



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

June 14, 2019

Mr. Ed Burchfield
Site Vice President
Duke Energy Carolinas, LLC
Oconee Nuclear Station
7800 Rochester Highway
Seneca, SC 29672

SUBJECT: OCONEE NUCLEAR STATION UNITS 1, 2, AND 3 – BIENNIAL PROBLEM
IDENTIFICATION AND RESOLUTION INSPECTION REPORT
05000269/2019010 AND 05000270/2019010 AND 05000287/2019010 AND
APPARENT VIOLATIONS

Dear Mr. Burchfield:

On May 2, 2019, the U.S. Nuclear Regulatory Commission (NRC) completed a problem identification and resolution inspection at your Oconee Units 1, 2, 3 and 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.

The NRC inspection team reviewed the station's corrective action program and the station's implementation of the program to evaluate its effectiveness in identifying, prioritizing, evaluating, and correcting problems, and to confirm that the station was complying with NRC regulations and licensee standards for corrective action programs. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

The team also evaluated the station's processes for use of industry and NRC operating experience information and the effectiveness of the station's audits and self-assessments. Based on the samples reviewed, the team determined that your staff's performance in each of these areas adequately supported nuclear safety.

Finally, the team reviewed the station's programs to establish and maintain a safety-conscious work environment and interviewed station personnel to evaluate the effectiveness of these programs. Based on the team's observations and the results of these interviews, the team found no evidence of challenges to your organization's safety-conscious work environment. Your employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

Section 71152B of the enclosed report discusses two findings with two associated apparent violations for which the NRC has not yet reached a preliminary significance determination. One finding involved the failure to provide appropriate procedures, instructions, or drawings for maintenance that could affect the performance of the Unit 1 reactor coolant makeup (RCM) pump in accordance with Technical Specification 5.4.1, "Procedures." Specifically, there were no instructions or drawings associated with the lube oil strainer inspection procedure to ensure adequate clearance was established between the lube oil suction tubing and the pump's moving

parts upon reinstallation. The second finding involved a failure to report to the NRC on January 8, 2017, (the 60-day reporting period) that the Unit 1 RCM pump was inoperable for longer than the required action completion time, which was a condition prohibited by the plant's Technical Specifications.

We intend to issue our final safety significance determination and enforcement decision, in writing, within 90 days from the date of this letter. The NRC's significance determination process (SDP) is designed to encourage an open dialogue between your staff and the NRC; however, neither the dialogue nor the written information you provide should affect the timeliness of our final determination. We ask that you promptly provide any relevant information that you would like us to consider in making our determination. We are currently evaluating the significance of this finding and will notify you in a separate correspondence once we have completed our preliminary significance review. You will be given an additional opportunity to provide additional information prior to our final significance determination unless our review concludes that the finding has very low safety significance (i.e., Green).

If you contest the violations or significance or severity of the violations documented in this inspection report, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001; with copies to the Regional Administrator, Region II; the Director, Office of Enforcement; and the NRC resident inspector at Oconee.

This letter, its enclosure, and your response (if any) will be made available for public inspection and copying at <http://www.nrc.gov/reading-rm/adams.html> and at the NRC Public Document Room in accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding."

Sincerely,

/RA/

Frank J. Ehrhardt, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Docket Nos.: 05000269 and 05000270 and 05000287
License Nos.: DPR-38 and DPR-47 and DPR-55

Enclosure:
Inspection Report 05000269/2019010 and 05000270/2019010 and 05000287/2019010

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SUBJECT: OCONEE NUCLEAR STATION UNITS 1, 2, AND 3 – BIENNIAL PROBLEM
IDENTIFICATION AND RESOLUTION INSPECTION REPORT
05000269/2019010 AND 05000270/2019010 AND 05000287/2019010 AND
APPARENT VIOLATIONS

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U.S. NUCLEAR REGULATORY COMMISSION
Inspection Report

Docket Number(s): 05000269, 05000270 and 05000287

License Number(s): DPR-38, DPR-47 and DPR-55

Report Number(s): 05000269/2019010, 05000270/2019010 and 05000287/2019010

Enterprise Identifier: I-2019-010-0014

Licensee: Duke Energy Carolinas, LLC

Facility: Oconee Nuclear Station, Units 1, 2, and 3

Location: Seneca, SC 29672

Inspection Dates: April 15, 2019 to May 02, 2019

Inspectors: B. Adkins, Senior Fuel Facility Project Inspector
R. Rodriguez, Senior Project Engineer
A. Ruh, Acting Senior Resident Inspector (Oconee Nuclear Station)
M. Toth, Project Engineer (Team Lead)

