DUKE POWER COMPANY

OCONEE NUCLEAR STATION

ATTACHMENT 1

TECHNICAL SPECIFICATIONS

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4.5.1 Emergency Core Cooling Systems

Applicability

Applies to periodic testing requirements for the Emergency Core Cooling Systems.

Objective

To verify that the Emergency Core Cooling Systems are operable.

Specification

4.5.1.1 System Tests

4.5.1.1.1 High Pressure Injection System

a. During each refueling outage, a system test shall be conducted to demonstrate that the system is operable. A test signal will be applied to demonstrate actuation of the High Pressure Injection System for emergency core cooling operation.

b. The test will be considered satisfactory if control board indication verifies that all components have responded to the actuation signal properly; all appropriate pump breakers shall have opened or closed and all valves shall have completed their travel.

4.5.1.1.2 Low Pressure Injection System

a. During each refueling outage, a system test shall be conducted to demonstrate that the system is operable. The test shall be performed in accordance with the procedure summarized below:

(1) A test signal will be applied to demonstrate actuation of the Low Pressure Injection System for emergency core cooling operation.

(2) Verification of the engineered safety features function of the Low Pressure Service Water pumps and manual alignment from the control room of valves LPSW-4 and LPSW-5 shall be made to demonstrate operability of the Low Pressure Injection coolers. [1]

b. The test will be considered satisfactory if control board indication verifies that all components have responded to the ES actuation signal properly; all appropriate ES actuated pump breakers shall have opened or closed, and all ES actuated valves shall have completed their travel. In addition, valves LPSW-4 and LPSW-5 shall have completed their travel.

[1] The ES function of valves LPSW-4 and LPSW-5 shall be verified during each refueling outage. This surveillance requirement may be discontinued and replaced by the valve surveillance in 4.5.1.1.2.a.(2) when the ES signals are removed from LPSW-4 and LPSW-5. Removal of the ES signal from valves LPSW-4 and LPSW-5 is scheduled in the U3EOC16, U1EOC17, and U2EOC16 refueling outages successively.

4.5.1.1.3 Core Flooding System

a. During each refueling outage, a system test shall be conducted to demonstrate proper operation of the system. During pressurization of the Reactor Coolant System, verification shall be made that the check and isolation valves in the core flooding tank discharge lines operate properly.

b. The test will be considered satisfactory if control board indication of core flood tank level verifies that all valves have opened.

4.5.1.2 Component Tests

4.5.1.2.1 Valves - Power Operated

a. Valves LP-17, -18, shall only be tested every cold shutdown unless previously tested during the current quarter.

b. During each refueling outage the following LPI system valves shall be cycled manually to verify the manual operability of these power operated valves:

(1) LPI pump discharge (ES) LP-17,-18
(2) LPI discharge throttling LP-12,-14
(3) LPI discharge header crossover LP-9,-10
(4) LPI discharge to HPI/RBS LP-15,-16

4.5.1.2.2 Check Valves

Periodic individual leakage testing[a] of valves CF-12, CF-14, LP-47 and LP-48 shall be accomplished prior to power operation after every time the plant is placed in the cold shutdown condition for refueling, after each time the plant is placed in a cold shutdown condition for 72 hours if testing has not been accomplished in the preceding 9 months, and prior to returning the valve to service after maintenance, repair or replacement work is performed. Whenever integrity of these valves cannot be demonstrated, the integrity of the remaining valve in each high pressure line having a leaking valve shall be determined and recorded daily. In addition, the position of the other closed valve located in the high pressure piping shall be recorded daily. For the allowable leakage rates and limiting conditions for operation, see Technical Specification 3.1.6.10.

Bases

The Emergency Core Cooling Systems are the principle reactor safety features in the event of loss of coolant accident. The removal of heat from the core provided by these systems is designed to limit core damage.

The High Pressure Injection System under normal operating conditions has one pump operating. The HPI system test required by Specification 4.5.1.1.1 verifies that the HPI system responds as required to actuation of ES channels 1 and 2.

(a) To satisfy ALARA requirements, leakage may be measured indirectly (as from the performance of pressure indicators) if accomplished in accordance with approved procedures and supported by computations showing that the method is capable of demonstrating valve compliance with the leakage criteria.

The LPI system test required by Specification 4.5.1.1.2 verifies that the LPI system responds as required to actuation of ES channels 3 and 4. In addition, this test verifies that the LPSW pumps respond as required to actuation of ES channels 3 and 4 and that LPSW-4 and -5 (LPSW supply valves to LPI coolers) respond as required to manual alignment from the control room. The test required by Specification 4.5.3 verifies the containment heat removal capability of the LPI coolers (in conjunction with the RBCUs and RB Spray system).

The low pressure injection pumps are tested singularly for operability by opening the borated water storage tank outlet valves and the bypass valves in the borated water storage tank fill line. This allows water to be pumped from the borated water storage tank through each of the injection lines and back to the tank.

