



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

May 9, 2017

Mr. George A. Lippard III, Vice President
Nuclear Operations
South Carolina Electric & Gas Company
Virgil C. Summer Nuclear Station
P.O. Box 88, Mail Code 800
Jenkinsville, SC 29065

**SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1 – NRC INTEGRATED
INSPECTION REPORT 05000395/2017001**

Dear Mr. Lippard:

On March 31, 2017, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Virgil C. Summer Nuclear Station, Unit 1. On April 27, 2017, the NRC inspectors discussed the results of this inspection with you and other members of your staff. The results of this inspection are documented in the enclosed report.

No NRC-identified or self-revealing findings were identified during this inspection. However, NRC inspectors documented two licensee-identified violations, which were determined to be of very low safety significance, in this report. The NRC is treating these violations as non-cited violations (NCVs) consistent with Section 2.3.2.a of the Enforcement Policy.

If you contest the violations or significance of these NCVs, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Virgil C. Summer Nuclear Station, Unit 1.

If you disagree with a cross-cutting aspect assignment in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; and the NRC resident inspector at the Virgil C. Summer Nuclear Station, Unit 1.

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Sincerely,

/RA/

Anthony D. Masters, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Docket No.: 50-395
License No.: NPF-12

Enclosure:
IR 05000395/2017001
w/Attachment: Supplemental Information

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SUBJECT: VIRGIL C. SUMMER NUCLEAR STATION, UNIT 1 – NRC INTEGRATED
INSPECTION REPORT 05000395/2017001 May 9, 2017

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U. S. NUCLEAR REGULATORY COMMISSION

REGION II

Docket No. 50-395

License No. NPF-12

Report Nos. 05000395/2017001

Licensee: South Carolina Electric & Gas (SCE&G) Company

Facility: Virgil C. Summer Nuclear Station, Unit 1

Location: Jenkinsville, SC 29065

Dates: January 1 through March 31, 2017

Inspectors: J. Reece, Senior Resident Inspector
E. Coffman, Resident Inspector
E. Stamm, Senior Reactor Inspector

Approved by: Anthony D. Masters, Chief
Reactor Projects Branch 5
Division of Reactor Projects

Enclosure

SUMMARY

IR 05000395/2017001; January 1, 2017 – March 31, 2017: Virgil C. Summer Nuclear Station, Unit 1; integrated inspection report.

The report covered a three-month period of inspection by resident inspectors. No NRC-identified or self-revealing findings were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP), dated April 29, 2015. The cross-cutting aspects were determined using IMC 0310, "Aspects Within the Cross Cutting Areas," dated December 4, 2014. All violations of NRC requirements are dispositioned in accordance with the NRC's Enforcement Policy dated November 1, 2016. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision (Rev.) 6.

Two violations of very low safety significance that were identified by the licensee have been reviewed by the NRC. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program (CAP). These violations and corrective action tracking numbers are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 began the inspection period at full Rated Thermal Power (RTP) and operated at or near full RTP for the remainder of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment

Partial System Walkdowns

a. Inspection Scope

The inspectors conducted four partial equipment alignment walkdowns which are listed below, to evaluate the operability of selected redundant trains or backup systems with the other train or system inoperable or out of service (OOS). Correct alignment and operating conditions were determined from the applicable portions of drawings, system operating procedures (SOP), and technical specifications (TS). The inspections included review of outstanding maintenance work orders (WOs) and related condition reports (CRs) to verify that the licensee had properly identified and resolved equipment alignment problems that could lead to the initiation of an event or impact mitigating system availability. Documents reviewed are listed in the Attachment.

- 'A' emergency diesel generator (EDG) while 'B' EDG was OOS for emergent work
- 'B' emergency feedwater (EFW) and turbine driven emergency feedwater (TDEFW) while 'A' motor driven EFW (MDEFW) system was OOS for planned maintenance
- 'A' MDEFW and TDEFW during scheduled maintenance on the 'B' MDEFW pump and related components
- 'B' EDG during scheduled major maintenance on the 'A' EDG

b. Findings

No findings were identified.