Approved By: Frank J. Ehrhardt, Chief
Reactor Projects Branch 1
Division of Reactor Projects

Enclosure

SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) continued monitoring the licensee's performance by conducting a biennial problem identification and resolution inspection at Oconee Units 1, 2 and 3 in accordance with the Reactor Oversight Process. The Reactor Oversight Process is the NRC's program for overseeing the safe operation of commercial nuclear power reactors. Refer to <https://www.nrc.gov/reactors/operating/oversight.html> for more information. Findings and violations being considered in the NRC's assessment are summarized in the table below.

List of Findings and Violations

Inadequate Procedure for Reinstalling Reactor Coolant Makeup Pump Oil Suction Tubing			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Pending AV 05000269/2019010-01 Open	Not Present Performance	71152B
The inspectors identified an apparent violation (AV) of Technical Specification (TS) 5.4.1, "Procedures," when the licensee failed to provide procedures, instructions, or drawings regarding reinstallation of the reactor coolant makeup (RCM) pump suction tubing that were appropriate to the circumstances. The AV is pending an initial significance characterization.			

Failure to Report a Condition Prohibited by Technical Specifications			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Not Applicable	Pending AV 05000269/2019010-02 Open	None	71152B
The inspectors identified an AV of 10 CFR 50.73(a)(2)(i)(B) when the licensee failed to submit a licensee event report (LER) to the NRC within 60 days of discovery of a condition prohibited by the plant's TS. Specifically, the licensee failed to report that the Unit 1 RCM pump was inoperable for a period of time that exceeded the required action completion time of TS 3.10.1 Conditions C and G. The AV is pending an initial enforcement characterization.			

Additional Tracking Items

None.

INSPECTION SCOPES

Inspections were conducted using the appropriate portions of the inspection procedures (IPs) in effect at the beginning of the inspection unless otherwise noted. Currently approved IPs with their attached revision histories are located on the public website at <http://www.nrc.gov/reading-rm/doc-collections/insp-manual/inspection-procedure/index.html>. Samples were declared complete when the IP requirements most appropriate to the inspection activity were met consistent with Inspection Manual Chapter (IMC) 2515, "Light-Water Reactor Inspection Program - Operations Phase." The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel to assess licensee performance and compliance with Commission rules and regulations, license conditions, site procedures, and standards.

OTHER ACTIVITIES – BASELINE

71152B - Problem Identification and Resolution

Biennial Team Inspection (IP Section 02.04) (1 Sample)

The inspectors performed a biennial assessment of the licensee's corrective action program, use of operating experience, self-assessments and audits, and safety conscious work environment.

- Corrective Action Program Effectiveness – The inspectors assessed the corrective action program's effectiveness in identifying, prioritizing, evaluating, and correcting problems.
- Operating Experience, Self-Assessments and Audits – The inspectors assessed the effectiveness of the station's processes for use of operating experience, audits and self-assessments.
- Safety Conscious Work Environment – The inspectors assessed the effectiveness of the station's programs to establish and maintain a safety-conscious work environment.

INSPECTION RESULTS

Assessment	71152B
Corrective Action Program Effectiveness	
Based on the samples reviewed, the team determined that the licensee's corrective action program complied with regulatory requirements and self-imposed standards. The licensee's implementation of the corrective action program adequately supported nuclear safety.	
Operating Experience, Self-Assessments, and Audits	
The team determined that the station's processes for the use of industry and NRC operating experience information and for the performance of audits and self-assessments were effective and complied with all regulatory requirements and licensee standards. The implementation of these programs adequately supported nuclear safety. The team concluded that operating experience was adequately evaluated for applicability and that appropriate	

actions were implemented to address lessons learned as needed. The inspectors determined that the licensee was effective at performing self-assessments and audits to identify issues at a low level, properly evaluated those issues, and resolved them commensurate with their safety significance.

Safety Conscious Work Environment

Based on interviews with plant staff and reviews of the latest safety culture survey results to assess the safety conscious work environment on site, the team found no evidence of challenges to the safety conscious work environment. Employees appeared willing to raise nuclear safety concerns through at least one of the several means available.

