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16.9 AUXILIARY SYSTEMS

16.9.11 Turbine Building Flood Protection Measures

COMMITMENT Turbine Building Flood Protection Measures shall be OPERABLE as follows:

a. CCW Pump Discharge Valves (1,2,3CCW-10 through -13) shall be capable of being closed remotely unless one of the following conditions exists:

   1. the unwatering blocks are installed for the associated CCW inlet piping,

   2. the associated condensate coolers CCW flowpath is isolated with locked closed valve(s), the associated waterbox inlet valves are locked closed, the crossover tie valves are locked closed, the CCW inlet piping is vented at the high point to disable the first siphon, and the CCW inlet piping is intact inside the Turbine Building, or

   3. Keowee lake level is $\leq$ 796.5 ft. absolute and the associated CCW inlet piping is vented at the high point to disable the first siphon.

b. Condenser Outlet Valves (1,2,3CCW-20 through -25) shall be capable of closing automatically when all CCW pumps on the applicable unit are tripped to mitigate certain Turbine Building flood conditions unless one of the following conditions exists:

   1. a condenser outlet valve is closed and air locked with air pressure vented and strongback installed,

   2. a condenser outlet valve is closed with its operator removed and strongback installed,

   3. the unwatering blocks are installed for the associated CCW discharge piping, or

   4. Keowee lake level is $\leq$ 791 ft. absolute and the associated CCW discharge piping is vented at the high point to prevent reverse siphon flow.

c. Two flowpaths (one each from two different units) shall be available for reverse gravity flow through the Condensate coolers whenever Keowee lake level is greater than 791 ft. A flowpath for reverse gravity flow consists of an open condenser discharge header, one failed-open condensate cooler CCW flow control valve, one open condensate cooler, and an open flowpath to the suction of the LPSW and SSF ASW Pumps.

d. Prior to opening any condenser waterbox access hatch or creating any opening in the CCW, HPSW, or LPSW systems > 24 inches diameter (or multiple openings with equivalent diameter > 24 inches), an isolation boundary with single barriers shall be established to isolate the opening from the lake using the following methods, as applicable:

   1. Any manual valves > 24 inches diameter used for the isolation boundary shall be locked closed,

   2. Any motor-operated valve > 24 inches diameter used for the isolation boundary shall be closed with its breaker locked open and the handwheel locked,

   3. Any condenser outlet valve used for the isolation boundary shall be closed and air-locked with air pressure vented and strongback installed,

   4. A physical barrier, such as unwatering blocks or blank flange, may be used for boundary isolation instead of valves.

e. The Turbine Building/Auxiliary Building boundary wall shall be sealed below Elevation 795 ft. with all water tight doors operable.

f. The Turbine Basement Water Emergency High Level alarm shall be operable.

g. The six foot diameter Turbine Building Flood drain shall be operable.

APPLICABILITY: At all times.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Turbine Building Flood Protection Measures inoperable.	A.1 Initiate action to restore flood protection measures to OPERABLE status. AND A.2 ----------NOTE---------- Entry into the associated Condition results in unavailability for all three units. ---------- Log unavailability duration in the Operations Log for Maintenance Rule Performance monitoring. AND A.3 Perform a Risk Assessment using the PRA matrix considering CCW integrity not met for all three units.	Immediately None None

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 16.9.11.1	Verify OPERABILITY of Turbine Basement Water Emergency High Level Alarm.	12 months
SR 16.9.11.2	Verify capability to close all four CCW pump discharge valves.	18 months
SR 16.9.11.3	Verify capability to automatically close condenser outlet valves when all CCW pumps are tripped.	18 months

BASES

One of the risk-significant Maintenance Rule functions for the CCW System is to maintain system integrity to prevent or mitigate a Turbine Building flood. The purpose of this Selected Licensee Commitment is to monitor the performance of the major design features associated with this function. To monitor performance of this function, any unavailability must be logged.

The Oconee UFSAR Section 3.4.1.1.1 describes the flood protection measures for the Turbine Building and Auxiliary Building. These measures are the basis for the commitments in SLC 16.9.11. The flood protection measures were implemented to reduce the overall risk of a Turbine Building flood, as determined by the Oconee Probabilistic Risk Assessment (PRA) study.

Upon detection of a Turbine Building flood, operators would trip the CCW pumps which would automatically close all condenser outlet valves. They would also close all CCW pump discharge valves. This may be done using a pushbutton in the control room that closes all four valves on that unit or by closing the valves individually using pushbuttons at the breaker compartment in the Equipment Room. This SLC is intended to ensure that the functional capability of the CCW pump discharge valves and condenser outlet valves will be maintained unless alternative actions have been taken.