Testing the manual operability of power-operated valves in the Low Pressure Injection System gives assurance that flow can be established in a timely manner even if the capability to operate a valve from the control room is lost.

With the reactor shut down, the valves in each core flooding line are checked for operability by reducing the Reactor Coolant System Pressure until the indicated level in the core flood tanks verify that the check and isolation valves have opened.

Power Operated Valves LP-17 and LP-18, are boundary valves between high pressure and low pressure design piping. As such, functional testing of these valves is performed during cold shutdown conditions when the Reactor Coolant System pressure is below the design pressure of the Low Pressure Injection System piping and the potential for over-pressurization of the low pressure system is eliminated. Check Valves CF-12, CF-14, LP-47, and LP-48 are located on the high pressure piping and therefore can be leak tested with the Reactor Coolant System at hot shutdown conditions.

REFERENCE

(1) FSAR, Section 6

DUKE POWER COMPANY

OCONEE NUCLEAR STATION

ATTACHMENT 2

TECHNICAL SPECIFICATIONS

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4.5.1 Emergency Core Cooling Systems

Applicability

Applies to periodic testing requirements for the Emergency Core Cooling Systems.

Objective

To verify that the Emergency Core Cooling Systems are operable.

Specification

4.5.1.1 System Tests

4.5.1.1.1 High Pressure Injection System

a. During each refueling outage, a system test shall be conducted to demonstrate that the system is operable. A test signal will be applied to demonstrate actuation of the High Pressure Injection System for emergency core cooling operation.

b. The test will be considered satisfactory if control board indication verifies that all components have responded to the actuation signal properly; all appropriate pump breakers shall have opened or closed and all valves shall have completed their travel.

4.5.1.1.2 Low Pressure Injection System

a. During each refueling outage, a system test shall be conducted to demonstrate that the system is operable. The test shall be performed in accordance with the procedure summarized below:

(1) A test signal will be applied to demonstrate actuation of the Low Pressure Injection System for emergency core cooling operation.

(2) Verification of the engineered safety features function of the *Low Pressure Service Water pumps and manual alignment from the control room of valves LPSW-4 and LPSW-5* ~~Low Pressure Service Water System which supplies cooling water to the low pressure coolers~~ shall be made to demonstrate operability of the *Low Pressure Injection* coolers. [1]

b. The test will be considered satisfactory if control board indication verifies that all components have responded to the *ES* actuation signal properly; all appropriate *ES actuated* pump breakers shall have opened or closed, and all *ES actuated* valves shall have completed their travel. *In addition, valves LPSW-4 and LPSW-5 shall have completed their travel.*

[1] *The ES function of valves LPSW-4 and LPSW-5 shall be verified during each refueling outage. This surveillance requirement may be discontinued and replaced by the valve surveillance in 4.5.1.1.2.a.(2) when the ES signals are removed from LPSW-4 and LPSW-5. Removal of the ES signal from valves LPSW-4 and LPSW-5 is scheduled in the U3EOC16, U1EOC17, and U2EOC16 refueling outages successively.*

4.5.1.1.3 Core Flooding System

a. During each refueling outage, a system test shall be conducted to demonstrate proper operation of the system. During pressurization of the Reactor Coolant System, verification shall be made that the check and isolation valves in the core flooding tank discharge lines operate properly.

b. The test will be considered satisfactory if control board indication of core flood tank level verifies that all valves have opened.

4.5.1.2 Component Tests

4.5.1.2.1 Valves - Power Operated

a. Valves LP-17, -18, shall only be tested every cold shutdown unless previously tested during the current quarter.

b. During each refueling outage the following LPI system valves shall be cycled manually to verify the manual operability of these power operated valves:

(1) LPI pump discharge (ES) LP-17,-18
(2) LPI discharge throttling LP-12,-14
(3) LPI discharge header crossover LP-9,-10
(4) LPI discharge to HPI/RBS LP-15,-16

4.5.1.2.2 Check Valves

Periodic individual leakage testing[a] of valves CF-12, CF-14, LP-47 and LP-48 shall be accomplished prior to power operation after every time the plant is placed in the cold shutdown condition for refueling, after each time the plant is placed in a cold shutdown condition for 72 hours if testing has not been accomplished in the preceding 9 months, and prior to returning the valve to service after maintenance, repair or replacement work is performed. Whenever integrity of these valves cannot be demonstrated, the integrity of the remaining valve in each high pressure line having a leaking valve shall be determined and recorded daily. In addition, the position of the other closed valve located in the high pressure piping shall be recorded daily. For the allowable leakage rates and limiting conditions for operation, see Technical Specification 3.1.6.10.

Bases

The Emergency Core Cooling Systems are the principle reactor safety features in the event of loss of coolant accident. The removal of heat from the core provided by these systems is designed to limit core damage.