1R05 Fire Protection

Quarterly Fire Protection Walkdowns

a. Inspection Scope

The inspectors reviewed recent CRs, WO, and impairments associated with the fire protection system. The inspectors reviewed surveillance activities to determine whether they supported the operability and availability of the fire protection system. The inspectors assessed the material condition of the active and passive fire protection systems and features, and observed the control of transient combustibles and ignition

sources. The inspectors conducted routine inspections of the following five areas (respective fire zones also noted):

- Control building 412 elevation (fire zones CB02 and CB05)
- Diesel generator rooms 'A' and 'B' (fire zones DG01.01, 01.02, and DG02.01, 02.02)
- Service water pumphouse (fire zones SWPH01, 02, 03, 04.02, 05.01.01, .02, .03, and 05.02.01, .02, .03)
- 1DA switchgear room 463 elevation (fire zone IB01.20)
- 1DB switchgear and heating, ventilation, and air conditioning (HVAC) rooms (fire zones IB01.16, IB01.17, and IB01.22.02)

b. Findings

No findings were identified.

1R06 Flood Protection Measures

Internal Flooding

a. Inspection Scope

The inspectors reviewed and walked down the 463 elevation of the intermediate building regarding internal flood protection features and equipment to determine consistency with design requirements, Updated Final Safety Analysis Report (UFSAR), and flood analysis documents. Risk significant structures, systems, and components (SSCs) in these areas included the EDGs and associated support systems. The inspectors reviewed the licensee's CAP database to verify that internal flood protection problems were being identified at the appropriate level, entered into the CAP, and appropriately resolved. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R07 Heat Sink Performance

Annual Review

a. Inspection Scope

The inspectors conducted one heat sink performance sample. The inspectors observed inspections and cleaning of the 'A' spent fuel heat exchanger, reviewed the applicable health reports, inspection results, and verified that the heat exchanger performance issues were entered into the licensee's CAP. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified.

1R11 Licensed Operator Regualification Program

.1 Licensed Operator Regualification

a. Inspection Scope

The inspectors observed an operator regualification simulator exam scenario occurring on February 6, 2017, involving multiple failures leading to entry into abnormal operating procedures followed by emergency operating procedures in order to combat the problems. The inspectors observed crew performance in terms of communications; ability to prioritize failures in order to take timely and proper actions; prioritizing, interpreting, verifying alarms; correct use and implementation of procedures, including the alarm response procedures; timely control board operation and manipulation, including high-risk operator actions; oversight and direction provided by the shift supervisor, including the ability to identify and implement appropriate TS actions and emergency action levels. The inspectors reviewed the licensee's critique comments to verify that any performance deficiencies were captured for appropriate corrective action.

b. Findings

No findings were identified.

.2 Resident Quarterly Observation of Control Room Operations

a. Inspection Scope

During the inspection period, the inspectors conducted two observations of licensed reactor operator activities to ensure consistency with licensee procedures and regulatory requirements. For the listed activities covering a total four hour period, the inspectors observed the following elements of operator performance: 1) operator compliance and use of plant procedures including TS; 2) control board component manipulations; 3) use and interpretation of plant instrumentation and alarms; 4) documentation of activities; 5) management and supervision of activities; and 6) control room communications.

- Component cooling water (CCW) flow adjustments on nonessential header
- 'A' train solid state protection system (SSPS) surveillance test and reactor coolant system (RCS) dilution for temperature control.

b. Findings

No findings were identified.