Observation	71152B
Corrective Action Program Effectiveness	
<p><u>Problem Identification:</u> The inspectors determined that the licensee was effective in identifying problems and entering them into the corrective action program and there was a low threshold for entering issues into the corrective action program. This conclusion was based on a review of the requirements for initiating condition reports as described in licensee procedure AD-PI-ALL-0100, "Corrective Action Program," and management's expectation that employees were encouraged to initiate condition reports for any reason. Additionally, site management was actively involved in the corrective action program and focused appropriate attention on significant plant issues.</p> <p>The inspection team identified an issue of concern associated with the Unit 1 RCM pump on April 26, 2019. The licensee failed to provide appropriate procedures, instructions, or drawings for maintenance that affected performance of safety-related equipment in accordance with TS 5.4.1, "Procedures," and Regulatory Guide 1.33. Consequently, mechanics removed, inspected, and reinstalled the RCM pump lube oil suction strainer without ensuring adequate clearance was established between the tubing and the pump's internal moving parts. This resulted in the shearing of the tubing and rendering the pump inoperable. This issue also included the licensee's failure to make a 60-day report to the NRC upon discovery of a condition prohibited by TS. These violations are described in the table below.</p> <p><u>Problem Prioritization and Evaluation:</u> Based on the review of condition reports, the inspectors concluded that problems were prioritized and evaluated in accordance with the condition report significance determination guidance in procedure AD-PI-ALL-0100. The inspectors determined that adequate consideration was given to system or component operability and associated plant risk.</p> <p>The inspectors reviewed several condition report evaluations where various departmental conclusions conflicted one another or were not included in parallel evaluations. Based on the examples listed below, on-site departments sometimes do not communicate results to each other. The licensee's corrective action program allows issues to be re-screened once new information becomes available. The licensee created NCRs to evaluate these issues.</p> <ul style="list-style-type: none"> • SSF diesel fuel oil pump leak (NCR 02186873) – There were differing conclusions regarding foreign material exclusion and age-related degradation evaluations between 	

maintenance and engineering. Engineering was not aware of new age-related degradation information and therefore the issue was not re-assessed.

- RCMU tubing replacement (NCR 02077410) – The engineering quick cause evaluation stated maintenance replaced internal tubing associated with the pump, but maintenance staff interviews stated internal pump tubing was not replaced. This information was not used to revise the original quick cause evaluation.
- Instrument Air maintenance rule evaluation (NCR 02195764) - A human performance problem with operations was identified during completion of an equipment checklist by engineering. The human performance issue was not further evaluated because the engineer did not answer “yes” to the applicable questions in the checklist.

The inspection team identified one issue of concern regarding a failure to evaluate a condition adverse to quality associated with missed quality control hold points. The licensee improperly screened nuclear condition report (NCR) 02214809 in accordance with AD-PI-ALL-0100, "Corrective Action Program," and failed to address the original problem scope until the NRC questioned whether the screening criteria was correct on April 16, 2019. This issue was entered into the licensee's corrective action program as NCR 02268804 and is documented as a minor violation in the table below.

Corrective Actions: Based on a review of corrective action documents, interviews with licensee staff, and verification of completed corrective actions, the inspectors determined that corrective actions were timely, commensurate with the safety significance of the issues, and effective, in that conditions adverse to quality were corrected. For significant conditions adverse to quality, the corrective actions directly addressed the cause and effectively prevented recurrence. The team reviewed condition reports and effectiveness reviews to verify that the significant conditions adverse to quality had not recurred. Effectiveness reviews for corrective actions to prevent recurrence (CAPRs) were sufficient to ensure corrective actions were properly implemented and were effective.

Inadequate Procedure for Reinstalling Reactor Coolant Makeup Pump Oil Suction Tubing			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Mitigating Systems	Pending AV 05000269/2019010-01 Open	Not Present Performance	71152B
The inspectors identified an AV of TS 5.4.1, "Procedures," when the licensee failed to provide procedures, instructions, or drawings regarding reinstallation of the RCM pump suction tubing that were appropriate to the circumstances. The AV is pending an initial significance characterization.			

