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ACCESSION NBR:9406020298 DOC.DATE: 94/05/25 NOTARIZED: NO DOCKET #
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SUBJECT: Submits seismic licensing basis,replacing submittal for #5 in svc water insp rept on 940314.

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May 25, 1994

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Subject: Oconee Nuclear Station
Docket Nos. 50-269, -270, -287
Seismic Licensing Basis

Per the discussion in the conference call on May 17, 1994, this letter is written to replace the submittal for Item #5 in the Service Water Inspection Report made on March 14, 1994. The following discussion presents Oconee's licensing basis for the specific accident scenarios.

1. Loss of Coolant accident (LOCA) with a simultaneous Safe Shutdown earthquake (SSE).

For the simultaneous LOCA and SSE, Oconee's licensing basis is that they do not occur simultaneously. The simultaneous occurrence of the two events was used for design criteria to ensure adequate system design margin.

Section 9.2.2.3 of the FSAR states that the LPSW system is designed to ensure heat transfer capability following the occurrence of a LOOP, LOCA, seismic event and single failure. This statement was added to the FSAR in the 1992 update and incorrectly states the licensing basis for ONS. The FSAR prior to 1992 did not make any mention of the LPSW heat transfer capability during a LOCA, LOOP, seismic event and single failure. This statement will be revised in the current FSAR revision to indicate the correct licensing basis. A copy of the revised FSAR has been attached for your information. A 50.59 evaluation for the FSAR change has been completed.

In section 3.2.2 of the FSAR, the statement is made that a seismic event will not cause a LOCA and the simultaneous occurrence of these events will not result in the loss of function to vital safety related components or systems. Also, Section 3.2.2 of the FSAR indicates that capability is provided to assure necessary protective actions to protect the public during a LOCA even in the event of a simultaneously occurring Maximum Hypothetical earthquake (MHE). The statements made in section 3.2.2 pertain to design criteria with respect to the

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LOCA and natural phenomena. In order to better understand the application of the criteria to ONS, the entire FSAR should be reviewed to put the statements in Section 3.2.2 into the proper context.

In Section 3.1.2, Criterion 2 indicates that the systems and components essential to prevention of accidents or the mitigation of their consequences shall be designed to withstand, without loss of function, the additional force imposed by natural phenomena such as earthquakes. Oconee's response to this criterion states that the essential systems and components have been designed to withstand, without loss of function, the additional forces imposed by natural phenomena. This criterion and Oconee's response does not postulate the simultaneous occurrence of the LOCA and SSE for accident analysis. Also, a review of Chapter 15 in the FSAR indicates that the simultaneous occurrence of a LOCA and SSE is not postulated during accident scenarios.

Section 3.9.2.4 and Section 3.9.3.1.1 of the FSAR summarize the analysis that was performed on the reactor internals, fuel assembly, and reactor coolant system under faulted conditions. The analysis considered four separate loading conditions which included the simultaneous occurrence of a SSE and a LOCA. The analysis indicates that the systems and structures were designed to withstand the simultaneous LOCA and SSE. However, these sections do not require ONS to take the LOCA and SSE simultaneously for an accident analysis.

In addition to Oconee's FSAR, a July 8, 1985 memo by Dennis Crutchfield, the Assistant Director for Safety Assessment, indicates:

> "...the fact that safety related structures, systems, and components are designed to remain functional during a Safe Shutdown earthquake (SSE) and assure the integrity of the reactor coolant pressure boundary, the capability to shutdown the reactor and maintain it in a safe condition or the capability to mitigate the consequences of accidents, as a design basis event the SSE is not assumed to occur simultaneous with accidents."

Therefore, the fact that Oconee used the simultaneous occurrence of the SSE and the LOCA to determine design loads does not require the postulation of a concurrent LOCA and SSE for accident analysis.

2. Postulation of a single failure during a seismic event.

Oconee's licensing basis is that a single failure is not

postulated during a seismic event.

A review of the design criterion listed in the FSAR indicates that RPS, ES and electric power systems need to postulate single failures given certain design basis accidents. However, there is no mention of the postulation of a single failure during a seismic event. The design of the systems to mitigate the SSE includes the use of a single isolation valve at the boundary between seismic and non-seismic piping. This single isolation valve ensures that a failure in the non-seismic portion of the system cannot cause loss of function to the safety system. Section 3.7.3.9 and Section 10.3.1 of the FSAR specify the use of an automatic or remote-manual valve for normally open valves which isolate the seismic and non-seismic boundary during a seismic event. The use of a single isolation valve in the EFW system and associated support systems was reviewed in Generic Letter 81-14 and found to be acceptable. Also, plant drawings in the FSAR indicate a single isolation valve between seismic and non-seismic pipe. Therefore implicit in Oconee's design, a postulated single failure during a SSE is not required since redundancy in the isolation between seismic and non-seismic boundaries were not required to mitigate a SSE.