1R12 Maintenance Effectiveness

a. Inspection Scope

The inspectors evaluated the equipment issue described in the CR listed below to verify the licensee's effectiveness with the corresponding preventive or corrective maintenance associated with structure, system, and components (SSCs). The

inspectors reviewed Maintenance Rule (MR) implementation to verify that component and equipment failures were identified, entered, and scoped within the MR program. Selected SSCs were reviewed to verify proper categorization and classification in accordance with 10 CFR 50.65. The inspectors examined the licensee's 10 CFR 50.65(a)(1) corrective action plans to determine if the licensee was identifying issues related to the MR at an appropriate threshold and that effective corrective actions were implemented. The inspectors' review evaluated if maintenance preventable functional failures or other MR findings existed that the licensee had not identified. The inspectors reviewed the licensee's controlling procedures consisting of engineering services procedure (ES)-514, Rev. 7, "Maintenance Rule Program Implementation," and station administrative procedure (SAP)-0157, Rev. 2, "Maintenance Rule Program," to verify consistency with the MR program requirements.

- CR-16-04795, received annunciator alarm for 'C' chiller trip

b. Findings

No findings were identified.

1R13 Maintenance Risk Assessment and Emergent Work Control

a. Inspection Scope

The inspectors performed risk assessments, as appropriate, for the six scheduled work activities listed below to assess, as appropriate: 1) the effectiveness of the risk assessments performed before maintenance activities were conducted; 2) the management of risk; 3) that, upon identification of an unforeseen situation, necessary steps were taken to plan and control the resulting emergent work activities; and 4) that emergent work problems were adequately identified and resolved. The inspectors evaluated the licensee's work prioritization and risk characterization to determine, as appropriate, whether necessary steps were properly planned, controlled, and executed for the planned and emergent work activities.

- Work week 03, fire emergency procedure (FEP) red risk condition for emergent work on the 'B' EDG
- Work week 03, yellow risk condition for 'A' SSPS surveillance test
- Work week 04, FEP red risk condition for work on the 'A' EFW system
- Work week 07, FEP red risk condition for work on the 'B' EFW system
- Work week 08, yellow risk condition for 'B' SSPS surveillance test
- Work week 09, FEP red risk for 'A' EDG scheduled major maintenance

b. Findings

No findings were identified.

1R15 Operability Determinations and Functionality Assessments

a. Inspection Scope

The inspectors reviewed the four operability evaluations listed below, affecting risk significant mitigating systems to assess, as appropriate: 1) the technical adequacy of the evaluations; 2) whether operability was properly justified and the subject component or system remained available, such that no unrecognized increase in risk occurred; 3) whether other existing degraded conditions were considered; 4) that the licensee considered other degraded conditions and their impact on compensatory measures for the condition being evaluated; and 5) the impact on TS limiting conditions for operations and the risk significance in accordance with the significance determination process. The inspectors verified that the operability evaluations were performed in accordance with SAP-209, Rev. 1C, "Operability Determination Process," and SAP-999, Rev. 14A, "Corrective Action Program."

- CR-16-04379, service water (SW) pond reactor building cooling unit (RBCU) 1B and 2B return isolation valve failed stroke time testing
- CR-17-00198, 'A' EDG cooler SW return valve has downstream pin hole leaks
- CR-17-00751, discovered discharge fan damper failed open due to tagout of the 'A' EDG 'B' fan motor
- CR-17-01036, 'A' EDG jacket water temperature reading above operability limit

b. Findings

No findings were identified.

1R18 Plant Modifications

a. Inspection Scope

The inspectors reviewed one temporary modification implemented by work order as noted below, for adverse effects on system availability, reliability, and functional capability. Documents reviewed included site drawings, applicable sections of the UFSAR, supporting 10 CFR 50.59 evaluations, TS, and design basis information. The inspectors evaluated the change documents and associated 10 CFR 50.59 reviews against the system design basis documentation and UFSAR to verify that the changes did not adversely affect the safety function of safety systems. The inspectors reviewed any related CRs to confirm that problems were identified at an appropriate threshold, were entered into the CAP, and appropriate corrective actions had been initiated.