Description: On November 9, 2016, during a routine pump lubrication preventative maintenance task, the licensee discovered a broken section of lube oil tubing inside the Unit 1 RCM pump and documented the issue in NCR 2077410. The broken tubing was part of the suction line that allows a shaft-driven lubricating pump to pull oil from the pump's oil sump. The lubricating pump normally injects pressurized oil to the pump's hydrodynamic bearings which drain back to the sump. The line was broken at a point that was above the standing oil level of the sump, which would have prevented the lubricating pump from being able to draw oil from the sump. The tubing showed evidence that the reciprocating motion of the pump's connecting rods caused the connecting rod cap bolts to repeatedly strike the tubing, causing gradual material loss and an eventual circumferential fracture. The licensee's engineering evaluation determined the condition called into question the capability of the pump to operate for the 72-hour mission time of the standby shutdown facility and was classified as a maintenance rule functional failure. The evaluation also included a statement from the vendor that concluded "...forced flow oil lubrication is required for operability." The RCM pump is designed to supply borated makeup to the reactor coolant system (RCS) to provide reactor coolant pump seal cooling and RCS inventory during certain postulated events that could disable normal plant safety systems.

A "Quick Cause Evaluation" by engineering determined the most probable cause for the tubing failure was an incorrect placement and alignment of the tubing during a tubing replacement activity in November 2014 under work order (WO) 2166213. The licensee determined a lack of guidance regarding placement and interference checks in the WO was determined to have permitted the incorrect installation. However, a subsequent "Performance Analysis" by the maintenance department determined that the internal tubing was not actually replaced in 2014, which was different than the cause determined by engineering. On April 26, 2019, inspectors reviewed these evaluations as part of a biennial problem identification and resolution inspection and noted the discrepancies between the evaluations. After responding to questions posed by NRC inspectors, the licensee subsequently determined the tubing likely became bent during routine removal, inspection, and reinstallation of the suction strainer line per WO 2139921 during the same November 2014 maintenance period. The tubing removal and installation can be difficult to accomplish due to a limited amount of working space. Also, the detection of an improper installation was unlikely because neither the work order nor the referenced generic maintenance procedure, MP/0/A/1840/040, "Pumps – Motors – Miscellaneous Components – Lubrication – Oil Sampling – Oil Change," contained instructions to inspect for potential interference with the pump's moving parts.

During the two year operating cycle, between when the improper installation was introduced and the failed condition was discovered, the pump was run 10 times for routine testing with a cumulative run time of approximately 4 hours and 53 minutes. It was not immediately evident the precise time that the failure occurred because the pump passed all surveillance tests satisfactorily, had no sudden changes in vibration readings, and did not experience a low lube oil pressure protective trip during testing. After discovery in 2016, routine lube oil sampling showed the lube oil tested high for contamination and wear and necessitated the oil to be changed. The licensee did not inspect the pump's bearings at that time based on the satisfactory performance of the pump.

Corrective Action(s): The broken tubing was replaced in November 2016 under work order 20050086-04. Additionally, the routine preventive maintenance instructions for replacing the suction strainer tubing were revised to include clearance checks consisting of rotation of the pump by hand to demonstrate no interference exists.

Corrective Action Reference(s): NCRs 2271065 and 2271539.

Performance Assessment:

Performance Deficiency: The failure to provide appropriate procedures, instructions, or drawings for maintenance that could affect the performance of safety-related equipment per TS 5.4.1 and Regulatory Guide 1.33 was a performance deficiency. Specifically, WO 2139921-01 tasked mechanics to remove and inspect the RCM pump lube oil suction strainer per procedure MP/0/A/1840/040. However, there were no instructions or drawings to ensure adequate clearance was established between the tubing and the pump's moving parts upon reinstallation.

Screening: The performance deficiency was more than minor because it was associated with the procedure quality attribute of the mitigating systems cornerstone and it adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of the RCM pump to respond to initiating events and prevent undesirable consequences (i.e. core damage). Specifically, the final tubing configuration resulted in the eventual failure of the lube oil suction line. The broken line impaired the direct injection of lube oil to the pump's bearings, which created a reasonable doubt on the capability of the pump to remain operable for its 72-hour mission time.

Significance: The inspectors assessed the significance of the finding using Inspection Manual Chapter 0609, Appendix A, "The Significance Determination Process for Findings At-Power," Exhibit 2, "Mitigating Systems Screening Questions," dated June 19, 2012. The issue screened as requiring a detailed risk evaluation because the finding represented a loss of system due to inoperability of the RCM pump. A significance determination is pending an initial significance characterization.

