive core cooing system instrumentation to determine if the procedures contained sufficient information to meet the requirements of UFSAR Section 14.2.9.1.3, the initial test program administrative manual, and vendor or technical manuals. The reviews

performed by the inspectors included the following documents as it relates to various instruments:

- procedures B-GEN-ITPCI-019-146, 3-PXS-OTS-16-006, and B-GEN-ITPCI-039-F181 related to calibration and operation of level transmitters in the in-containment refueling water storage tank;
- procedures B-GEN-ITPCI-019-120 and 3-PXS-OTS-16-012 related to calibration of the narrow range lower level transmitters in the core makeup tank;
- procedures B-GEN-ITPCI-039-F176 and 3-GEN-OTS-10-002 related to actuation of a containment isolation valve in the normal residual heat removal system;
- procedures B-GEN-ITPCI-019-117 and 3-PXS-OTS-16-019 related to calibration of a narrow range upper level transmitter in the core makeup tank; and
- procedures B-GEN-ITPCI-039-F155 and 3-GEN-OTS-10-001 related to the opening of the first stage automatic depressurization system (ADS) “A” isolation valve.

Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document;
- test objectives were clearly stated;
- all required testing prerequisites were identified, including:
    - required plant systems availability was specified;
    - any associated facility procedures were specified;
    - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
    - all special supplies and test equipment needs were specified;
    - special environmental conditions and hold times, if any, were identified; and
    - test precautions and limitations were specified;
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- procedures reflected requirements in UFSAR Table 14.3-2, 14.3-7, as applicable;
- procedures required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - valve lineups;
    - electrical power and control requirements;
    - all temporary installations or equipment modifications (instrumentation, electrical, and piping); and
    - all necessary special conditions e.g. temperatures, pressures, flows, water chemistry;
- procedures included a section listing references to appropriate ITAAC, UFSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;

- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed correctly, and the test objectives are met;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures required that all temporary connections, disconnections or jumpers be restored to normal at the end of the test or references their control by another procedure;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedures provided for verification of calibration of M&TE and recoding of any temporarily installed or used M&TE equipment identification and calibration date.

b. Findings

No findings were identified.

3P04 Pre-operational Testing

- 70702-02.04 - Test Witnessing

a. Inspection Scope

The inspectors witnessed the use and implementation of procedure 3-CNS-ITPP-503 related to Unit 3 Type C leakage testing of containment isolation valves. Specifically, the inspectors attended the pre-job brief and witnessed the leakage test performance on valve 3-PXS-V043 (Containment N2 Supply CIV Check Valve) for the following attributes:

- test personnel used the current procedure revision and were familiar with the procedural requirements;
- test personnel minimum staffing requirements and the responsibilities and qualification requirements of test personnel were met;
- test prerequisites and initial conditions were met;
- measuring and test equipment required by the procedure was calibrated and in service at the time of the test;
- test data recording equipment required by the procedure was calibrated;
- briefings were conducted and appropriate shift turnover was performed;
- test logs documented any test anomalies, problems, interruptions, and/or deficiencies, and were included in the licensee's corrective action program; and
- test personnel performed a preliminary review of test results to determine that the observed test results meet the established acceptance criteria.

b. Findings

No findings were identified.

3P05 Pre-operational Testing

- 70702-02.03 - Procedure Review
- 70702-02.04 - Test Witnessing

a. Inspection Scope

The inspectors reviewed procedures B-GEN-ITPCI-019, B-GEN-ITPCI-039 and associated procedures related to the calibration and operation of RCS, in-containment refueling water storage tank, core makeup tank, reactor coolant pump, and engineered safety features instrumentation to determine if the procedures contained sufficient information to meet the requirements of UFSAR Section 14.2.9.1.1.g, the initial test program administrative manual, and vendor or technical manuals. The reviews performed by the inspectors included the following documents as it relates to various components:

- procedures B-GEN-ITPCI-019-128 and B-GEN-ITPCI-039-F238 related to the proper calibration and operation of a level transmitter in the in-containment refueling water storage tank;
- procedure B-GEN-ITPCI-019-102 related to the proper calibration and operation of a level transmitter in the in-containment refueling water storage tank;
- procedure 3-PMS-ITPP-504 related to the demonstration of proper actuation of the reactor trip function associated with various RCS instrumentation;
- procedure B-GEN-ITPCI-019-151 related to the proper calibration of a level transmitter in the pressurizer;
- procedures B-GEN-ITPCI-039-F074 and 3-GEN-OTS-10-003 related to the actuation of core makeup tank B discharge isolation valve;
- procedures B-GEN-ITPCI-019-043 and B-GEN-ITPCI-019-044 related to the proper calibration of resistance temperature detectors for the bearing water temperature of reactor coolant pump 2A;
- procedures B-GEN-ITPCI-039-F004 related to the actuation of component cooling water system containment isolation valve;
- procedures B-GEN-ITPCI-019-108 and B-GEN-ITPCI-019-154 related to the calibration/check of the 1A and 2A RCP speed sensors;
- procedures B-GEN-ITPCI-039-F168 and 3-RCS-OTS-10-001 related to the actuation of the Reactor vessel head vent valve RCS-PL-V150D;
- procedure B-GEN-ITPCI-039-F238 and component test procedures for SV3-VFS-V800A/B related to the containment vacuum relief and isolation; and
- procedures B-GEN-ITPCI-039-F026 related to the reactor coolant pump switchgear for reactor coolant pump 1A.

Specifically, the inspectors reviewed the procedures for the following attributes:

- appropriate licensee staff and management approval were indicated on the document.