- Bypass Authorization Request 16-02, 'B' Reactor Coolant Pump (RCP) Keyphasor and Tachometer (Locked Rotor Trip)

b. Findings

No findings were identified.

1R19 Post Maintenance Testing

a. Inspection Scope

For the six maintenance activities listed below, the inspectors reviewed the associated post-maintenance testing (PMT) procedures and either witnessed the testing and/or reviewed test records to assess whether: 1) the effect of testing on the plant had been adequately addressed by control room and/or engineering personnel; 2) testing was adequate for the maintenance performed; 3) test acceptance criteria were clear and adequately demonstrated operational readiness consistent with design and licensing basis documents; 4) test instrumentation had current calibrations, range, and accuracy consistent with the application; 5) tests were performed as written with applicable prerequisites satisfied; 6) jumpers installed or leads lifted were properly controlled; 7) test equipment was removed following testing; and 8) equipment was returned to the status required to perform its safety function. The inspectors verified that these activities were performed in accordance with general test procedure, GTP-214, "Post Maintenance Testing Guideline," Rev. 5F.

- WO 1609724, Retest following XVB03107B-SW actuator air filter replacement (old filter had minor debris)
- WO 1700457, Replacement of 'B' EDG air receiver tank's water level switch
- WO 1615039 and 1611654, retests following inboard seal replacement on 'A' CCW pump
- WO 1618215, 'C' CCW pump outboard bearing has excessive chatter with visible metal flake degradation
- WO 1701603, 'A' SW pump motor lower bearing cooling flow indicator replacement
- WO 1614152, Inspect closing coil in breaker XSW1DB03 for foreign material

b. Findings

No findings were identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed and/or reviewed five surveillance test procedure (STP) listed below to verify that TS or risk significant surveillance requirements were followed, and that test acceptance criteria were properly specified to ensure that the equipment could perform its intended safety function. The inspectors verified that proper test conditions were established as specified in the procedures, that no equipment preconditioning activities occurred, and that acceptance criteria were met.

In-Service Tests

- STP-222.002, "Component Cooling Pump Test," Rev. 10A
- STP-212.002, "Reactor Building Spray Pump Test," Rev. 7
- STP-205.004, "RHR Pump and Valve Operability Test," Rev. 9B

Routine

- STP-125.013A, "Diesel Generator 'A' Semi-Annual Operability Test," Rev. 1C
- STP-506.003, "RCP Under-Frequency Unit Trip Actuating Device Operational Test," Rev. 11B

b. Findings

No findings were identified.

2. EMERGENCY PREPAREDNESS

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation

Emergency Preparedness Drill

a. Inspection Scope

On February 15, 2017, the inspectors reviewed and observed the performance of an emergency preparedness (EP) shift turnover drill that involved a large fuel oil fire impacting a crane in the yard area, crane boom failure damaging the reactor water storage tank, a design basis loss of coolant accident, a lockout on the 'A' train emergency switchgear bus, loss of the 'B' train charging pump, and a failure of the transfer switch for the 'C' charging pump which required entry into increasing emergency action levels starting with a Notification of Unusual Event and ending in a General Emergency. The inspectors assessed abnormal and emergency procedure usage, emergency plan classifications, protective action recommendations, respective notifications, and the adequacy of the licensee's drill critique. The inspectors verified that drill deficiencies were captured into the licensee's corrective action program.

b. Findings

No findings were identified.

3. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification

Mitigating Systems Cornerstone

a. Inspection Scope

The inspectors verified the accuracy of the licensee's PI submittals listed below for the period January 1, 2016 through December 31, 2016. The inspectors used the performance indicator definitions and guidance contained in Nuclear Energy Institute NEI 99-02, Rev. 7, "Regulatory Assessment Performance Indicator Guideline," and licensee procedure SAP-1360, Rev. 3, "NRC and INPO/WANO Performance Indicators,"

to check the reporting of each data element. The inspectors sampled licensee event reports (LERs), operator logs, plant status reports, CRs, and performance indicator data sheets to verify that the licensee had properly reported the PI data.