Cross-cutting Aspect: Not Present Performance. No cross-cutting aspect was assigned because the performance deficiency occurred more than three years ago, and therefore was not reflective of present licensee performance.

Enforcement:

Violation: Oconee Unit 1 TS 5.4.1, "Procedures," states, in part, that written procedures shall be implemented covering the applicable procedures recommended in Appendix 'A' of Regulatory Guide 1.33, February 1978. Regulatory Guide 1.33, "Quality Assurance Program Requirements (Operation)", Appendix A, Paragraph 9.a, "Procedures for Performing Maintenance," requires that "maintenance that can affect the performance of safety-related equipment should be properly pre-planned and performed in accordance with written procedures, documented instructions, or drawing appropriate to the circumstances." Contrary to the above, on November 21, 2014, WO 2139921-01 did not provide procedures, instructions, or drawings regarding reinstallation of the RCM suction strainer tubing that were appropriate to the circumstances. Specifically, the work order tasked mechanics to remove and inspect the RCM pump lube oil suction strainer per procedure MP/0/A/1840/040. However, there were no instructions or drawings to ensure adequate clearance was established between tubing and the pump's moving parts upon reinstallation.

Enforcement Action: This violation is being treated as an apparent violation pending a final significance determination.

Failure to Report a Condition Prohibited by Technical Specifications			
Cornerstone	Significance	Cross-cutting Aspect	Report Section
Not Applicable	Pending AV 05000269/2019010-02 Open	None	71152B
<p>The inspectors identified an AV of 10 CFR 50.73(a)(2)(i)(B) when the licensee failed to submit an LER to the NRC within 60 days of discovery of a condition prohibited by the plant's TS. Specifically, the licensee failed to report that the Unit 1 RCM pump was inoperable for a period of time that exceeded the required action completion time of TS 3.10.1 Conditions C and G. The AV is pending an initial enforcement characterization.</p>			
<p><u>Description:</u> On November 9, 2016, during a routine pump lubrication preventative maintenance task, the licensee discovered a broken section of lube oil tubing inside the Unit 1 RCM pump and documented the issue in NCR 2077410. An engineering evaluation determined the condition called into question the capability of the pump to remain operable for the 72-hour mission time of the standby shutdown facility. A reportability evaluation by the licensee concluded the failure should be assumed to have occurred at the time of discovery because there was no firm evidence that the failure existed before discovery for a time longer than permitted by TS. This conclusion was based on completion of nine surveillance tests with satisfactory results, no low lube oil pressure trips, and no traceable error in installation practice or procedural guidance.</p> <p>Inspectors questioned the above rationale because, although the specific time of failure could not be determined, the licensee's "Quick Cause Evaluation" concluded the condition was traceable to an error in installation procedure guidance and that the failure mechanism was directly induced by physical operation of the pump - both of which had occurred prior to the date of discovery. The last time the pump had been successfully operated was during an October 4, 2016, surveillance test. If the failure occurred during this last pump run or during shutdown of the pump, then the prior history of satisfactory test results was irrelevant, and the degraded condition would have existed while the unit was in Mode 1 for approximately 36 days until the unit was shutdown for a planned refueling outage on November 5, 2016. This duration was longer than the 7 day and 12 hour required action completion time of TS 3.10.1 Conditions C and G. If the failure occurred during an earlier test, the long-term operability of the pump (72-hour mission time) was still not assured solely by successful results during the relatively brief quarterly surveillance tests. These tests generally averaged less than 23 minutes of run time to complete.</p> <p>Corrective Action(s): The licensee entered the issue into the corrective action program and made plans to submit an LER for the condition.</p> <p>Corrective Action Reference(s): NCR 2271065</p>			

Performance Assessment:

Performance Deficiency: This violation was associated with a finding assessed using the significance determination process which was documented under AV 05000269/2019010-01.

Cross-cutting Aspect: None

Enforcement:

Severity: The ROP's significance determination process does not specifically consider the regulatory process impact in its assessment of licensee performance. Therefore, it is necessary to address this violation which impedes the NRC's ability to regulate using traditional enforcement to adequately deter non-compliance. The NRC has not made an enforcement decision for this issue.

