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Southern Nuclear Operating Company  
Vogtle Electric Generating Plant – Units 3&4  
Submittal of Turbine Maintenance and Inspection Program  
In Accordance with Updated Final Safety Analysis Report

Ladies and Gentlemen:

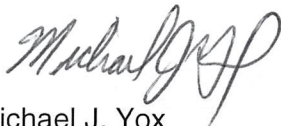
This submission is made with regard to the Vogtle Electric Generating Plant (VEGP), Units 3&4 Combined License (COL) Number NPF-91 and NPF-92, as required by the VEGP 3&4 Updated Final Safety Analysis (UFSAR) Section 10.2.6, *Combined License Information on Turbine Maintenance and Inspection*. Per UFSAR Section 10.2.6, a turbine maintenance and inspection program will be submitted to the NRC staff for review prior to fuel load. The program will be consistent with the maintenance and inspection program plan activities and inspection intervals identified in UFSAR Subsection 10.2.3.6.

Southern Nuclear Operating Company (SNC) hereby submits the turbine maintenance and inspection program, provided in the enclosure, in accordance with UFSAR Section 10.2.6.

This letter contains no regulatory commitments.

Should you have questions regarding the enclosed information, please contact Kelli Roberts at (706) 848-6991.

Respectfully submitted,



Michael J. Yox  
Regulatory Affairs Director Vogtle 3 & 4

Enclosure: Vogtle Electric Generating Plant (VEGP) Units 3&4  
Turbine Maintenance and Inspection Program

MJY/LBP/sfr

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**Southern Nuclear Operating Company  
ND-20-0561  
Enclosure**

**Vogtle Electric Generating Plant (VEGP) Units 3&4  
Turbine Maintenance and Inspection Program**

### **COL Information on Turbine Maintenance and Inspection per UFSAR Section 10.2.6**

Per SNC's UFSAR Section 10.2.6, a turbine maintenance and inspection program will be submitted to the NRC staff for review prior to fuel load, and the program will be consistent with the maintenance and inspection program plan activities and inspection intervals identified in Subsection 10.2.3.6 (Reference 1). UFSAR section 10.2.6 also requires plant-specific turbine rotor test data and calculated toughness curves that support the material property assumptions in the turbine rotor analysis to be available for review after fabrication of the turbine and prior to fuel load. Plant specific rotor test data, material composition data, material testing validation, product quality certificates, and construction Quality Assurance (QA) records from the manufacturer are available for review in the final QA data packages (References 2 through 9).

### **Maintenance and Inspection Program Plan Requirements per UFSAR Section 10.2.3.6**

Disassembly of the turbine is conducted during plant shutdown. Inspection activities include disassembly of the turbine conducted during plant shutdown and inspection of parts normally inaccessible when the turbine is assembled for operation. These activities are performed via Preventive Maintenance (PM) tasks (Attachment A) that are tracked in the site's asset management software database, MAXIMO.

At least one main steam stop valve, control valve, reheat stop valve, and intercept valve are dismantled and inspected approximately every 3 years during scheduled refueling or maintenance shutdowns. A staggered inspection ensures that turbine valves are inspected every outage and that each group of valves, stop, control, or intercept, meets the 3-year inspection requirement. Attachment B shows the PM tasks associated with these inspections.

Main stop valves, control valves, reheat stop and intercept valves may be tested from the main control room with the turbine online using the turbine control and protection system (TCPS). The TCPS can control full or partial stroke of the valves. The control system contains test functions and allows for valves to be tested online. The reheat stop valves and intercept valves can be tested separately. All valve positions can be observed by operators in the control room. During a valve test, the other valves cannot be tested. Only one valve can be tested at a time (Reference 10).

Extraction nonreturn valves are tested prior to each startup per the Main Steam System normal operating procedure, 3-MSS-SOP-001 (Reference 11). As part of this procedure the nonreturn valve closing operation is tested and verified using surveillance procedure 3-MSS-NTS-20-001, Extraction Steam Power Assist Non-Return Valves Testing (Reference 13).

Turbine valve testing is performed at six-month intervals. The semi-annual testing frequency is based on nuclear industry experience that turbine-related tests are the most common cause of plant trips at power. A PM task will stroke test the valves listed on Attachment C on a six (6) month frequency. Stroke testing is performed using 3-MTS-NTS-20-001, Main Turbine System Valve Stroke Test (Reference 12).

Extraction nonreturn valves are tested locally by stroking the valve full open with air, then equalizing air pressure, allowing the spring closure mechanism to close the valve. Closure of each valve is verified by direct observation of the valve arm movement. 3-MSS-SOP-001, Main Steam System normal operating procedure contains guidance for placing extraction steam into service (Reference 11). As part of this procedure the nonreturn valve closing operation is tested

and verified using surveillance procedure, 3-MSS-NTS-20-001, Extraction Steam Power Assist Non-Return Valves Testing (Reference 13).