In Commitment a, the CCW pump discharge valves shall be capable of being closed remotely. This precludes credit for manual operation of the valves during a flood since there may not be adequate time to take credit for manual operation. Additional options are provided in case the valves cannot be closed remotely. One option includes locking closed the condensate coolers CCW flowpath, the waterbox inlet valves, and the crossover tie valves and venting the high point. Another option involves Keowee lake level $\leq$ 796.5

feet absolute with the CCW high point vented. The high point may be vented by opening valves or by other means, such as manways. These options provide additional flexibility to allow maintenance to be performed on the CCW pump discharge valves while preventing the possibility of CCW Siphoning into the Turbine Building basement.

In Commitment b of the SLC, additional options are provided to allow maintenance to be performed on the condenser outlet valves. Option "1" allows a condenser outlet valve to be out of service if the valve is blocked closed with the air supply to the valve operator defeated. Option "2" is similar to "1" except that it allows the valve operator to be removed for maintenance if the strongback is installed. Option "3" involves installing the unwatering blocks at the CCW discharge and venting the high point of the discharge piping. Option "4" allows the automatic valve operation to be out of service if the lake level is $\leq$ 791 feet absolute and the high point of the discharge piping is vented. Below this lake level, the CCW discharge pipe could not be refilled from the lake. Venting the high point may be accomplished by opening manways or by any available means. Credit cannot be taken for the normally open mid-point vents on the discharge piping, because these vents may not prevent reverse siphon flow.

Options "3" or "4" of Commitment b will make the affected flowpath incapable of applying towards the requirements in Commitment c, which requires two flowpaths for reverse gravity flow; however, Commitment c may still be met using other available flowpaths (e.g., other units).

Per UFSAR Section 3.4.1.1.1, the worst-case flood would involve failure of the expansion joint at the inlet to the condenser. There are other possible failures could lead to a Turbine Building flood. The flood consequences would vary depending upon the size of the opening and other factors. A flood that involved an opening greater than approximately 24 inches diameter may affect the Low Pressure Service Water (LPSW) pumps. Therefore, emphasis is placed on any activities that would create openings in the piping greater than 24 inches diameter.

Commitment d is provided to control activities that would create openings in the CCW, HPSW, or LPSW Systems. These activities are controlled to ensure that such openings are isolated from the lake using physical barriers (e.g., locks) and not just administrative barriers (e.g., valve tags). Commitment d requires that an isolation boundary be established on a case-by-case basis prior to opening a condenser waterbox access-hatch and for any openings > 24 inches, including multiple openings equivalent to 24 inches diameter. Single isolation is acceptable, but the isolation boundary must include physical barriers, such as locked closed valves, and not just administrative barriers, such as valve tags. Physical barriers may include blocks or blank flanges. A stoppel plug or wet-tapping machine may also act as a physical barrier. This SLC is intended to address only the isolation of the opening from the lake.

If Keowee lake level is greater than 791 ft., reverse gravity flow can be used to provide suction to the LPSW and SSF ASW pumps. An analysis was performed to determine the optimum flowpath to supply suction to these pumps while minimizing any excess flow that would contribute to additional flooding. This

analysis determined that flowpaths through one condensate cooler and one flow control valve on each of two units would be optimum. As a result of this analysis, Condensate Coolers CCW Flow Control Valves for Units 2 and 3 (2, 3CCW-84) have been permanently failed open by having their instrument air supplies removed. If either flowpath through Units 2 or 3 will be unavailable, an alternate flowpath should be provided on Unit 1 by failing open 1CCW-84.

REFERENCES

1. UFSAR Sections 3.4.1.1.1, 9.2.2, 9.6, and Figure 9-9, 12/31/96 update.
2. Engineering Directives Manual EDM-210, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants or the Maintenance Rule."
3. OSS-0254.00-00-1003, "Design Basis Specification for the Condenser Circulating.Water (CCW) System," Rev. 8.
4. OSS-0254.00-00-3005, "Design Basis Specification for the Turbine Building Structure," Rev. 1.
5. AP/1,2,3/A/1700/10, "Uncontrollable Flooding of Turbine Building," Approved 4/30/97.
6. Calculation No. C-OSA-SA-83-0002-0, Rev. 0, 3/1/83, "Turbine Building Flood CCW Reverse Flow Analysis."
7. Calculation NO. OSC-6522, Rev. 0, 2/29/96, "Turbine Building Flood CCW Reverse Flow Analysis."
8. Calculation No. OSC-6577, Rev. 0, 6/7/96, "CCW Turbine Building Flood Analysis."
9. PT/1,2/A/0261/07, "Emergency CCW System Flow Test."
10. PT/3/A/0261/07, "Dam Failure Test."
11. IP/0/B/0235/03. "Turbine Basement Water Level Alarm System Check."
12. Calculation No. OSC-5771, PRA Risk-Significant SSC's for the Maintenance Rule."
13. Work Process Manual Section 607. "Maintenance Rule Assessment of Equipment Removed From Service".
14. OP/1,2,3/A/1104/12, "Condenser Circulating Water System."
15. Calculation OSC-6081, Rev. 2, CCW Seismic-LOOP Response."
16. Oconee Unit 3 Probabilistic Risk Assessment, Rev. 1, November. 1990.