- test objectives were clearly stated;
- all required testing prerequisites were identified, including:
    - required plant systems availability was specified;
    - any associated facility procedures were specified;
    - prior completion of calibration checks, limit switch setting, protective device settings, etc. were included where applicable;
    - all special supplies and test equipment needs were specified;
    - special environmental conditions and hold times, if any, were identified; and
    - test precautions and limitations were specified.
- test acceptance criteria and source of the acceptance criteria were clearly identified;
- procedures were written to reflect requirements in UFSAR Tables 6.2.3-1, 15.0-4a, and 15.0-4b, as applicable;
- procedure required comparison of results with acceptance criteria;
- initial test conditions were specified, including:
    - valve lineups;
    - electrical power and control requirements;
    - all temporary installations or equipment modifications (instrumentation, electrical, and piping); and
    - all necessary special conditions e.g. temperatures, pressures, flows, water chemistry;
- procedures included a section listing references to appropriate ITAAC, FSAR sections, technical specifications, drawings, design specifications, industry codes, and other requirements;
- step-by-step instructions for the performance of the procedure, including hold points if needed, were included to the extent necessary to ensure that the test is performed correctly, and the test objectives are met;
- provisions were made for recording details of the conduct of the test, including all test anomalies or observed deficiencies, their resolution, and all necessary retesting;
- procedures required that all temporary connections, blind flanges, disconnections or jumpers be restored to normal at the end of the test, or references their control by another procedure;
- procedures provided for the identification of both personnel conducting the testing and those evaluating the test data;
- provisions were made for the evaluator to document acceptability of the data;
- procedures provided for quality control, quality assurance, engineering, or other specified individual verification of critical steps or test parameters;
- special precautions for personnel and equipment safety were specified;
- expected performance of all automatic functions or controls was specified; and
- procedure provided for verification of calibration of M&TE and recording of any temporarily installed or used M&TE equipment identification and calibration date.

The inspectors witnessed the use and implementation of procedures B-GEN-ITPCI-019-154 and B-GEN-ITPCI-039-F238 for component tests associated with UFSAR Section 14.2.9.1.1.g.

Specifically, the inspectors witnessed the tests for the following attributes:

- test personnel used the current procedure revision and were familiar with the procedural requirements;
- test personnel minimum staffing requirements and the responsibilities and qualification requirements of test personnel were met;
- test prerequisites and initial conditions were met;
- measuring and test equipment required by the procedure was calibrated and in service at the time of the test;
- briefings were conducted and appropriate shift turnover was performed;
- test engineers' logs documented any test anomalies, problems, interruptions, and/or deficiencies, and were included in the licensee's corrective action program; and
- test personnel performed a preliminary review of test results to determine that the observed test results meet the established acceptance criteria.

b. Findings

No findings were identified.

3P06 Pre-operational Testing

- 70702-02.04 - Test Witnessing

a. Inspection Scope

The inspectors witnessed the use and implementation of procedure 3-CNS-ITPP-502 related to Unit 3 Type B local leak rate testing. Specifically, the inspectors attended the pre-job brief and witnessed the local leak rate test performance of main steam line containment penetration bellow 1 (3-SGS-PY-C01A), and main feedwater line containment penetration bellow 2 (3-SGS-PY-C02A) for the following attributes:

- test personnel used the current procedure revision and were familiar with the procedural requirements;
- test personnel minimum staffing requirements and the responsibilities and qualification requirements of test personnel were met;
- test prerequisites and initial conditions were met;
- measuring and test equipment required by the procedure was calibrated and in service at the time of the test;
- test data recording equipment required by the procedure was calibrated;
- briefings were conducted and appropriate shift turnover was performed;
- test engineers' logs documented any test anomalies, problems, interruptions, and/or deficiencies, and were included in the licensee's corrective action program; and
- test personnel performed a preliminary review of test results to determine that the observed test results meet the established acceptance criteria.

b. Findings

No findings were identified.

4. OTHER INSPECTION RESULTS

4OA6 Meetings, Including Exit

.1 Exit Meeting.

On October 23, 2020, the inspectors presented the inspection results to Mr. M. Yox, Vogtle 3&4 Director of Regulatory Affairs, and other licensee and contractor staff members. Proprietary information was reviewed during the inspection period but was not included in the inspection report.

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensees and Contractor Personnel

E. Riffle, ITP Director
A. Nix, NI Manager
T. Petrak, ITAAC Manager
M. Hickox, Test Support Manager
C. Alexander, Milestone Manager
S. Boyle, Milestone Manager
D. Pagan-Diaz, ITP Turnover. Manager
J. Olsen, NI Supervisor
S. Leighty, SNC Licensing Supervisor
C. Castell, SNC Licensing Engineer
N. Patel, SNC Licensing Engineer
J. Cole, SNC Licensing Engineer
J. Weathersby, SNC Licensing Engineer
C. Main, ITAAC Project Manager
D. Wade, ITAAC Project Manager
B. Macioce, Principle Engineer Digital Testing
R. McKay, ITP Test Engineer
S. Turner, ITP Test Engineer
G. Weaver, ITP Test Engineer
R. Nicoletto, ITP Test Engineer
W. Pipkins, ITP Test Engineer
D. Melton, ITP Test Engineer
R. Espara, ITP Test Engineer
J. Clark, ITP Test Engineer
K. Morgan, ITP Test Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Item Number	Type	Status	Description
05200025/2020009-01	NCV	Open	Failure to Complete Containment Prior to Unit 3 ILRT
05200025/2020009-02	NCV	Open/Closed	Failure to Establish Adequate Procedure for Unit 3 72-hour Battery Performance Test