During outages, non-destructive examinations for the turbine assembly provide assurance that rotor flaws that lead to brittle fracture of a rotor are detected. These activities are performed via PM tasks (Attachment A) that are tracked in the site's asset management software database, MAXIMO.

### **Completion Statement**

Unit 4 procedures and PMs will be duplicated from Unit 3 procedures and PMs prior to initial fuel load in accordance with COL section 2.D.(12)(f)4. Based on the above information, SNC hereby notifies the NRC that the Turbine Maintenance and Inspection Plan criteria, as outlined in UFSAR sections 10.2.3.6 and 10.2.6, are met.

**References (available for NRC inspection)**

1. Updated Safety Analysis Report (UFSAR) Sections 10.2.3.6 and 10.2.6
2. SV3-MG01-VQQ-001, Final QA Data Package for Low Pressure Turbine A (Unit 3)
3. SV3-MG01-VQQ-005, Final QA Data Package for High Pressure Turbine (Unit 3)
4. SV3-MG01-VQQ-007, Final QA Data Package for Low Pressure Turbine B (Unit 3)
5. SV3-MG01-VQQ-014, Final QA Data Package for Low Pressure Turbine C (Unit 3)
6. SV4-MG01-VQQ-002, Final QA Data Package for Low Pressure Turbine A (Unit 4)
7. SV4-MG01-VQQ-004, Final QA Data Package for Low Pressure Turbine B (Unit 4)
8. SV4-MG01-VQQ-013, Final QA Data Package for High Pressure Turbine (Unit 4)
9. SV4-MG01-VQQ-016, Final QA Data Package for Low Pressure Turbine C (Unit 4)
10. AP1000 Main Turbine Control and Diagnostics System-System Specification Document, APP-TOS-M3-001
11. Main Steam System, 3-MSS-SOP-001
12. Main Turbine System Valve Stroke Test, 3-MTS-NTS-20-001
13. Extraction Steam Power Assist Non-Return Valves Testing, 3-MSS-NTS-20-001

Attachment A

**High Pressure (HP) and Low Pressure (LP) Turbine PMs Tasks**

<b>PM No.</b>	<b>Title</b>	<b>Component</b>	<b>Work Scope/Task Content</b>
3MTSPM0010	(90M-NEIL*) MTS – HP TURBINE INSPECTION	3-MTS-MG-01	<p>WORK SCOPE: HP -Inspection HP Turbine</p> <p>TASK CONTENT: "Turbine Inspection should include the following:            Inspect Journal Bearings.            Inspect Thrust Bearing if disassembled during HP Inspection.            Inspect Oil Seals.            Inspect Packing.            Inspect Steam Path (nozzles, wheels, blade rings, rotors, diaphragms)            NDE rotor surface, blade/bucket attachment areas, and shaft bore (if applicable).            NDE/NDT should include visual exam, dye/fluorescent penetrant, magnetic particle, and Ultrasonic array testing as applicable.            Inspect Casing for erosion.            Inspect Packing &amp; glands            Inspect for evidence of rubbing (misalignment)            Inspect Casing, coupling, and Coupling Bolting.            Perform alignment during reassembly."</p>
3MTSPM0076	(126M-NEIL) MTS – LP TURBINE A INSPECTION	3-MTS-MG-02A	<p>WORK SCOPE: Inspection-LP Turbine (Mono block, Welded, and Advanced Disk Design)</p> <p>TASK CONTENT: "Turbine Inspection should include the following:            Inspect Journal Bearings.            Inspect Thrust Bearing (if it is part of the LP).            Inspect Oil Seals.            Inspect Packing and glands.            Inspect Steam Path (nozzles, wheels, blade rings, rotors, and diaphragms)            NDE rotor surface, blade/bucket attachment areas, disc (if applicable) and shaft bore (if applicable).            NDE/NDT should include visual exam, dye/fluorescent penetrant, magnetic particle, and Ultrasonic array testing as applicable.            Perform Turning Gear inspection (as applicable to the individual rotor)            Inspect Casing for erosion.            Replace (as required) any turbine relief diaphragms            Inspect for evidence of rubbing (misalignment)            Inspect Casing, Coupling, and Coupling Bolting.            Inspect Exhaust Hood Spray Piping and Nozzles for degradation            Perform alignment during reassembly."</p>
3MTSPM0077	(126M-NEIL) MTS – LP TURBINE B INSPECTION	3-MTS-MG-02B	Same as 3-MTS-MG-02A above
3MTSPM0078	(126M-NEIL) MTS – LP TURBINE C INSPECTION	3-MTS-MG-02C	Same as 3-MTS-MG-02A above