Violation: 10 CFR 50.73 (a)(1) states, in part, a licensee shall submit an LER for any event described in the paragraph within 60 days after the discovery of the event. Paragraph 50.73 (a)(2)(i)(B) states, in part, the licensee shall report any operation or condition which was prohibited by the plant's technical specifications. Contrary to the above, the licensee failed to report to the NRC on January 8, 2017, (within the 60-day reporting period) that the Unit 1 RCM pump was inoperable for longer than the plant's TS required action completion time, which was a condition prohibited by the plant's TS.

Enforcement Action: This violation is being treated as an apparent violation pending a final significance (enforcement) determination.

Minor Violation	71152B
<p>Minor Violation: 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action," states, in part, "Measures shall be established to ensure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected."</p> <p>Contrary to the above, beginning on June 25, 2018, the licensee failed to identify and correct missed quality control hold point verifications as a condition adverse to quality. Specifically, the licensee failed to follow AD-PI-ALL-0100, "Corrective Action Program," Section 5.8 to address an undesired condition after discovering several quality control (QC) hold point verifications were missed during installation of engineering change (EC) 408925, "Supplemental Spent Fuel Cooling." The licensee determined that the original work order did not require the QC verifications but should have in accordance with procedure MP/0/A/1800/003, "Flange-to-Flange Connections." The licensee improperly screened the original NCR, 2214809, in accordance with AD-PI-ALL-0100, "Corrective Action Program," and failed to address the original problem scope until the NRC questioned whether the screening criteria was correct on April 16, 2019.</p> <p>Screening: The inspectors determined the performance deficiency was minor. The inspectors answered "no" to the more than minor screening questions in IMC 0612 Appendix B "Issue Screening," dated January 1, 2018.</p> <p>Enforcement: The licensee initiated NCR 02268804 on April 16, 2019, to address this minor violation. On July 25, 2018, the licensee had completed an operational performance test,</p>	

corrected system leaks, and confirmed foreign material was not introduced into the spent fuel pool system. This failure to comply with procedural requirements constitutes a minor violation that is not subject to enforcement action in accordance with the NRC's Enforcement Policy.

EXIT MEETINGS AND DEBRIEFS

The inspectors verified no proprietary information was retained or documented in this report.

- On May 2, 2019, the inspectors presented the biennial problem identification and resolution inspection results to Mr. Ed Burchfield and other members of the licensee staff.