3. Occurrence of a Loss of Offsite power (LOOP) and a SSE with the postulation of a single failure.

Oconee's licensing basis is that a LOOP and SSE do not occur simultaneously.

As stated in the above discussion, a single automatic or remote-manual valve is used to provide isolation between the seismic and non-seismic boundary. There are no requirements to have safety-related power for the isolation valve. Therefore, the original design of Oconee did not provide safety related power to any of the seismic boundary valves. A recent modification provided safety-related power to LPSW-139 and 3LPSW-45 as an enhancement to the plant. All seismic boundary valves are safety-related and seismically designed. The NRC has reviewed this configuration which is addressed in both the FSAR and Generic Letter 81-14. With no specific requirements for safety related power and as evidenced by the plants design, it is Oconee's licensing position that a LOOP and SSE were not postulated to occur simultaneously.

Very truly yours,

J. W. Hampton

cc: Mr. S. D. Ebneter, Regional Administrator
U. S. Nuclear Regulatory Commission, Region II

Mr. L. A. Wiens, Project Manager
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9.2.2.2.3 Low Pressure Service Water System (LPSW)

The schematic arrangement of the LPSW system is shown on Figure 9-11 and Figure 9-12. Oconee 1 and 2 share three 15,000 gal/min LPSW pumps. The LPSW pumps and the HPSW pumps take suction from the 42 inch crossover line between the condenser inlet headers; two LPSW pumps are supplied by one suction line and the other pump is supplied by the other suction line. The HPSW system is 0 connected to LPSW at the LPSW pump discharge to provide emergency back-up.

2 Suction is provided to the LPSW pumps via gravity flow or siphon flow from the CCW System (ECCW
2 mode) following a design basis accident where the CCW pumps are not running. Lake level is
2 administratively controlled to maintain sufficient NPSH for the LPSW pumps under these conditions.

0 The LPSW system provides cooling for components in the Turbine Building, the Auxiliary Building, and
0 in the Reactor Building. Two separate 24 inch lines provide LPSW to the components in the Auxiliary and Reactor Buildings. These two supply lines are further divided into four separate supply headers, two supplying the components in Oconee 1 and two supplying the components in Oconee 2. The decay heat removal coolers and the Reactor Building cooling units are supplied by separate LPSW supply lines. The return lines from the decay heat removal coolers and the Reactor Building coolers maintain separation to a point beyond a remote-operated isolation valve.

For Oconee 3, each of the two 15,000 gal/min LPSW pumps take their suction from the CCW crossover. These pumps provide cooling water via separate supply lines to engineered safeguards equipment in the Reactor Building and the Auxiliary Building similar to Oconee 1 and 2. The return lines from the Oconee 1 3 engineered safeguards maintain separation to a point beyond a remote-operated isolation valve.

The Turbine Building requirements for LPSW are supplied from other separate headers. The three pumps associated with Oconee 1 and 2 have a Turbine Building header serving the Turbine Building requirements for Oconee 1 and 2. The two pumps associated with Oconee 3 also have a Turbine Building header to supply the Oconee 3 requirements.

The separate flow paths serving the emergency safeguards equipment can be isolated by remote-operated isolation valves.

The LPSW system is monitored and operated from the control room. Isolation valves are incorporated in all LPSW lines penetrating the Reactor Building.

The three (per unit) Reactor Building coolers ("A," "B," and "C") are supplied by individual lines from the separate LPSW supply headers. Each inlet line is provided with a motor operated shutoff valve located outside the Reactor Building. Similarly, each discharge line from the coolers is provided with a motor operated valve located outside the Reactor Building. This allows each cooler to be isolated 1 individually. During normal operation, the "A" and "C" coolers receive throttled flow while flow through the "B" cooler is diverted to the four Reactor Building auxiliary cooling units to provide normal Reactor Building cooling. Flow to the RB auxiliary cooling units is automatically isolated by an engineered safeguards signal returning full flow to the RB cooling units. Also, on an engineered safeguards signal the outlet valves on the three RB cooling units fully open automatically to assure emergency flow through coolers.

2 The LPSW System provides sufficient flow to the Low Pressure Injection (LPI) coolers and Reactor
2 Building Cooling Units (RBCUs) to ensure sufficient heat transfer capability following a design basis
2 accident and a single active failure. The worst case design basis accident involves a LOCA/loss of offsite
2 power with ~~seismic event~~ a loss of instrument air. The worst case single failures for achieving desired flows to the RBCUs and
2 LPI coolers are 1) failure of a single LPSW pump, and 2) failure of a 4160 volt bus which fails an LPSW

a loss of instrument air