\* Nuclear Electric Insurance Limited



Attachment B

**Main Steam Stop / Control / Reheat Stop / Intercept Valve PM Tasks**

<b>PM No.</b>	<b>Title</b>	<b>Component</b>	<b>Activity</b>
3MTSPM0012	(90M-NEIL*) MTS – MAIN TURBINE STOP 1 VALVE INSPECTION	3-MTS-V001A	Disassembled Inspection of Main Stop valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual
3MTSPM0015	(90M-NEIL) MTS – MAIN TURBINE STOP VALVE 3 INSPECTION	3-MTS-V001B	Disassembled Inspection of Main Stop valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0018	(90M-NEIL) MTS – MAIN TURBINE CONTROL VALVE 1 INSPECTION	3-MTS-V002A	Disassembled Inspection of Control (governor) valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0021	(90M-NEIL) MTS – MAIN TURBINE CONTROL VALVE 3 INSPECTION	3-MTS-V002B	Disassembled Inspection of Control (governor) valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0024	(90M-NEIL) MTS – MAIN TURBINE STOP VALVE 2 INSPECTION	3-MTS-V003A	Disassembled Inspection of Main Stop valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0027	(90M-NEIL) MTS – MAIN TURBINE STOP VALVE 4 INSPECTION	3-MTS-V003B	Disassembled Inspection of Main Stop valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0030	(90M-NEIL) MTS – MAIN TURBINE CONTROL VALVE 2 INSPECTION	3-MTS-V004A	Disassembled Inspection of Control (governor) valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.

PM No.	Title	Component	Activity
3MTSPM0033	(90M-NEIL) MTS – MAIN TURBINE CONTROL VALVE 4 INSPECTION	3-MTS-V004B	Disassembled Inspection of Control (governor) valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0036	(90M-NEIL) MTS – MAIN TURBINE REHEAT STOP / INTERCEPT VALVE A INSPECTION	3-MTS-V005A	Disassembled Inspection of Reheat Intercept valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0039	(90M-NEIL) MTS – MAIN TURBINE REHEAT STOP / INTERCEPT VALVE B INSPECTION	3-MTS-V005B	Disassembled Inspection of Reheat Intercept valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0042	(90M-NEIL) MTS – MAIN TURBINE REHEAT STOP / INTERCEPT VALVE C INSPECTION	3-MTS-V005C	Disassembled Inspection of Reheat Intercept valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0045	(90M-NEIL) MTS – MAIN TURBINE REHEAT STOP / INTERCEPT VALVE D INSPECTION	3-MTS-V005D	Disassembled Inspection of Reheat Intercept valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0048	(90M-NEIL) MTS – MAIN TURBINE REHEAT STOP / INTERCEPT VALVE E INSPECTION	3-MTS-V005E	Disassembled Inspection of Reheat Intercept valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.
3MTSPM0051	(90M-NEIL) MTS – MAIN TURBINE REHEAT STOP / INTERCEPT VALVE F INSPECTION	3-MTS-V005F	Disassembled Inspection of Reheat Intercept valves for evidence of leakage, steam cutting, cracks, excessive erosion, binding, etc. Inspect valve per vendor recommendations in SV3-MG01-VM-004. Disassembly and reassembly instructions are provided in manual.

\* Nuclear Electric Insurance Limited

Attachment C

**Turbine Valve 6-Month Stroke Testing**

PM Task	Title	Component	Activity
3MTSNTS20001	(6M) MTS - MAIN TURBINE VALVE TEST	3-MTS-V001A, 3-MTS-V001B, 3-MTS-V002A, 3-MTS-V002B, 3-MTS-V003A, 3-MTS-V003B, 3-MTS-V004A, 3-MTS-V004B, 3-MTS-V005A, 3-MTS-V005B, 3-MTS-V005C, 3-MTS-V005D, 3-MTS-V005E, 3-MTS-V005F, 3-MTS-V006A, 3-MTS-V006B, 3-MTS-V006C, 3-MTS-V006D, 3-MTS-V006E, 3-MTS-V006F	WORK INSTRUCTIONS: TEST VALVE MOVEMENT FROM CONTROL ROOM USING TCPS  TECH SPEC NAME: VEGP34 UFSAR 10.2.3.6  OUTAGE RELATED: No  SPECIAL INSTRUCTIONS: Use Procedure# 3-MTS-NTS-20-001  SPECIAL EQUIPMENT: None