LIST OF DOCUMENTS REVIEWED

1. Construction Reactor Safety

Section 1A01

Procedures

B-GEN-ITPCI-039, PMS CIM Component Test, Rev. 3
B-GEN-ITPCI-039-F084, PXS-PL-V118A-I1-A Component Test 2, Rev. 1
B-GEN-ITPCI-039-F085, PXS-PL-V118A-I1-F Component Test 1, Rev. 1

B-GEN-ITPCI-039-F086, PXS-PL-V118A-I1-F Component Test 2, Rev. 1
B-GEN-ITPCI-039-F123, RCS-PL-V004A-I1-A Component Test 1, Rev. 1
3-PMS-ITPP-522, PMS Squib Valve Controller Performance Preoperational Test, Rev. 2.0
3-PMS-OTS-17-012, ADS & IRWST Injection Block and Squib Valve Testing, Rev. A (0.0)
B-GEN-ITPA-019, Protection and Safety Monitoring System Initial Test Program Test Plan, Rev. 1.0

Miscellaneous

APP-PMS-J0M-003, AP1000 Protection and Safety Monitoring System-Technical Manual, Rev. 2
APP-PMS-T1-501, AP1000 Protection and Safety Monitoring System Preoperational and Component Test Specification, Rev. 9
3-PMS-ITPP-522, PMS Squib Valve Controller Performance Preoperational Test, Rev. 2.0
APP-PV98-T6-001, Squib Valve Firing Circuit Verification Test Design Document, Rev. 1
APP-PV98-T1C-501, AP1000 Initial Test Program Squib Valve Controller Performance Calculational Worksheet, Rev. 1
APP-PV98-Z0-001, Pyrotechnic Actuator for ASME Boiler and Pressure Vessel Code, Section III Class 1 Squib Valves (PV70), Rev. 3

Work Orders

1120456
1109896
1109900

Drawings

APP-PXS-E5-PLV125B01, Combined Wiring Diagram APP-PXS-PL-V125B IRWST INJECTION ISOL. VALVE SH 1 OF 2, Rev. 2
APP-PXS-E5-PLV125B01, Combined Wiring Diagram APP-PXS-PL-V125B IRWST INJECTION ISOL. VALVE SH 2 OF 2, Rev. 1
APP-RCS-E5-PLV004D01, Combined Wiring Diagram APP-RCS-PL-V004D CLASS 1E SQUIB VALVE SH 1 OF 2, Rev. 2
APP-RCS-E5-PLV004D01, Combined Wiring Diagram APP-RCS-PL-V004D CLASS 1E SQUIB VALVE SH 2 OF 2, Rev. 1

Section 1A02

Procedures

B-GEN-ITPCI-039, PMS Cim Component Test Procedure, Rev. 3
B-GEN-ITPCI-039-F084, PXS-PL-V118A-I1-A Component Test 2, Rev. 1
B-GEN-ITPCI-039-F085, PXS-PL-V118A-I1-F Component Test 1, Rev. 1
B-GEN-ITPCI-039-F086, PXS-PL-V118A-I1-F Component Test 2, Rev. 1
B-GEN-ITPCI-039-F123, RCS-PL-V004A-I1-A Component Test 1, Rev. 1
B-GEN-ITPA-019, Protection and Safety Monitoring System Initial Test Program Test Plan, Rev. 1.0
3-PMS-ITPP-522, PMS Squib Valve Controller Performance Preoperational Test, Rev. 2.0
3-PMS-OTS-17-012, ADS & IRWST Injection Block and Squib Valve Testing, Rev. A (0.0)

Miscellaneous

APP-PMS-J0M-003, AP1000 Protection and Safety Monitoring System-Technical Manual, Rev. 2
APP-PMS-T1-501, AP1000 Protection and Safety Monitoring System Preoperational and Component Test Specification, Rev. 9
APP-PV98-T6-001, Squib Valve Firing Circuit Verification Test Design Document, Rev. 1

APP-PV98-T1C-501, AP1000 Initial Test Program Squib Valve Controller Performance Calculational Worksheet, Rev. 1
APP-PV98-Z0-001, Pyrotechnic Actuator for ASME Boiler and Pressure Vessel Code, Section III Class 1 Squib Valves (PV70), Rev. 3

Drawings
APP-PXS-E5-PLV125B01, COMBINED WIRING DIAGRAM APP-PXS-PL-V125B IRWST INJECTION ISOL. VALVE SH 1 OF 2, Rev. 2
APP-PXS-E5-PLV125B01, COMBINED WIRING DIAGRAM APP-PXS-PL-V125B IRWST INJECTION ISOL. VALVE SH 2 OF 2, Rev. 1
APP-RCS-E5-PLV004D01, COMBINED WIRING DIAGRAM APP-RCS-PL-V004D CLASS 1E SQUIB VALVE SH 1 OF 2, Rev. 2
APP-RCS-E5-PLV004D01, COMBINED WIRING DIAGRAM APP-RCS-PL-V004D CLASS 1E SQUIB VALVE SH 2 OF 2, Rev. 1

Section 1A03
Procedures
3-GEN-OTS-10-001, Division A Quarterly Stroke Test, Rev. B (0.1)
3-CAS-OTS-10-001, Compressed Air System Valve Stroke Test, Rev. B (0.1)
3-CAS-SOP-001, Compressed and Instrument Air System, Rev. G (0.6)
B-GEN-ITPCI-039-F238, VFS-PL-800A Component Test, Rev. 1.0
B-GEN-ITPCI-039-F239, VFS-PI-800B Component Test, Rev. 1.0

