

Steven M. Snider Vice President Oconee Nuclear Station

RA-24-0092

10 CFR 50.90

Duke Energy ON01VP | 7800 Rochester Hwy Seneca, SC 29672

o: 864.873.3478 f: 864.873.5791 Steve.Snider@duke-energy.com

July 29, 2024

ATTN: Document Control Desk U. S. Nuclear Regulatory Commission Washington, DC 20555-0001

Duke Energy Carolinas, LLC Oconee Nuclear Station (ONS), Units 1, 2, and 3 Docket Numbers 50-269, 50-270, and 50-287 Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55

Subject: Application to Revise Technical Specification 3.7.7, "Low Pressure Service Water (LPSW) System," to Extend the Completion Time for One Required LPSW Pump Inoperable on a One-Time Basis

Pursuant to 10 CFR 50.90, Duke Energy Carolinas, LLC (Duke Energy) proposes to amend the Technical Specifications (TS) for Oconee Nuclear Station (ONS) Units 1, 2, and 3. The proposed amendment would revise TS 3.7.7, "Low Pressure Service Water (LPSW) System" to provide a one-time extended Completion Time for one required LPSW pump inoperable. Specifically, the proposed change would modify the current Completion Time Note associated with TS 3.7.7, Condition A, Required Action A.1 to 360 hours to be used once during an ONS Unit 2 refueling outage to allow the tie-in and testing of an alternate suction source to the shared Unit 1 and Unit 2 'A' and 'B' LPSW pumps. The proposed extended Completion Time would have an expiration date of December 31, 2027.

Duke Energy had a previously approved license amendment that extended the Completion Time only during Unit 2, Refuel 31, to allow the tie-in and testing of the alternate suction source. However, due to valve vendor delivery delays, Duke Energy was unable to perform the work during ONS Unit 2, Refuel 31. Since the previously approved extended Completion Time is no longer applicable, Duke Energy is requesting the NRC to approve an extended Completion Time to allow this work to be performed in a subsequent Unit 2 outage. Also, during modification planning, Duke Energy determined that an LPSW pump inlet isolation valve, LPSW-2, interferes with the installation of the alternate suction source. A longer one-time Completion Time is needed than that previously approved by the NRC due to the additional time needed to replace LPSW-2 prior to installing the alternate suction source. Installation of the alternate suction source is needed to permit draining of the Condenser Circulating Water (CCW) System cross-connect header for the replacement of three CCW valves.

The Enclosure to this letter provides a description and assessment of the proposed change. The Enclosure incorporates by reference and provides a summary of the previous License Amendment Request (LAR) (September 2, 2021) and Supplement (April 14, 2022) that was approved by the NRC in a letter dated July 15, 2022 (Amendment Nos. 424, 426, and 425) to providing an extended Completion Time for TS 3.7.7 Required Action A.1 that applied only during ONS Unit 2, Refuel 31. A significant portion of the justification provided in the previous LAR and Supplement is applicable to the proposed new extended Completion Time. RA-24-0092 Page 2

Attachment 1 provides the existing TS pages marked to show the proposed change. Attachment 2 provides retyped (clean) TS pages. Attachment 3 provides existing TS Bases pages marked to show the proposed change for information only. Attachment 4 provides simplified diagrams of the CCW crossover header before and after the alternate suction source to the LPSW pumps is placed in service. Attachment 5 provides a markup of LPSW flow diagrams and the ONS abnormal procedure for loss of LPSW.

The proposed change has been evaluated in accordance with 10 CFR 50.91(a)(1) using criteria in 10 CFR 50.92(c), and it has been determined that the proposed change involves no significant hazards consideration. The basis for this determination is included in the Enclosure.

Duke Energy requests approval of the proposed amendment to the ONS Technical Specifications within one year of the date this submittal is accepted by the Nuclear Regulatory Commission staff for review. Once approved, Duke Energy will implement the license amendments within 120 days. There are no regulatory commitments contained in this submittal.

In accordance with 10 CFR 50.91, Duke Energy is notifying the State of South Carolina of this license amendment request by transmitting a copy of this letter and Enclosure to the designated State Official.

If there are any questions or if additional information is needed, please contact Mr. Ryan Treadway, Director – Nuclear Fleet Licensing at 980-373-5783 or ryan.treadway@duke-energy.com.

I declare under penalty of perjury that the foregoing is true and correct. Executed on July 29, 2024.