The High Pressure Injection System under normal operating conditions has one pump operating. The HPI system test required by Specification 4.5.1.1.1 verifies that the HPI system responds as required to actuation of ES channels 1 and 2.

(a)

To satisfy ALARA requirements, leakage may be measured indirectly (as from the performance of pressure indicators) if accomplished in accordance with approved procedures and supported by computations showing that the method is capable of demonstrating valve compliance with the leakage criteria.

The LPI system test required by Specification 4.5.1.1.2 verifies that the LPI system responds as required to actuation of ES channels 3 and 4. In addition, this test verifies that the LPSW pumps ~~and LPSW-4 and 5 (LPSW supply to LPI coolers)~~ respond as required to actuation of ES channels 3 and 4 *and that LPSW-4 and -5 (LPSW supply valves to LPI coolers) respond as required to manual alignment from the control room*. The test required by Specification 4.5.3 verifies the containment heat removal capability of the LPI coolers (in conjunction with the RBCUs and RB Spray system).

The low pressure injection pumps are tested singularly for operability by opening the borated water storage tank outlet valves and the bypass valves in the borated water storage tank fill line. This allows water to be pumped from the borated water storage tank through each of the injection lines and back to the tank.

Testing the manual operability of power-operated valves in the Low Pressure Injection System gives assurance that flow can be established in a timely manner even if the capability to operate a valve from the control room is lost.

With the reactor shut down, the valves in each core flooding line are checked for operability by reducing the Reactor Coolant System Pressure until the indicated level in the core flood tanks verify that the check and isolation valves have opened.

Power Operated Valves LP-17 and LP-18, are boundary valves between high pressure and low pressure design piping. As such, functional testing of these valves is performed during cold shutdown conditions when the Reactor Coolant System pressure is below the design pressure of the Low Pressure Injection System piping and the potential for over-pressurization of the low pressure system is eliminated. Check Valves CF-12, CF-14, LP-47, and LP-48 are located on the high pressure piping and therefore can be leak tested with the Reactor Coolant System at hot shutdown conditions.

REFERENCE

(1) FSAR, Section 6

ATTACHMENT 3

TECHNICAL JUSTIFICATION

Technical Specification Change:

The proposed revision to the Technical Specifications described in Attachment 1 changes the surveillance requirements for valves LPSW-4 and LPSW-5 in Technical Specification 4.5.1.1.2 (a) (2) and revises the bases. In addition, editorial clarifications to Technical Specification 4.5.1.1.2 are proposed.

Background:

Oconee Units 1 and 2 are served by a shared Low Pressure Service Water (LPSW) System that includes three LPSW pumps. Oconee Unit 3 has its own LPSW System that includes two LPSW pumps. Section 9.2.2 of the Oconee FSAR contains additional information regarding the LPSW System.

In a letter to the NRC dated December 28, 1995, Duke Power described the conceptual design of the Emergency Condenser Circulating Water (ECCW) System upgrade at Oconee. The ECCW System upgrade is being performed to resolve several service water issues. One of these issues involves Violation 93-25-03, Example A, "Inadequate NPSH for LPSW Pumps." This violation was issued because the net positive suction head available (NPSHa) for the Low Pressure Service Water (LPSW) pumps would be less than the net positive suction head required (NPSHr) under certain design basis conditions. These conditions involve a loss of coolant accident (LOCA) concurrent with a loss of off-site power (LOOP), a single failure of one LPSW pump, and a loss of instrument air. The assumed loss of instrument air causes the LPSW flow control valves which normally control flow to the Low Pressure Injection (LPI) coolers to fail open, resulting in the potential for inadequate NPSH. The concurrent flow demand by non-essential LPSW loads also impacts the ability to maintain adequate NPSH. The inadequate NPSH would exist for up to 30 minutes until operators isolate non-essential LPSW loads and reduce flow to the LPI coolers, thus reducing NPSHr to less than NPSHa.

With the existing design, Engineered Safeguards (ES) channels 3 and 4 would actuate at either 550 psig Reactor Coolant System (RCS) pressure or 3 psig Reactor Building (RB) pressure. Actuation of ES channels 3 and 4 would automatically open valves LPSW-4 and LPSW-5 on the affected Oconee unit to admit LPSW cooling water flow to the Low LPI coolers. As shown in Figure 1, LPSW-4 is an isolation valve on the LPSW outlet from the A LPI cooler, and LPSW-5 is the isolation valve on the LPSW outlet from the B LPI cooler. This actuation would occur within several seconds following a large break LOCA. Initially, the LPI System would operate in the injection mode taking its suction from the borated water storage tank (BWST). Upon reaching a specified minimum level in the BWST, operators would establish the recirculation mode by realigning the suction

of the LPI pumps to the Reactor Building emergency sump (RBES). The LPSW cooling water flow to the LPI coolers is only necessary for removing heat from LPI while in the RBES recirculation mode. Since the water from the BWST is at a low temperature, no LPSW heat removal via the LPI coolers is necessary while in the injection mode. The BWST contains enough water inventory to support the LPI injection mode for at least 30 minutes after a large break LOCA.