Work Orders
1109875
1109915
1109853
1109872

Section 1P01
Unit 3 & 4 EPCRs for the following valves through 7/30/2020
RCS-PLV-001 A/B
RCS-PLV-002 A/B
RCS-PLV-003 A/B
RCS-PLV-0014 A/B/C/D
RCS-PLV-0004 A/B/C/D
PXS-PLV-14 A/B
PXS-PLV-15 A/B
PXS-PLV-108 A/B
PXS-PLV-123 A/B
PXS-PLV-125 A/B
PXS-PLV-118 A/B
PXS-PLV-120 A/B

Condition Reports
CR 50057519, "NRC Criterion XIII inspection observation", dated 7/29/2020
CR 50057525, "NRC Criterion XIII inspection observation", dated 7/29/2020
CR 50057585, "Work orders cancelled without proper justification", dated 7/30/2020

Procedures

26139-000-4MP-T81C-N6201, Field Material Storage Control, Rev. 9
B-GEN-MNT-002, Work Process And Requirements For Plant Equipment Preservation And Preventive Maintenance, Rev. 2.0
APP-PV14-VMM-001, Instruction, Operation and Maintenance Manual for PV14 Air Operated Globe Valves, ASME Section III, Class 1, 2 & 3, Rev. 3
APP-PV20-VMM-001, Installation, Operation & Maintenance Manual for AP1000 PV20 Piston Operated Rotary Ball Valves, Rev. 2.0
SV0-PV01-VMM-001, MAINTENANCE MANUAL for AP1000 PV01 Size 3 or Larger Motor Operated Gate Valves, Section III, Class 1, 2 & 3, Rev. 0
SV0-PV01-VMM-002, Instruction Manual for AP1000 PV01 Size 3" and Larger Motor Operated Globe Valves, Section III, Class 1, 2 & 3, Rev. 1
APP-PV70-VMM-001, PV70 Squib (Pyrotechnic Actuated) Valves Maintenance Manual, Rev. 2
APP-PV98-VMM-001, PV98 Pyrotechnic Actuator Instruction Manual (for PV70 Squib Valves), Rev. 1

2. SAFEGUARDS PROGRAMS

Section 2P01
NMP-SE-021, Security Search Process
NMP-EP-144, Protective Actions
NMP-SE-023, Personnel Authorization and Badging Program
NMP-SE-021-001 Security Sealing Operation Instructions
Vogtle Procedure 90321-C, Threat Assessment and Security Force Protection Recommendations
Vogtle Procedure 00652-C, Personnel Escort Duties and Responsibilities
Vogtle Procedure 90106-C, Compensatory Measure for Degraded Security Systems
Vogtle Procedure 00008-C, Plant Lock and Key Control
Vogtle Procedure 00653-C, Protected Area Entry/Exit Control

3. OPERATIONAL READINESS

Section 3T01
Procedures
3-RCS-ITPP-506, RCP and Reactor Coolant Flow Precore Hot Functional, Rev. 2

Miscellaneous
APP-RCS-M3R-002, Baseline RCS Flow Measurement Specification, Rev. 2
APP-SSAR-GSC-771, Acceptance Criteria for AP 1000 RCS Flow Coastdown Preoperational and Startup Tests, Rev. 2
APP-RCS-T1-501, Reactor Coolant System Preoperational Test Specification, Rev. 4

Section 3T02
Procedures
3-PXS-ITPP-503, Passive Core Cooling System Pre-Core Flow Testing with RV Head Installed Preoperational Test Procedure, Section 4.6, Version 2.1
ND-RA-001-008, ITAAC Principal Closure Document Review and Development, Version 14.0

Calculations
APP-PXS-T1-501, Passive Core Cooling System Preoperational Test Specification, Rev. 4
APP-PXS-M3C-019, IRWST/Containment Sump Injection Lines and ADS Line Resistances, Rev. 5

Drawings
APP-RCS-PLW-01H, Reactor Coolant System Containment Bldg Room 11701/11500 ADS Piping to Sparger B, Rev. 3 and 4
APP-RCS-PLW-018, Reactor Coolant System Containment Bldg Room 11701/11500 ADS Piping to Sparger A, Rev. 2 and 3
APP-RCS-PLW-070, Reactor Coolant System Containment Building Room 11603 ADS Stage 1 Lower Tier, Rev. 5
APP-RCS-PLW-071, Reactor Coolant System Containment Bldg Room 11701 ADS Stage 1 Lower Tier, Rev. 2 and 3
APP-RCS-PLW-081, Reactor Coolant System Containment Bldg Room 11701 ADS Stage 1 Upper Tier, Rev. 3 and 4

Work Orders
SV3-PXS-t0W-1071718, Perform Passive Core System Pre-Core Flow Testing with RV Head Installed Pre-Operational Test per 3-PXS-ITPP-503

Corrective Action Documents
439845
439847
439848
633735

Miscellaneous
SV3-PXS-T2C-007, Vogtle Unit 3 3-PXS-ITPP-503 Section 4.6 ADS Stages 1, 2, and 3 Flow Line Resistance Test Calculation, Rev. 0
SV3-PXS-T1R-007, Vogtle Unit 3 3-PXS-ITPP-503 Section 4.7 ADS Stages 1, 2, and 3 Flow Line Resistance Test Engineering Report, Rev. 0
ND-20-0401, ITAAC Closure Notification on Completion of ITAAC 2.1.02.08d.i (Index Number 32), dated July 31, 2020
SVP_SV0_005751, Completion Package Documents for Vogtle Unit 3 ITAAC 2.1.02.08d.i, dated July 16, 2020
SVE-PXS-ITR-800032, ITAAC Technical Report – Unit 3 Recorded Results of RCS ADS Stages 1-3 Group A and B Line Flow Resistance: ITAAC 2.1.02.08d.i, Rev. 0
SV3-RCS-ITR-801032, Unit 3 Inspections and Associated Analysis of the ADS Stages 1-3 Piping Flow Path: ITAAC 2.1.02.08d.i, Rev. 0