- Unplanned Scrams per 7000 Critical Hours
- Unplanned Power Changes per 7000 Critical Hours
- Unplanned Scrams with Complications

b. Findings

No findings were identified.

4OA2 Problem Identification and Resolution

.1 Review of Items Entered into the Corrective Action Program

a. Inspection Scope

As required by inspection procedure IP 71152, "Identification and Resolution of Problems," and in order to help identify repetitive equipment failures or specific human performance issues for follow-up, the inspectors performed a daily screening of items entered into the licensee's CAP. This review was accomplished by either attending daily screening meetings that briefly discussed major CRs, or accessing the licensee's computerized corrective action database and reviewing each CR that was initiated.

b. Findings

No findings were identified.

.2 Annual Sample Review of CR-17-00150

a. Inspection Scope

The inspectors reviewed CR-17-00150, 'fire protection doors listed in technical report TR07800-020 are not identified in station implementation procedures,' in detail to evaluate the effectiveness of the licensee's corrective actions for important safety issues. The inspectors assessed whether the issue was properly identified, documented accurately and completely, properly classified and prioritized, adequately considered extent of condition, generic implications, common cause, and previous occurrences, adequately identified root causes/apparent causes, and identified appropriate and timely corrective actions. Also, the inspectors verified the issues were processed in accordance with procedure, SAP-999, "Corrective Action Program," Rev. 14A.

b. Findings

The enforcement aspects regarding CR-17-00150 are discussed in Section 4OA7 of this report. The inspectors reviewed CR-17-00150 initiated on January 10, 2017, in detail and noted that it was initiated by the licensee's fire protection engineer following his review of a previous CR initiated for problems with turbine building fire door DRTB/202. Specifically, CR-17-00136 documented that DRTB/202 required maintenance but was

not a NFPA 805 required fire door as it was not listed in station administrative procedure, SAP-131A, "Fire Protection Program Surveillances and Compensatory Measures," Rev. 3. Further investigation by the licensee determined that technical report, TR07800-020, "NFPA 805 Monitoring Program Phase 1: Scoping," Rev. 0, identified not only DRTB/202, but also other fire doors that should have been included in SAP-131A and two other procedures, fire protection procedure, FPP-015, "Shift Inspection," Rev. 7, and FPP-025, "Fire Containment," Rev. 6A. The inspectors noted that the licensee initiated Action 3 in CR-17-00150 to provide a list of doors that are affected by this issue so that appropriate interim actions may be taken including acceptance criteria and necessary compensatory actions and retest requirements. The inspectors noted that Action 3 was completed January 12, 2017, with the development of a technical work record, TWR-PB4264 which contained the following enclosures:

- Enclosure A - All NFPA 805 Required Fire Doors
- Enclosure B - Doors Not Listed in SAP-131A, Table 6.1.11-2
- Enclosure C1 - Doors Not Listed in FPP-015, Attachment (Att) I
- Enclosure C2 - Doors Listed in FPP-015, Att I but not identified as required
- Enclosure D - Fire Doors Not Listed in FPP-025, Enclosure 6.3

At the end of the quarter, the inspectors determined that the licensee had not translated the interim actions noted in the TWR into their fire protection monitoring program governed by the above procedures. This observation was provided to the licensee who will take additional actions to evaluate the TWR for use on shift by the operators. The inspectors continue to monitor licensee corrective actions regarding fire door deficiencies.