To provide adequate NPSH during all design basis conditions, the LPSW flow demand after a LOCA/LOOP will have to be reduced to decrease NPSHr. This necessitates isolating LPSW flow from any unnecessary loads early in the LOCA/LOOP. However, flow to the LPSW non-essential header cannot be isolated too early without significant equipment damage to turbine-generator equipment that is normally cooled from the LPSW non-essential header.

To resolve the NPSH issues, Duke proposes to remove the ES signal that automatically opens valves LPSW-4 and LPSW-5. After establishing RBES recirculation mode, operators would isolate flow to the LPSW non-essential header and throttle open LPSW-4 and LPSW-5 from the control room. This will maintain LPSW flow demand low enough so that the NPSHa remains greater than NPSHr.

Removing the ES signal from valves LPSW-4 and LPSW-5 requires a change to Technical Specification 4.5.1.1.2 (a) (2). This Technical Specification requires a functional verification of the ES function of valves LPSW-4 and LPSW-5 on a refueling outage frequency. Under the proposed change, the reference to ES will be changed so that it applies to the LPSW pumps but not to LPSW-4 and LPSW-5. The capability of the operators to open LPSW-4 and LPSW-5 from the control room will be verified under this revised surveillance requirement.

Justification for Change to Valve Surveillance Requirement in Technical Specifications:

Technical Specification 4.5.1.1.2 (a) (2) requires "verification of the engineered safety features function of the low pressure service water system which supplies cooling water to the low pressure coolers ... to demonstrate operability of the coolers". As described in the associated Technical Specification bases, the purpose of this Technical Specification surveillance is to verify that the LPSW pumps and LPSW-4 and LPSW-5 respond as required to actuation of ES channels 3 and 4.

Automatically opening LPSW-4 and LPSW-5 upon actuation of ES channels 3 and 4 simplifies operator action by pre-staging the necessary LPSW cooling flow to the LPI coolers in preparation for operator realignment from the LPI injection mode to the LPI RBES recirculation mode. After a detailed operations and engineering review, it was concluded that operator burden would not be significantly affected by deleting this automatic function.

A review of the operator burden for opening LPSW-4 and LPSW-5 was performed. During the first 30 minutes after a LOCA/LOOP, actions performed by the operators would not be affected by the proposed change. During this period, the operators must verify proper operation of all ES equipment. Also, operators monitor BWST level and begin switchover to RBES recirculation at the appropriate level in the BWST. After completion of the switchover to RBES recirculation, operators would be required to isolate the LPSW non-essential header. Isolation of the non-essential header will require closing one valve, either 1LPSW-139 (Unit 1), 2LPSW-139 (Unit 2), or 3LPSW-45 (Unit 3). After completion of the ECCW upgrade project, controls for these valves will be located in the control room for their respective unit. In addition, valve 3LPSW-45 will be renumbered as 3LPSW-139 to be consistent with the other units' valve numbers. See Figure 2 for the planned configuration for the Unit 1 and 2 LPSW non-essential header.

After isolating the LPSW non-essential header, operators will throttle open LPSW-4 and LPSW-5. Controls for these valves are located in the control room, and flow indication is located with the valve controls. Normally, LPSW flow to the LPI coolers is throttled using air-operated valves. During a design basis accident involving a loss of instrument air, the air-operated valves fail open to their travel stops. Therefore, motor-operated valves LPSW-4 and LPSW-5 are used to throttle LPSW flow to the LPI coolers under these conditions. The existing design basis for Oconee takes credit for throttling LPSW-4 and LPSW-5 from the full open position to an intermediate position within 30 minutes after a LOCA/LOOP to reduce NPSHr.

Evaluation of the necessary operator actions indicated that the actions necessary to establish LPSW cooling water flow to the LPI coolers can be taken within 5-10 minutes after switchover to RBES recirculation. A short delay in the transfer of LPSW flow to the LPI coolers following the switchover to RBES recirculation mode will have no significant impact on the Reactor Building heat removal or environmental qualification (EQ) requirements. If there is no LPSW flow to the LPI coolers in the RBES recirculation mode, the water being injected into the core will be warmer, resulting in a higher steam release to containment. However, the Reactor Building cooling units (RBCUs), which share the burden of removing energy from containment with the LPI coolers, will remove more energy as the building heats up. This partially compensates for the lack of cooling flow to the LPI coolers over this brief time period.

An analysis was performed to determine the containment response to the limiting large break LOCA when the LPSW flow to the LPI Coolers is delayed for 30 minutes following the initiation of sump recirculation mode. Worst case assumptions for the RBCUs capacity were used. The effect of this delay on the minimum long-term heat removal requirements for the RBCUs was evaluated. The results of this analysis showed that the EQ requirements would be met. The delay has no effect on the peak containment pressure because the peak pressure occurs earlier in the event during the injection mode.