Section 3T03
Procedures
3-RCS-ITPP-506, RCP and Reactor Coolant Flow Precore Hot Functional, Version 2

Specifications
APP-RCS-M3R-002, Baseline RCS Flow Measurement Specification, Revision 2
APP-SSAR-GSC-771, Acceptance Criteria for AP 1000 RCS Flow Coastdown Preoperational and Startup Tests, Revision 2
APP-RCS-T1-501, Reactor Coolant System Preoperational Test Specification, Revision 4

Section 3T04
Procedures
B-GEN-ITPCI-039-F026, ECS-ES-32 Component Test, Rev. 1.0
B-GEN-ITPCI-039-F031, ECS-ES-61 Component Test, Rev. 1.0

Miscellaneous
SV3-GW-J4-008, AP1000 Interface specification for RCP class 1E Circuit Breakers, Rev. 3

Work Orders
1109892

Section 3T05
Procedures
3-CNS-ITPP-501, Containment Integrated Leak Rate Test (Type A), Rev. 6.0
3-CNS-ITPP-502, Containment Penetration Leak Rate (Type B) Preoperational Test, Rev. 3.0
3-CNS-ITPP-503, LLRT Containment Leak Rate Test Type C, Rev. 3.0
B-GEN-ITPA-004, Conduct of Test, Rev. 16.1

Miscellaneous
B-PROG-ENG-001, Appendix J (ILRT/LLRT) Containment Leakage Rate Testing Program Manual, Rev. 3.0
NEI 94-01, Industry Guideline for Implementing Performance-Based Option of 10 CFR Part 50, Appendix J, Rev. 0
ANSI/ANS-56.8-1994, American National Standard for Containment System Leakage Testing Requirements, 8/04/1994
ASME Section III, 2000
ILRT Test Report

Section 3T06
Procedures
B-GEN-ITPA-004, Conduct of Test, Rev. 11.0
3-PXS-ITPP-503, Passive Core Cooling System Pre-Core Flow Testing with RV Head Installed Preoperational Test Procedure, Sections 4.4.2 and 4.5.2, Version 2.1
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50056542

Section 3T04
Procedures:
3-CNS-ITPP-503, LLRT Containment Leak Rate Test Type C, Ver. 3.0
B-GEN-ITPA-004, Conduct of Test, Rev. 11.0

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SV3-PXS-M6-001, Piping And Instrumentation Diagram Passive Core Colling System, Rev. 6

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1068278

Section 3T05
Procedures
3-GEN-OTS-10-003, Division C Quarterly Valve Stroke Test, Rev. A(0.0)
3-PMS-ITPP-504, PMS Reactor Trip Breakers, Rev. 2
3-RCS-OTS-10-001, Reactor Coolant System Valve Stroke, Rev. A(0.0)
B-GEN-ITPA-011, Initial Test Program Administration and Test Procedure Development, Rev. 8.1
B-GEN-ITPCI-019, PMS Sensor Channels, Rev. 4
B-GEN-ITPCI-019-043, PMS-Channel Calibration Test for 3-RCS-TE213B-E1, Rev. 1.0
B-GEN-ITPCI-019-044, PMS-Channel Calibration Test for 3-RCS-TE213B-E2, Rev. 1.0
B-GEN-ITPCI-019-102, PMS-Channel Calibration Test for 3-RCS-FT101A, Rev. 1.0
B-GEN-ITPCI-019-108, PMS-Channel Calibration Test for 3-RCS-ST281, Rev. 1.0
B-GEN-ITPCI-019-128, PMS Channel Calibration Test for 3-RCS-PT191B, Rev. 1.0
B-GEN-ITPCI-019-151, PMS Channel Calibration Test for 3-RCS-LT195C, Rev. 1.0
B-GEN-ITPCI-019-154, PMS-Channel Calibration Test for 3-RCS-ST283, Rev. 1.0
B-GEN-ITPCI-039, PMS CIM Component Test Procedure, Rev. 4.2
B-GEN-ITPCI-039-F004, CCS-PL-V200 Component Test, Rev. 1.0
B-GEN-ITPCI-039-F026, ECS-ES-32 Component Test, Rev. 1.0
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Drawings
SV3-RCS-J5-100203, Inst Loop Wiring Diag RCS System 2-Wire-PMS PWRD Class 1E Instrs-Inside Containment to Outside Cab Junction Box, Rev. 3
SV3-RCS-J5-100604, Inst Loop Wiring Diag RCS System 8-Wire-PMS PWRD Class 1E Instrs-Inside Containment to Outside Cab Junction Box, Rev. 1
SV3-PV14-Z0D-104, PV14 Datasheet 104, Rev. 5
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APP-PMS-T1-501, AP1000 Protection and Safety Monitoring System Preoperational and Component Test Specification, Rev. 9
APP-PMS-J7-001, AP1000 Protection and Safety Monitoring System – System Specification Document, Rev. 2
APP-JY50-J0M-001, AP1000 Reactor Trip Switchgear Technical Manual, Rev. 0
APP-PXS-M3-001, Passive Core Cooling System, System Specification Document, Rev. 10
SV3-MP01-VNM-001, AP1000 Reactor Coolant Pump Technical Manual for US RCPs, Rev. 1
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SV3-JE62-V8M-001, AP1000 RCP Speed and Phase Reference Sensors Instruction Manual, Rev. 0
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APP-RCS-M3C-101, RCS Instrumentation and Packaged Mechanical System Interface Requirements, Rev. 13
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CR 50061499