4OA3 Followup of Events and Notices of Enforcement Discretion

.1 (Closed) LER 05000395/2016-006-00: Circuit 1 Hot Gas Bypass Valve Failure Renders A-Train Chiller Non-functional and A-Train Charging Pump Inoperable

On October 19, 2016, a past operability evaluation conducted by the licensee concluded that safety-related mechanical water chiller 'A' (XHX0001A) had been non-functional from June 20, 2016, through July 20, 2016, due to circuit 1 hot gas bypass valve, XVM16484A-VU, failing open. This adversely impacted the ability of XHX0001A removing the design basis heat load of the system which, in part, supports room cooling for the 'A' charging/safety injection pump (XPP0043A). Consequently, TS 3/4.5.2 action requirements for the 'A' train charging pump, XPP0043A, were exceeded. The licensee entered the problem into their CAP as CR-16-03655. The enforcement aspects of this problem are discussed in Section 4OA7 of this report. This LER is closed.

.2 (Closed) LER 05000395/2016-003-01: Steam Propagation Door Discovered Propped Open

On September 13, 2016, the licensee discovered a steam propagation barrier (SPB) door, DRIB/107, for the 'C' chiller room located on the 412 foot elevation of the intermediate building propped open. They subsequently determined the door had been open for approximately 3 hours and 22 minutes. This problem could have resulted in non-functionality of both trains of the chilled water system if a steam or feedwater line break (high energy line break, HELB) had occurred due to exposure of components rated

for mild environmentally qualification (EQ) conditions to harsh (EQ) conditions. This would also render both trains of high head safety injection pumps inoperable since the chilled water system provides room cooling for the respective pumps. The licensee entered and exited TS 3.0.3 at 2030 and 2042 hours, respectively, on September 13, 2016, following closure of the door. The licensee entered the problem into their CAP as CR-16-04703, and contracted a vendor to perform a detailed HELB analysis to determine the impact on those vulnerable components not designed for harsh EQ conditions. Subsequently, the licensee revised this LER to include the vendor's conclusions. The NRC reviewed this revision and determined that there are no new aspects requiring a regulatory response, and the enforcement aspects discussed in Section 4OA7 of NRC Integrated Inspection Report, 05000395/2016004, are bounding. This LER is closed.

.3 (Closed) LER 05000395/2016-004-01: Steam Propagation Barrier Degraded Due to Missing Orifices

On September 14, 2016, during extent of condition reviews for the SPB problem discussed in Section 4OA3.3 above, the licensee determined that floor drain orifices, installed by a modification in late 2008 and early 2009 as SPBs to allow extended chiller work, were in locations not specified by the respective modification package. Specifically, orifices were not installed as designed in a floor drain between the 'A' chiller room and the room for chilled water pumps, and between the 'B' chiller room and the 'C' chiller room. The licensee entered this problem in their CAP as CR-16-04716, and contracted a vendor to perform a detailed HELB analysis to determine the impact on vulnerable components not designed for harsh EQ conditions. Subsequently, the licensee revised this LER to include the vendor's conclusions. The NRC reviewed this revision and determined that there are no new aspects requiring a regulatory response, and the enforcement aspects discussed in Section 4OA7 of NRC Integrated Inspection Report, 05000395/2016004, are bounding. This LER is closed.

.4 (Closed) Cancellation of LER 05000395/2016-005-00: Steam Propagation Barrier Degraded Due to Removal of Ventilation Duct Access Panel for Surveillance Activities

During extent of condition reviews for the SPB problem discussed in Section 4OA3.3 above, the licensee discovered a SPB degradation involving missing fasteners on a ventilation access panel. On October 4, 2016, the licensee further discovered that the panel covers had been periodically removed to allow inspection of fire dampers internal to the ductwork. Furthermore, removal of the panels could allow steam from a HELB to enter areas with components rated for mild EQ conditions. The licensee entered this problem in their CAP as CR-16-05696, and contracted a vendor to perform a detailed HELB analysis to determine the impact on vulnerable components not designed for harsh EQ conditions. Subsequently, the licensee cancelled this LER considering the vendor's conclusions resulting in no loss of safety function for the related maintenance activities. The NRC reviewed this cancellation and determined that there are no new aspects requiring a regulatory response, and the enforcement aspects discussed in Section 4OA7 of NRC Integrated Inspection Report, 05000395/2016004, are bounding. Cancellation of this LER is closed.