A vendor analysis was performed to evaluate the thermal effects on the LPI coolers due to delaying LPSW cooling flow. The original cooler specification is based on a maximum

in-service temperature difference of 175 °F. The 30 minute delay in LPSW cooling flow to the LPI coolers could potentially result in a worst case temperature difference of 210 °F. The evaluation by the manufacturer of the LPI coolers has concluded that the coolers can withstand this increased temperature difference.

Duke has evaluated the delay of LPSW cooling flow's impact on core cooling, including NPSH for the LPI pumps and Building Spray (BS) pumps. This analysis concluded that there are no adverse impacts on the capability to maintain core cooling. In addition, NPSH for the LPI pumps and BS pumps remains adequate assuming a 30 minute delay in supplying LPSW cooling flow to the LPI coolers.

In summary, operator action to isolate the LPSW non-essential header and throttle open LPSW-4 and LPSW-5 is expected to take only about 5-10 minutes after switchover to RBES recirculation. This change will not have an adverse impact on containment heat removal as long as this operator action is taken within 30 minutes after realigning from the injection mode to the RBES mode. Realigning to the RBES recirculation mode is required no earlier than 30 minutes after a large break LOCA/LOOP; therefore, the operator actions to isolate the LPSW non-essential header and throttle open LPSW-4 and LPSW-5 are required within one hour after a large break LOCA/LOOP. Due to the time available to perform these relatively simple actions, Duke Power has concluded that operator burden is not significantly affected.

The existing valves associated with this change, 1LPSW-139, 3LPSW-45, 1,2,3LPSW-4 and 1,2,3LPSW-5 are tested periodically per Oconee's In-Service Testing (IST) program and the Generic Letter 89-10 test program. Valve 2LPSW-139, which will be installed as part of the ECCW upgrade, will also be included in these testing programs.

A single failure analysis of the LPSW System concludes that no single failure could cause a simultaneous failure of a single LPSW pump and one of the valves required to isolate the LPSW non-essential header, thus resulting in inadequate NPSH. Specifically, valves 1LPSW-139 and 2LPSW-139 will be powered from separate 208VAC motor control centers, and these motor control centers will be powered from 4160 VAC switchgear 1TE and 2TE, respectively. 1LPSW-139 is currently supplied from a Unit 2 power source; however, this power supply will be changed to a Unit 1 power source. The LPSW pumps A and C for Units 1 and 2 are powered from 4160 VAC switchgear 1TC and 2TC, respectively. LPSW pump B for Units 1 and 2 can be powered from either 1TD or 2TD. On Unit 3, Valve 3LPSW-45 is powered from 208 VAC motor control center 3XS3 which is powered from 4160 VAC switchgear 3TE. The Unit 3 LPSW pumps A and B are powered from 4160 VAC switchgear 3TC and 3TD, respectively. Therefore, each valve that is required to close to isolate the LPSW non-essential header is powered from separate power supplies from the LPSW pumps. Each of these valves is or will be powered from Class 1E power supplies.

Only one motor-operated valve is needed to isolate each unit's non-essential header. Redundant isolation valves are not required, because if a single failure of the valve is postulated, then all LPSW pumps would be assumed to be operating. If all LPSW pumps are operating, the pump discharge pressures are higher and the pumps will operate at a point on their pump curves such that the NPSHr would not exceed NPSHa. If one LPSW pump fails to operate, the remaining LPSW pumps would operate at a lower discharge pressure and a higher flow rate per pump, resulting in a higher NPSHr. However, if one LPSW pump fails, a failure of the motor-operated valve used to isolate the non-essential header is not postulated.

A probablistic risk assessment (PRA) has been performed to address replacing the automatic actuation of LPSW-4 and LPSW-5 with operator action. The PRA determined that this change has a negligible impact on the projected core melt frequency.

By reducing the LPSW flow to the LPI coolers during the initial phase of a design basis accident, the potential exists for the LPSW pumps to be operated below the manufacturer's recommended minimum continuous flow rate of 4250 gpm per pump. Also, in the event that all LPSW pumps successfully start and operate during the event, the potential exists for a stronger pump to deadhead a weaker pump during low flow conditions. To avoid damaging a pump due to minimum flow concerns, the ECCW upgrade project includes installation of minimum flow piping for each LPSW pump. Each minimum flow line will have local flow rate indication for testing. To avoid having to install heat exchangers on the minimum flow piping, the discharge from each pump will not be returned to its own suction supply. Currently, the manufacturer recommends a minimum flow of 4250 gpm per pump for long term continuous operation. If minimum flow piping is designed for this flow rate, the LPSW NPSH requirements would be unreasonably high. The design will ensure an adequate pump minimum flow for operation of up to 24 hours. This minimum flow requirement will be confirmed by documented pump testing by the manufacturer.