Section 3T06
Procedures
3-CNS-ITPP-502, Containment Penetration Leak Rate (Type B) Preoperational Test, Rev. 3.0
B-GEN-ITPA-004, Conduct of Test, Rev. 11.0

Drawings
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Work Orders
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LIST OF ACRONYMS

ADS	automatic depressurization system
CAP	corrective action program
CFR	Code of Federal Regulations
CNS	containment system
CR	condition report
EOF	emergency operations center
EPA	electrical penetration assembly
E-Plan	emergency plan
ERF	emergency response facility
ERO	emergency response organization
E&DCR	engineering & design coordination report
FEMA	Federal Emergency Management Agency
ILRT	integrated leak rate test
IP	inspection procedure
IMC	inspection manual chapter
IR	inspection report
ITAAC	inspections, tests, analysis, and acceptance criteria
M&TE	measuring and test equipment
NCV	non-cited violation
NRC	Nuclear Regulatory Commission
OSC	operations support center
PA	protected area
PMS	protection and safety monitoring system
RCP	reactor coolant pump
REV	revision
REP	radiological emergency preparedness
TSC	technical support center
UFSAR	Updated Final Safety Analysis Report
VA	vital area
VEGP	Vogtle Electric Generating Plant

ITAAC INSPECTED

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
30	2.1.02.08b	8.b) The RCPs have a rotating inertia to provide RCS flow coastdown on loss of power to the pumps.	A test will be performed to determine the pump flow coastdown curve.	The pump flow coastdown will provide RCS flows greater than or equal to the flow shown in Figure 2.1.2-2, “Flow Transient for Four Cold Legs in Operation, Four Pumps Coasting Down.”

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
32	2.1.02.08d.i	8.d) The RCS provides automatic depressurization during design basis events.	i) A low pressure flow test and associated analysis will be conducted to determine the total piping flow resistance of each ADS valve group connected to the pressurizer (i.e., ADS Stages 1-3) from the pressurizer through the outlet of the downstream ADS control valves. The reactor coolant system will be at cold conditions with the pressurizer full of water. The normal residual heat removal pumps will be used to provide injection flow into the RCS discharging through the ADS valves. Inspections and associated analysis of the piping flow paths from the discharge of the ADS valve groups connected to the pressurizer (i.e., ADS Stages 1□3) to the spargers will be conducted to verify the line routings are consistent with the line routings used for design flow resistance calculations.	i) The calculated ADS piping flow resistance from the pressurizer through the sparger with all valves of each ADS group open is < 2.91E□6 ft/gpm2.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
41	2.1.02.09a	9.a) The RCS provides circulation of coolant to remove heat from the core.	Testing and analysis to measure RCS flow with four reactor coolant pumps operating at no□load RCS pressure and temperature conditions will be performed. Analyses will be performed to convert the measured pre-fuel load flow to post□fuel load flow with 10□percent steam generator tube plugging.	The calculated post-fuel load RCS flow rate is > 301,670 gpm.
46	2.1.02.11a.i	11.a) Controls exist in the MCR to cause the remotely operated valves identified in Table 2.1.2-1 to perform active functions.	i) Testing will be performed on the squib valves identified in Table 2.1.2-1 using controls in the MCR without stroking the valve.	i) Controls in the MCR operate to cause a signal at the squib valve electrical leads which is capable of actuating the squib valve.
48	2.1.02.11b.i	11.b) The valves identified in Table 2.1.2-1 as having PMS control perform an active safety function after receiving a signal from the PMS.	i) Testing will be performed on the squib valves identified in Table 2.1.2-1 using real or simulated signals into the PMS without stroking the valve.	i) The squib valves receive a signal at the valve electrical leads that is capable of actuating the squib valve.
64	2.1.02.13b	13.b) The RCPs trip after receiving a signal from the PMS.	Testing will be performed using real or simulated signals into the PMS.	The RCPs trip after receiving a signal from the PMS.
107	2.2.01.07.i	7. The CNS provides the safety-related function of containment isolation for containment boundary integrity and provides a barrier against the release of fission products to the atmosphere.	i) A containment integrated leak rate test will be performed.	i) The leakage rate from containment for the integrated leak rate test is less than La.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
110	2.2.01.09	9. Safety-related displays identified in Table 2.2.1-1 can be retrieved in the MCR. 10.a) Controls exist in the MCR to cause those remotely operated valves identified in Table 2.2.1-1 to perform active functions. 10.b) The valves identified in Table 2.2.1-1 as having PMS control perform an active safety function after receiving a signal from the PMS.	Inspection will be performed for retrievability of the safety-related displays in the MCR. Stroke testing will be performed on remotely operated valves identified in Table 2.2.1-1 using the controls in the MCR. Testing will be performed on remotely operated valves listed in Table 2.2.1-1 using real or simulated signals into the PMS.	Safety-related displays identified in Table 2.2.1-1 can be retrieved in the MCR. Controls in the MCR operate to cause remotely operated valves identified in Table 2.2.1-1 to perform active safety functions. The remotely operated valves identified in Table 2.2.1-1 as having PMS control perform the active function identified in the table after receiving a signal from PMS.
181	2.2.03.08c.ii	8.c) The PXS provides RCS makeup, boration, and safety injection during design basis events.	ii) A low-pressure test and analysis will be conducted for each CMT to determine piping flow resistance from the cold leg to the CMT. The test will be performed by filling the CMT via the cold leg balance line by operating the normal residual heat removal pumps.	ii) The flow resistance from the cold leg to the CMT is ≤ 7.21 x 10-6 ft/gpm2.
209	2.2.03.11b.i	11.b) The valves identified in Table 2.2.3-1 as having PMS control perform their active function after receiving a signal from the PMS.	i) Testing will be performed on the squib valves identified in Table 2.2.3-1 using real or simulated signals into the PMS without stroking the valve.	i) Squib valves receive an electrical signal at the valve electrical leads that is capable of actuating the valve after a signal is input to the PMS.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
216	2.2.03.12a.iv	12.a) The squib valves and check valves identified in Table 2.2.3-1 perform an active safety-related function to change position as indicated in the table.	iv) Exercise testing of the check valves with active safety functions identified in Table 2.2.3-1 will be performed under preoperational test pressure, temperature, and fluid flow conditions.	iv) Each check valve changes position as indicated in Table 2.2.3-1
529	2.5.02.06a.i	6.a) The PMS initiates an automatic reactor trip, as identified in Table 2.5.2□2, when plant process signals reach specified limits.	An operational test of the as-built PMS will be performed using real or simulated test signals.	i) The reactor trip switchgear opens after the test signal reaches the specified limit. This only needs to be verified for one automatic reactor trip function.