4OA5 Other ActivitiesReactor Vessel Head Replacement (71007)Design and Planning InspectionsReview of 10 CFR 50.59 Screening/Evaluation for the Reactor Vessel Head Replacement (RVHR) and Control Rod Drive Mechanism (CRDM) Replacementa. Inspection Scope

The inspectors performed an in office review of the licensee's engineering documents to verify that selected design changes and modifications to systems, structures, and components (SSCs) described in the Final Safety Analysis Report (FSAR) for transporting the new and old new reactor vessel heads in and out of the plant respectively were evaluated in accordance with 10 CFR 50.59. The inspectors also reviewed the key design aspects and modifications associated with the RVHR, the CRDM replacement, and other modifications to verify that engineering evaluations and design changes associated with the RVHR and CRDM replacement were evaluated in accordance with 10 CFR 50.59. Documents reviewed are listed in the Attachment.

b. Findings

No findings were identified

4OA6 Meetings, Including Exit

On April 27, 2017, the resident inspectors presented the integrated inspection report results to Mr. G. Lippard and other members of the licensee staff. The licensee acknowledged the results of these inspections. The inspectors confirmed that inspection activities discussed in this report did not contain proprietary material.

4OA7 Licensee-Identified Violations

The following violations of very low safety significance (Green) were identified by the licensee and are violations of NRC requirements which meet the criteria of Section 2.3.2 of the NRC Enforcement Policy for characterization as NCVs:

- TS 3/4.5.2, "ECCS Subsystems – $T_{avg} \geq 350$ °F" states in part that two independent emergency core cooling system (ECCS) subsystems shall be OPERABLE with one OPERABLE centrifugal charging pump in Modes 1, 2 and 3. TS 1.18, "OPERABLE – OPERABILITY," definition states in part that a subsystem shall be OPERABLE when all necessary auxiliary equipment that are required for the subsystem are capable of performing their related support functions. Contrary to this, from June 20, 2015, through July 20, 2016, safety-related subsystem chiller, XHX0001A, an auxiliary component supporting the 'A' train charging pump (XPP0043A) was incapable of performing its safety function resulting in the inoperability of XPP0043A for greater than the allowed action times of TS 3/4.5.2. A review of IMC 0609, Appendix A, determined the finding was of very low safety significance (Green)

because the finding was not a design deficiency and it did not result in a loss of function. The licensee has documented this problem in their CAP as CR-15-04395.

- V.C. Summer Operating License condition 2.c(18) states in part that the licensee shall implement and maintain in effect all provisions of the approved fire protection program that comply with 10 CFR 50.48(c), National Fire Protection Association (NFPA) 805 of which Chapter 3, Section 3.2.3, "Procedures," states, "Procedures shall be established for implementation of the fire protection program." Contrary to this, on January 10, 2017, the licensee failed to establish procedures, SAP-131A, "Fire Protection Program Surveillances and Compensatory Measures," Rev 3., FPP-015, "Shift Inspection", Rev. 7, and FPP-025, "Fire Containment", Rev. 6A, to ensure the fire doors listed in TR07800-020, "NFPA 805 Monitoring Program Phase 1: Scoping," Rev. 0, were appropriately identified for adequate licensee actions concerning surveillances and degraded conditions. NRC used IMC 0609, "Significant Determination Process," Appendix F, "Fire Protection Significance Determination Process," Attachment 1, dated September 20, 2013, to perform a Phase 1 analysis and determined that the finding was of very low safety significance (Green) based on the response for Question 1.3.1A, in which the reactor was able to reach and maintain safe shutdown. The licensee has documented this problem in their CAP as CR-17-00150.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