Some of the facility modifications and associated testing which support the above technical justification for removal of the ES signal from valves LPSW-4 and LPSW-5 have not yet been completed. These items are listed below:

1. Installation of minimum flow piping for each LPSW pump.
2. Testing to demonstrate acceptable LPSW pump operation at the chosen design value for pump minimum flow.
3. Installation of new valve 2LPSW-139 to allow isolation of the LPSW non-essential header for Unit 2 without affecting flow to the Unit 1 non-essential header.
4. Relocation of control switches for valves 1LPSW-139 and 3LPSW-45 to the control room and rerouting the power supply for valve 1LPSW-139.

Completion of these modifications, along with removal of the ES signals from valves LPSW-4 and LPSW-5, is planned in the O3EOC16, O1EOC17 and O2EOC16 refueling outages scheduled for October 1996, May 1997, and August 1997, respectively. In order

to permit approval of this amendment prior to implementation on the first unit, while maintaining the existing surveillance requirements on remaining units, a footnote has been placed into the Technical Specifications which will allow transition to the new surveillance requirement.

Editorial Changes to Technical Specification 4.5.1.1.2:

In support of the changes proposed to the Technical Specification surveillance, the following revisions are proposed for clarification. Technical Specification 4.5.1.1.2.b is being clarified to differentiate between test acceptance criteria for ES actuated and non ES actuated components since LPSW-4 and LPSW-5 will become non ES actuated components. LPSW-4 and LPSW-5 will no longer receive an ES actuation signal; however, the test acceptance criterion will be to ensure that these valves have completed their travel.

References:

1. Oconee Final Safety Analysis Report (FSAR), 12/31/94 revision, Sections 6.3, 9.2.2, 15.14.3, 15.14.5, Figures 9-9, 9-11, and 9-12.

2. Letter dated December 28, 1995, from J. W. Hampton, Duke Power, to NRC Document Control Desk regarding ECCW System Upgrade, Docket Nos. 50-269, -270, and -287.