530	2.5.02.06a.ii	6.a) The PMS initiates an automatic reactor trip, as identified in Table 2.5.2□2, when plant process signals reach specified limits. 6.b) The PMS initiates automatic actuation of engineered safety features, as identified in Table 2.5.2-3, when plant process signals reach specified limits. 6.c) The PMS provides manual initiation of reactor trip and selected engineered safety features as identified in Table 2.5.2-4. 8.a) The PMS provides for the minimum inventory of displays, visual alerts, and fixed position controls, as identified in Table 2.5.2-5. The plant parameters listed with a "Yes" in the "Display" column and visual alerts listed with a "Yes" in the "Alert" column can be retrieved in the MCR. The fixed position controls listed with a "Yes" in the "Control" column are provided in the MCR. 8.c) Displays of the open/closed status of the reactor trip breakers can be retrieved in the MCR. 9.a) The PMS automatically removes blocks of reactor trip and engineered safety features actuation when the plant approaches conditions	An operational test of the as-built PMS will be performed using real or simulated test signals. An operational test of the as-built PMS will be performed using real or simulated test signals. An operational test of the as-built PMS will be performed using the PMS manual actuation controls. i) An inspection will be performed for retrievability of plant parameters in the MCR. iii) An operational test of the as□built system will be performed using each MCR fixed position control. Inspection will be performed for retrievability of displays of the open/closed status of the reactor trip breakers in the MCR. An operational test of the as-built PMS will be performed using real or simulated test signals. An operational test of the as-built PMS will be performed. An operational test of the as-built PMS will be performed. With one channel in bypass, an attempt will be made to place a redundant channel in bypass.	ii) PMS output signals to the reactor trip switchgear are generated after the test signal reaches the specified limit. This needs to be verified for each automatic reactor trip function. Appropriate PMS output signals are generated after the test signal reaches the specified limit. These output signals remain following removal of the test signal. Tests from the actuation signal to the actuated device(s) are performed as part of the system-related inspection, test, analysis, and acceptance criteria. ii) PMS output signals are generated for reactor trip and selected engineered safety features as identified in Table 2.5.2-4 after the manual initiation controls are actuated. i) The plant parameters listed in Table 2.5.2-5 with a "Yes" in the "Display" column, can be retrieved in the MCR. iii) For each test of an as-built fixed position control listed in Table 2.5.2-5 with a "Yes" in the "Control" column, an actuation signal is generated. Tests from the actuation signal to the actuated device(s) are performed as part of

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
		for which the associated function is designed to provide protection. These blocks are identified in Table 2.5.2-6. 9.b) The PMS two-out-of-four initiation logic reverts to a two-out-of-three coincidence logic if one of the four channels is bypassed. All bypassed channels are alarmed in the MCR. 9.c) The PMS does not allow simultaneous bypass of two redundant channels.		the system-related inspection, test, analysis and acceptance criteria. Displays of the open/closed status of the reactor trip breakers can be retrieved in the MCR. The PMS blocks are automatically removed when the test signal reaches the specified limit. The PMS two-out-of-four initiation logic reverts to a two-out-of-three coincidence logic if one of the four channels is bypassed. All bypassed channels are alarmed in the MCR. The redundant channel cannot be placed in bypass.
532	2.5.02.06c.i	6.c) The PMS provides manual initiation of reactor trip and selected engineered safety features as identified in Table 2.5.2-4.	An operational test of the as-built PMS will be performed using the PMS manual actuation controls.	i) The reactor trip switchgear opens after manual reactor trip controls are actuated.