A. Barbee, Director, Nuclear Training
C. Calvert, Manager, Design Engineering
N. Constance, Manager, Nuclear Training
G. Douglass, Manager, Nuclear Protection Services
D. Edwards, Supervisor, Operations
K. Ellison, Manager, Health Physics & Safety
J. Garza, Supervisor, Nuclear Licensing
T. Gatlin, Vice President, Nuclear Support Services
L. Harris, Manager, Quality Systems
R. Haselden, General Manager, Organizational / Development Effectiveness
R. Justice, General Manager, Nuclear Plant Operations
A. Ledbetter, Manager, Planning / Outage
G. Lippard, Vice President, Nuclear Operations
R. Mike, Manager, Chemistry Services
M. Moore, Supervisor, Nuclear Licensing
R. Ray, Manager, Maintenance Services
S. Reese, Licensing Specialist
D. Shue, Manager, Nuclear Operations
W. Stuart, General Manager, Engineering Services
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J. Wasieczko, Manager, Organization Development and Performance
D. Weir, Manager, Plant Support Engineering
R. Williamson, Manager, Emergency Services
S. Zarandi, General Manager, Nuclear Support Services

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Closed

LER 05000395/2016-006-00	Circuit 1 Hot Gas Bypass Valve Failure Renders A-Train Chiller Non-functional and A-Train Charging Pump Inoperable (Section 4OA3.1)
LER 05000395/2016-003-01	Steam Propagation Door Discovered Propped Open (Section 4OA3.2)
LER 05000395/2016-004-01	Steam Propagation Barrier Degraded Due to Missing Orifices (Section 4OA3.3)
LER 05000395/2016-005-00	Steam Propagation Barrier Degraded Due to Removal of Ventilation Duct Access Panel for Surveillance Activities, Cancellation of this LER (Section 4OA3.4)

LIST OF DOCUMENTS REVIEWED

Section 1R04

SOP-211, "Emergency Feedwater System," Rev. 14F
SOP-306, "Emergency Diesel Generator," Rev. 19D
Drawing D-302-085, "Emergency Feedwater System," Rev. 50

Section 1R06

Design Calculation DC03290-001, "Flooding for all AB and IB Areas Affected by FW," Rev. 6H
DC03490-003, "Intermediate & Diesel Generator Buildings Flooding Evaluation," Rev. 1A

Section 1R07

CR-17-00214, 'A' spent fuel pool heat exchanger test results
WO 1616051, Clean and perform eddy current testing on XHE007A

Section 4OA5 Other Activities

07010-014, VC Summer Multi-Node Containment HVAC Model for Reactor Head Replacement, Rev. 1
CN-RIDA-14-86, V.C. Summer Unit 1 Replacement RV Head – Thermal Sleeve Elimination – Rod Drop Time Analysis, Rev. 6 and Rev. 7
CR-15-01342, Control Rod Drop Times, dated 3/23/2015
DS-ME-14-1, VC Summer Unit 1 Replacement Control Rod Drive Mechanism (CRDM), Rev. 3
ECR 50845D, Weld Repair Contingency for RV Head Inspections Applicability Determination and 50.59 Screen, Rev. 0
ECR 50868, Replacement Reactor Vessel Closure Head (RRVCH) Applicability Determination, 50.59 Screen, and 50.59 Evaluation 2014-0003 Rev. 0
ECR 50874, Reactor Building Cooling Upgrade, 50.59 Screen, Rev. 3
ECR 50897, Replacement Reactor Service Structure-Integrated Head Assembly (IHA) Applicability Determination, 50.59 Screen, and 50.59 Evaluation 2017-01, Rev. 0
ES-ME-12-2, Equipment Specification for the Control Rod Drive Mechanism (CRDM) L106AC Latch Assembly, Rev. 3
UFSAR Sections 3.5.1.2.1, 3.7.3.7.2, 3.8.4.4.10, 3.9.4, 4.2.3.2.2, 4.2.3.4.2, 6.2.1, 6.2.2, 6.4.1, 9.2.1.2, 9.4.7.2.5, 9.4.8.1, 9.4.8.2, 15.4.5, 15.4.6