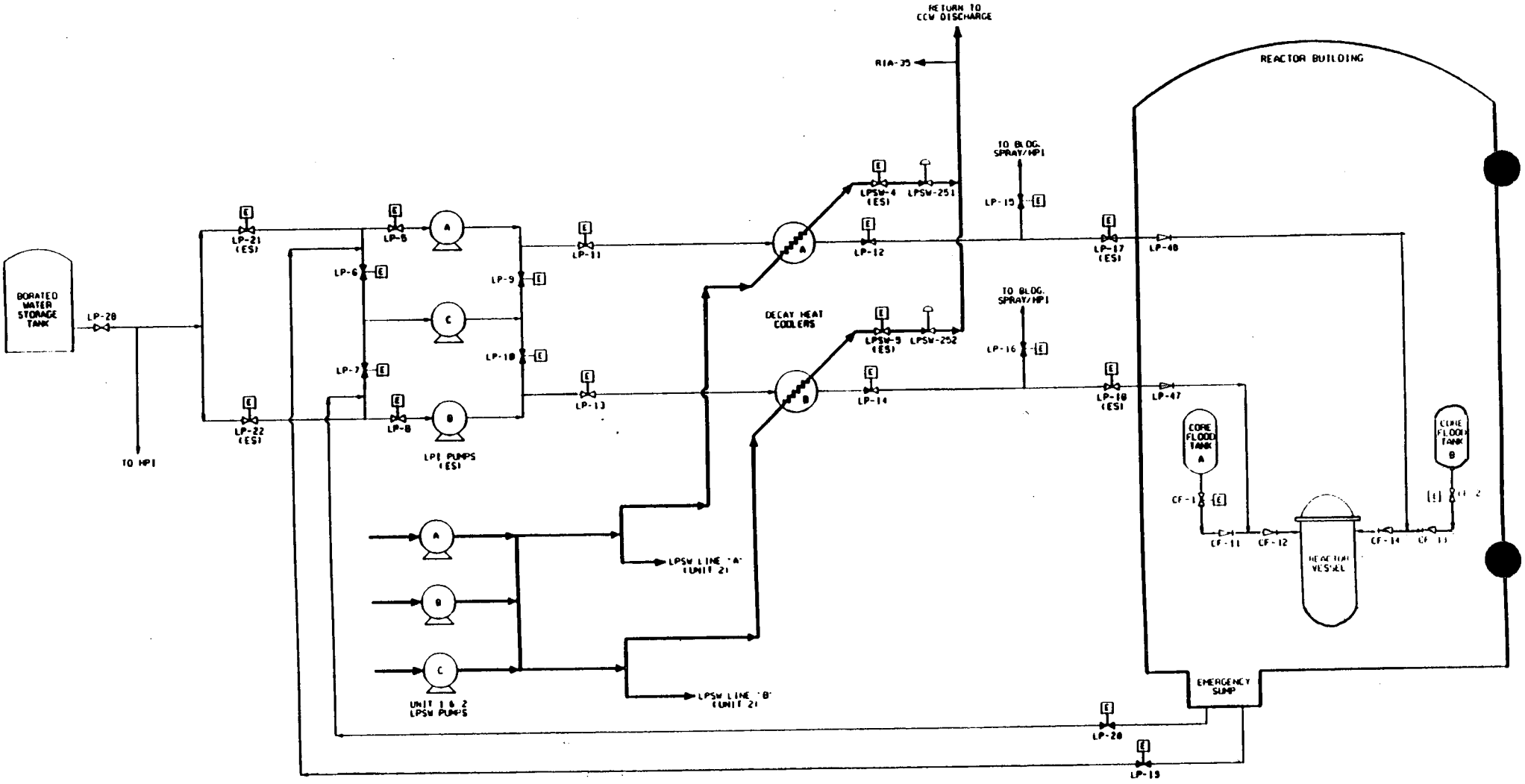

FIGURE 1 - LPI/LPSW SYSTEMS

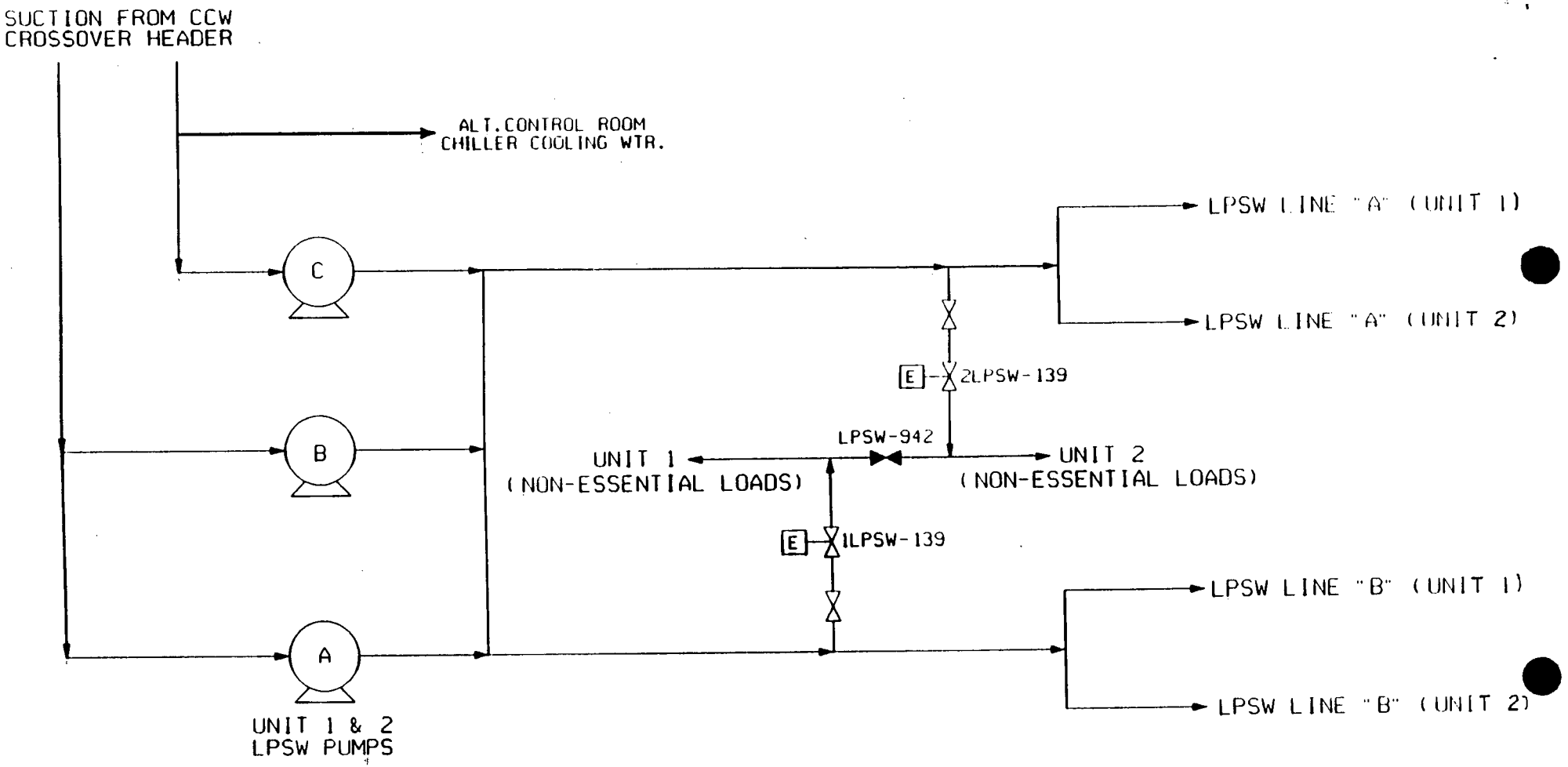

FIGURE 2 - NON-ESSENTIAL LPSW LOADS

ATTACHMENT 4

ANALYSIS OF NO SIGNIFICANT HAZARDS CONSIDERATION ISSUE

Pursuant to 10CFR50.91, Duke Power Company (Duke) has made the determination that this amendment request involves a No Significant Hazards Consideration by applying the standards established by NRC regulations in 10CFR50.92. The following discusses the basis for our analysis:

Will operation of the facility in accordance with the proposed amendment:

A. Involve a significant increase in the probability or consequences of an accident previously evaluated?

No. Eliminating the automatic signal that opens Low Pressure Service Water (LPSW) System valves, LPSW-4 and LPSW-5, upon an Engineered Safeguards (ES) actuation does not increase the probability of any accident previously evaluated. The proposed change would involve a delay in providing cooling water to the Low Pressure Injection (LPI) System coolers after a design basis accident. Cooling water flow to the LPI coolers is isolated during normal power operation. During normal cold shutdown conditions, cooling water flow to the LPI coolers is normally open without relying on the ES actuation signal. This cooling water flow is needed to mitigate certain accidents, but a delay in providing this cooling water flow after a design basis accident does not significantly increase the probability of any accident previously evaluated.

Eliminating the ES actuation signal for LPSW-4 and LPSW-5 will not increase the consequences of an accident previously evaluated. After a loss of coolant accident (LOCA), operators will operate the appropriate valves from the control room in sufficient time to provide adequate cooling water flow to maintain containment temperature and pressure within acceptable limits. Duke has also evaluated the delay of LPSW cooling flow's impact on core cooling and concluded that there are no adverse impacts on the capability to maintain core cooling. Since the containment temperature and pressure limits after a LOCA will not be exceeded, this change will not increase any potential off-site dose consequences after a LOCA. Due to the time available for operator action (approximately one hour), there is no significant increase in operator burden during this accident scenario.

B. Create the possibility of a new or different kind of accident from the accidents previously evaluated?

No. As stated above, due to the time available for operator action (approximately 1 hour), there is no significant increase in operator burden during this accident scenario. Eliminating the ES signal that automatically opens valves LPSW-4 and LPSW-5 results in significantly lower flow demand on the LPSW pumps. If all LPSW pumps are successfully started, this could result in a stronger pump causing deadhead conditions on a weaker pump since the pumps feed into the same piping system. To prevent any potential adverse effects on the LPSW pumps due to inadequate flow during the initial stages of a LOCA, minimum flow piping will be installed for

the LPSW pumps to provide adequate flowpaths for pump minimum flow. Testing will be performed to validate that the LPSW pumps can operate at the chosen design value for pump minimum flow. In addition, Duke conducted an evaluation, based on manufacturer input, of the thermal effects on the LPI coolers due to delaying LPSW cooling flow. This evaluation concluded that the 30 minute delay of LPSW cooling flow has no adverse thermal effects on the LPI coolers. Therefore, because there is no significant increase in operator burden and because there will be no adverse effects on the LPSW pumps, LPI coolers, and associated piping caused by the delayed LPSW cooling flow, the proposed change will not create the possibility of a new or different kind of accident from the accidents previously evaluated.

C. Involve a significant reduction in a margin of safety?

No. There are no safety limits or limiting safety system settings associated with the LPSW System in the Oconee Nuclear Station Technical Specifications. The proposed change will not affect any existing safety limits or limiting safety system settings. The proposed change will not affect any existing Limiting Conditions for Operation in the Technical Specifications. The proposed change involves an alternative method of initiating cooling water flow to the LPI coolers after a LOCA. This alternative method will achieve the required results since there will be no significant change in the containment temperature and pressure after a LOCA.

Duke has concluded based on the above that there are no significant hazards considerations involved in this amendment request.

ATTACHMENT 5

ENVIRONMENTAL IMPACT ANALYSIS

Pursuant to 10CFR51.22 (b), an evaluation of the proposed amendments has been performed to determine whether or not it meets the criteria for categorical exclusion set forth in 10CFR51.22 (c) 9 of the regulations. The proposed amendment does not involve:

1) A significant hazards consideration.

This conclusion is supported by the No Significant Hazards Consideration Evaluation which is contained in Attachment 4.

2) A significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

This amendment will not significantly change the types or amounts of any effluents that may be released offsite.

3) A significant increase in the individual or cumulative occupational radiation exposure.

This amendment will not significantly increase the individual or cumulative occupation radiation exposure.

In summary, this amendment request meets the criteria set forth in 10CFR51.22 (c) 9 of the regulations for categorical exclusion from an environmental inpact statement.