DOCUMENTS REVIEWED

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
71152B	Corrective Action Documents	Nuclear Condition Reports (NCRs)	2186873, 2192815, 2204093, 2241697, 2245792, 2249515, 1904991, 2120154, 2152357, 2174814, 2182752, 2192794, 2203865, 2229523, 2237828, 2237933, 2258500, 2260902, 2264655, 2126138, 2126890, 2126910, 2127207, 2187742, 2198001, 2201895, 2225998, 2254163, 2254184, 2254195, 2254966, 2255238, 2129708, 2214247, 2256006, 2198000, 2022432, 1824462, 2131608, 2180593, 2181422, 2235278, 2235293, 1845371, 1874428, 2166565, 2195764, 2211757, 2218198, 2229698, 2114841, 2114841, 2137156, 2185183, 2219546, 2235536, 2123084, 2138440, 2233950, 2205718, 2231541, 2246761, 2242391, 2214683, 2195484, 2235536, 2122360, 2205799, 2175322, 2179097, 2225050, 2141026, 2181499, 2208161, 2218180, 2224827, 2235056, 2245642, 2119805, 2124920, 2133456, 2149216, 2178071, 2179031, 2243692, 2244404, 2260467, 2261698, 2190861, 2201083, 2207319, 2207537, 2209700, 2222534, 2233261, 2247967, 2167367, 2135540, 2163754, 2139825, 1784273, 2214809, 2164277, 2240086, 2227735, 2239914, 2240250, 2242613, 2123096, 2212639, 2266346, 2145912, 2201179, 2166563, 2166287, 2222325, 2240038, 2104601, 2111992, 2104726, 2112360, 2179051, 2186691, 2225306, 2236713, 2258315, 2092434, 2109622, 2110634, 2122956, 2114313, 2117205, 2115922, 2201917, 2209353, 2200195, 2250109, 2117670, 2118719, 2119763, 2124553, 2129514, 2131202, 2132933, 2133557, 2134769, 2137738, 2141490, 2149409, 2163484, 2165408, 2168249, 2206542, 2213888, 2198433, 2198480, 2151342, 2200937, 1938925, 2109244, 2116393, 2126180, 2160986, 2185077, 2211886, 2215294, 2222318, 2235093, 2240074, 2240941, 2241092, 2242405, 2139129	
	Corrective Action Documents	Action Requests (ARs)	2269161, 2269174, 2269444, 2269956	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
	Resulting from Inspection	NCRs	2270635, 2270165, 2271539, 2268804, 2269208, 2270904	
		Procedure Revision Request (PRR)	2269204	
		Work Requests	20140206, 201403121, 20140421, 20140422	
	Drawings	0-0705	One Line Diagram 120VAC and 125 VDC Station Aux Circuits Instrumentation Vital Buses	105
		0-0705-B	One Line Diagram 125/250VDC Station Aux Circuits	37
		0-082	One Line Diagram 230K SWYD 125V D.C.	32
		0-085	One Line Diagram 525KV SWYD 125V D.C.	33
		0-6700-01	One Line Diagram 125 VDC Safety Related PSW DC Distribution Center for PSW Building	1
		0-706	One Line Diagram Essential SSF 125 D.C. Auxiliary Power Systems	15
		K-704	One Line Diagram 125V D.C. Station Aux Circuits	43
		OEE-151-39	Elementary Diagram Reactor Coolant Makeup Pump Motor Controls	8
		OEE-151-39A	Elementary Diagram Reactor Coolant Makeup Pump Motor Controls	13
		OEE-151-44	Elementary Diagram Reactor Coolant Makeup Pump Discharge Vlv 1HP398	3
		OEE-151-44A	Elementary Diagram Reactor Coolant Makeup Pump Discharge Valve SSF 1-HP-398	2
		OFD-135A-1.2	Flow Diagram of Fuel Oil System (SSF Diesel Engines)	14
		OFD-137B-1.1	Flow Diagram of Instrument Air System (Air Compressors, After Coolers, Receivers, Air Dryers)	26
		OFD-137B-1.2	Flow Diagram of Instrument Air System (Layout of Major Headers)	29
		OFD-137B-1.4	Flow Diagram of Instrument Air Accumulator Supply to Main and Start-up Feedwater Control Valves	1
		OM 261.0021.001	SSF RC Makeup Pump Oil Lines Schematic (NP6)	4
		OM 261.0033.001	SSF RC Make-up Pumps Oper. and Maint. Manual	14
		OM 322.0124.001	Agastat 7000/E7000 Timing Relay Manual	0
	Miscellaneous		Listing of SSF Category 3, Non-Critical Relays	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		ESI - EMD Owners Group Recommended Maintenance Program	Mechanical, Nuclear Standby Emergency Diesel Generators	9
		Licensee Event Reports	269-2018-001-00 269-2017-001-00 287-2018-001-00 287-2017-001-00 269-2018-002-00	
		Maintenance Rule	Expert Panel Meeting Minutes	05/25/2016
		OCONEE NUCLEAR STATION 125VDC	Vital Instrumentation and Control Power System Engineering Support Document	01/24/2019
		OP-OC-EL-DCD	Operations Training, DC Power Distribution	17a
		OSC-2310	SSF Design Bases Evaluation	24
		OSS-0254.00-00-2006	DBD for the 125 VDC Vital Instrumentation and Control Power System	14
		Primary Air System Control Cabinet	Infrared Thermography Results	08/02/2017
		PT/0/A/0400/007	SSF RC Makeup Pump Test	10/04/2016
		PT/0/A/0400/007	SSF RC Makeup Pump Test	11/05/2016
		PT/0/A/0811/002	Trip/Transient Review	04/13/2018 to 04/23/2018
		PT/1/A/0400/007	SSF RC Makeup Pump Test	11/26/2014
		PT/1/A/0400/007	SSF RC Makeup Pump Test	07/14/2016
		PT/1/A/0400/010	SSF-RC Makeup System Check Valve Stroke Test	11/05/2016 and 11/19/2016
		Reactor Coolant Makeup Pump Oil	970683, 970687, 902115, 902111, 934783, 934783, 902115, 825745	N/A