603	2.6.03.04c	4.c) Each IDS 24-hour battery bank supplies a dc switchboard bus load for a period of 24 hours without recharging. 4.d) Each IDS 72-hour battery bank supplies a dc switchboard bus load for a period of 72 hours without recharging. 4.e) The IDS spare battery bank supplies a dc load equal to or greater than the most severe switchboard bus load for the required period without recharging. 4.f) Each IDS 24-hour inverter supplies its ac load. 4.g) Each IDS 72-hour inverter supplies its ac load. 4.h) Each IDS 24-hour battery charger provides the PMS with two loss-of-ac input voltage signals. 5.a) Each IDS 24-hour battery charger supplies a dc switchboard bus load while maintaining the corresponding battery charged. 5.b) Each IDS 72-hour battery charger supplies a dc switchboard bus load while maintaining the corresponding battery charged. 5.c) Each IDS regulating transformer supplies an ac load when powered from the 480 V MCC. 6. Safety-related displays identified in Table	Testing of each 24-hour as□built battery bank will be performed by applying a simulated or real load, or a combination of simulated or real loads which envelope the battery bank design duty cycle. The test will be conducted on a battery bank that has been fully charged and has been connected to a battery charger maintained at 270±2 V for a period of no less than 24 hours prior to the test. Testing of each 72-hour as-built battery bank will be performed by applying a simulated or real load, or a combination of simulated or real loads which envelope the battery bank design duty cycle. The test will be conducted on a battery bank that has been fully charged and has been connected to a battery charger maintained at 270±2 V for a period of no less than 24 hours prior to the test. Testing of the as-built spare battery bank will be performed by applying a simulated or real load, or a combination of simulated or real loads which envelope the most severe of the division batteries design duty cycle. The test will be conducted	The battery terminal voltage is greater than or equal to 210 V after a period of no less than 24 hours with an equivalent load that equals or exceeds the battery bank design duty cycle capacity. The battery terminal voltage is greater than or equal to 210 V after a period of no less than 72 hours with an equivalent load that equals or exceeds the battery bank design duty cycle capacity. The battery terminal voltage is greater than or equal to 210 V after a period with a load and duration that equals or exceeds the most severe battery bank design duty cycle capacity. Each 24-hour inverter supplies a line-to-line output voltage of 208 ± 2% V at a frequency of 60 ± 0.5% Hz. Each 72-hour inverter supplies a line-to-line output voltage of 208 ± 2% V at a frequency of 60 ± 0.5% Hz. Two PMS input signals exist from each 24-hour battery charger indicating loss of ac input voltage when the loss-of-input voltage condition is simulated. Each 24-hour battery charger provides an output current of at least 150 A with an output voltage in the range 210 to 280 V. Each 72-hour battery

		2.6.3-1 can be retrieved in the MCR. 11. Displays of the parameters identified in Table 2.6.3-2 can be retrieved in the MCR.	on a battery bank that has been fully charged and has been connected to a battery charger maintained at 270±2 V for a period of no less than 24 hours prior to the test. Testing of each 24-hour as-built inverter will be performed by applying a simulated or real load, or a combination of simulated or real loads, equivalent to a resistive load greater than 12 kW. The inverter input voltage will be no more than 210 Vdc during the test. Testing of each 72-hour as-built inverter will be performed by applying a simulated or real load, or a combination of simulated or real loads, equivalent to a resistive load greater than 7 kW. The inverter input voltage will be no more than 210 Vdc during the test. Testing will be performed by simulating a loss of input voltage to each 24-hour battery charger. Testing of each as-built 24-hour battery charger will be performed by applying a simulated or real load, or a combination of simulated or real loads. Testing of each 72-hour as-built battery charger will be performed by applying a simulated or real	charger provides an output current of at least 125 A with an output voltage in the range 210 to 280 V. Each regulating transformer supplies a line-to-line output voltage of 208 ± 2% V. Safety-related displays identified in Table 2.6.3-1 can be retrieved in the MCR. Displays identified in Table 2.6.3-2 can be retrieved in the MCR.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
			load, or a combination of simulated or real loads. Testing of each as-built regulating transformer will be performed by applying a simulated or real load, or a combination of simulated or real loads, equivalent to a resistive load greater than 30 kW when powered from the 480 V MCC. Inspection will be performed for retrievability of the safety-related displays in the MCR. Inspection will be performed for retrievability of the displays identified in Table 2.6.3-2 in the MCR.	
609	2.6.03.04i	4.i) The IDS supplies an operating voltage at the terminals of the Class 1E motor operated valves identified in subsections 2.1.2, 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.3.2, 2.3.6, and 2.7.1 that is greater than or equal to the minimum design voltage.	Testing will be performed by measuring the voltage during motor starting at both the IDS battery and motor□operated valve motor terminals while each motor□operated valve is stroked. Analyses will be performed to verify that the voltage at the motor□operated valve motor terminals is greater than or equal to the minimum design voltage of each motor□operated valve with an IDS battery terminal voltage of 210 Vdc.	A report exists and concludes that IDS can provide a voltage greater than or equal to each valve's minimum design voltage to the motor terminals of each motor□operated valve when power is supplied under design conditions from IDS batteries with battery terminal voltage at 210 Vdc while each motor□operated valve is stroked.

No.	ITAAC No.	Design Commitment	Inspections, Tests, Analysis	Acceptance Criteria
659	C.2.6.09.02	2. Physical barriers for the protected area perimeter are not part of vital area barriers.	An inspection of the protected area perimeter barrier will be performed.	Physical barriers at the perimeter of the protected area are separated from any other barrier designated as a vital area barrier.
725	2.7.06.02.ii	2. The VFS provides the safety-related functions of preserving containment integrity by isolation of the VFS lines penetrating containment and providing vacuum relief for the containment vessel.	ii) Testing will be performed to demonstrate that remotely operated containment vacuum relief isolation valves open within the required response time.	ii) The containment vacuum relief isolation valves (VFS□PL-V800A and VFS□PL-V800B) open within 30 seconds.