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Sample Results		
		Rotork Controls letter	LN0193	01/30/2019
		Rotork Engineering Report ER1093-0	Wyle Thermal Aging Report	0
		Selected Licensee Commitment 16.9.14	SSF Diesel Generator Inspection Requirements	10/28/2004
		Station Health Report	SSF Power System for period Q4-2018	
		Station Health Report	SSF for period Q4-2018	
		Station Health Report	SSF Diesel for period Q4-2018	
		Unit 1 Operator Logs	Nightshift	04/12/2018
	Procedures	AD-EG-ALL-1209	System Health Reports and Notebooks	8
		AD-EG-ALL-1210	Maintenance Rule Program	1
		AD-NO-ALL-0201	Responding to Concerns	2
		AD-NO-ALL-0202	Employee Concerns Program	2
		AD-OP-ALL-0202	Aggregate Operator Impact Assessment	2
		AD-PI-ALL-0100	Corrective Action Program	various revisions
		AD-PI-ALL-0101	Root Cause Evaluation	4, 5, 6
		AD-PI-ALL-0102	Apparent Cause Evaluation	4
		AD-PI-ALL-0103	Quick Cause Evaluation	4
		AD-PI-ALL-0106	Cause Investigation Checklists	various revisions
		AD-PI-ALL-0200	Performance Trending	8
		AD-PI-ALL-0300	Self-Assessment and Benchmark Programs	3, 4
		AD-PI-ALL-0400	Operating Experience Program	3, 4, 5, 6, 7
		AD-PI-ALL-0401	Significant Operating Experience Program	3, 4, 5, 6
		IP/0/A/0370/001C	Standby Shutdown Facility RC Makeup Pump Discharge	59

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
			Flow and Pump Low Oil Pressure	
		IP/0/A/0370/001C1	Standby Shutdown Facility RC Makeup Pump Low Oil Pressure Agastat Time Delay Relay Test	3
		IP/0/A/5090/001	Tube Fitting and Tubing Installation	22
		MP/0/A/1800/003	Flange-to-Flange Connections	53
		MP/0/A/1840/040	Pumps - Motors - Miscellaneous Components - Lubrication - Oil Sampling - Oil Change	39
		MP/0/A/5050/032	Diesels - SSF - 12 and 16 Cylinder Preventive Maintenance - 2, 4, and 6 Year	44
		MP/0/A/5050/039	Diesels – SSF – 12 and 16 Cylinder Preventive Maintenance and Inservice Inspection – 10 and 12 Year	13
		OMP 5-02	Duties and Responsibilities of Keowee Station Personnel	10
		OMP 5-03	Emergency Power System	8
		OP/0/A/1106/027	Instrument Air System	124
		OP/2/A/1102/020D	SSF and Outside Rounds	89
		PT/0/B/0170/012	Primary Instrument Air System Quality Test	17
		PY-NO-ALL-0200	Safety Conscious Work Environment	2
		QAE-2	Nuclear Inspection Program Manual - Instrumentation and Instrument Tubing Inspections	5
		QAF-18	Nuclear Inspection Program Manual - Mechanical Inspections	5
		RP/0/A/1000/035	Severe Weather Preparations	4
		WPM-601A	On-Line Management Support Instructions	1
	Self-Assessments	3T2018 Maintenance	ONS Performance Trending Package 3rd Triannual 2018	
		3T2018 Operations	ONS Performance Trending Package 3rd Triannual 2018	
		Oconee Nuclear Plant	Mid-Cycle Assessment	August 21-25, 2017
		ONS Performance Trending Report	Training - 2nd Triannual 2018	
		ONS Performance Trending Report	Engineering - 3rd Triannual 2018	
		ONS Performance	Security - 3rd Triannual 2018	

Inspection Procedure	Type	Designation	Description or Title	Revision or Date
		Trending Report		
		ONS Security Assessments	ONS-SEC-1497-02-2017.1, ONS-SEC-1497-02-2017.2, ONS-SEC-1497-02-2017.3, ONS-SEC-1497-02-2018.1, ONS-SEC-1497-02-2018.2, ONS-SEC-1497-02-2018.3, 2017-ONS-SEC-01, 2018-ONS-SEC-PR-01, 2019-ONS-SEC-01	
	Work Orders	Work Orders and Work Requests	02140005, 02088810, 02139921, 02140005, 02166213, 20050086, 02040194, 01727244, 20213171, 20101640, 20172538, 20079248, 20125778, 20282500, 20099064, 20077039, 20068949, 20069506, 20075132, 20175134, 20076753, 20079052, 20090178, 20108570, 20111845, 20118740, 20085998, 20211533	