Sincerely,

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Steven M. Snider Vice President Oconee Nuclear Station

Enclosure: Description and Assessment of the Proposed Change

Attachments:

- 1. Technical Specifications Markup
- 2. Revised (Clean) Technical Specifications
- 3. Technical Specifications Bases Markup (Information Only)
- 4. Simplified Condenser Circulating Water System Crossover Header Diagrams
- 5. Low Pressure Service Water System Diagrams and Procedure (Markup)

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cc w/enclosure and attachments:

Ms. Laura Dudes, Administrator, Region II U.S. Nuclear Regulatory Commission Marquis One Tower 245 Peachtree Center Ave., NE, Suite 1200 Atlanta, GA 30303-1257

Mr. Shawn Williams, Project Manager Office of Nuclear Reactor Regulation U.S. Nuclear Regulatory Commission 11555 Rockville Pike Rockville, Maryland 20852

Mr. Nick Smalley NRC Senior Resident Inspector Oconee Nuclear Station

Lynne Gardner Manager, Radioactive and Infectious Wast Management Section South Carolina Department of Health & Environmental Control 2600 Bull Street Columbia, SC 29201

Robin Mack Assistant Bureau Chief Bureau of Environmental Health Services South Carolina Department of Health & Environmental Control 2600 Bull Street Columbia, SC 29201

ENCLOSURE

DESCRIPTION AND ASSESSMENT OF THE PROPOSED CHANGE

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ATTACHMENTS:

- 1. Technical Specifications Markup
- 2. Revised (Clean) Technical Specifications
- 3. Technical Specifications Bases Markup (Information Only)
- 4. Simplified Condenser Circulating Water System Crossover Header Diagrams
- 5. Low Pressure Service Water System Diagrams and Procedure (Markup)

1. SUMMARY DESCRIPTION

Duke Energy Carolinas, LLC (Duke Energy) proposes to amend the Technical Specifications (TS) for Oconee Nuclear Station (ONS) Units 1, 2, and 3. The proposed amendment would revise TS 3.7.7, "Low Pressure Service Water (LPSW) System" to extend the Completion Time associated with one required inoperable LPSW pump once prior to December 31, 2027.

Specifically, the proposed change would replace the expired Note with a similar Note modifying the Completion Time associated with TS 3.7.7, Condition A ("One required LPSW pump inoperable"), Required Action A.1 to 360 hours during an ONS Unit 2 refueling outage to allow for the tie-in and testing of an alternate suction source to the shared Unit 1 and Unit 2 'A' and 'B' LPSW pumps. The new Note specifically allows the Completion Time to apply one-time to install an alternate suction source and has an expiration date of December 31, 2027. The revised note provides more time than what was previously approved (Amendments Nos. 424, 426, and 425) due to the need to replace LPSW-2 prior to installation of the alternate suction source. The current configuration of LPSW-2 interferes with the installation of the alternate suction source is needed to permit draining of the Condenser Circulating Water (CCW) System crossover header for the replacement of three CCW valves.

2. DETAILED DESCRIPTION

2.1 System Design and Operation

LPSW System

The ONS LPSW System provides a heat sink for the removal of process and operating heat from safety related components during a transient or accident. The LPSW System also provides this heat sink function during normal operation and normal shutdown for various components. The system provides cooling directly to the Reactor Building Cooling Units, Low Pressure Injection coolers, turbine driven Emergency Feedwater (EFW) pump, High Pressure Injection pump motor coolers and the motor driven EFW pumps.

The LPSW System for Unit 1 and Unit 2 is shared and consists of three LPSW pumps (i.e., 'A', 'B' and 'C') which can supply multiple combinations of pathways to supply required components. The shared Unit 1 and 2 pumps take suction from the 42-inch cross-connection between the condenser inlet headers of all three units; two LPSW pumps ('A' and 'B') are supplied by one suction branch line and the other pump ('C') is supplied by the other suction branch line. The inlet to each LPSW pump can be isolated by pump isolation valves. LPSW-2, the inlet isolation valve for LPSW Pump A, will be replaced prior to installing the alternate suction source to the Unit 1 and Unit 2 shared LPSW pumps due to its configuration interfering with the installation. The LPSW System for Unit 3 consists of two LPSW pumps and like the Unit 1 and 2 pumps, also take their suction from the CCW 42-inch cross-connection header. The 42-inch cross-connection is also referred to as the CCW crossover header or CCW crossover line.

Additional information about the design and operation of the LPSW System, along with a list of the components served by the system, is presented in Section 9.2.2.2.3 of the ONS Updated Final Safety Analysis Report (UFSAR).

CCW System

The CCW System is designed to supply suction to the LPSW pumps from the 42-inch crossover header during normal operation and during emergencies. The CCW crossover header is embedded in the Turbine Building basement mat floor. Manual isolation valves are provided so that service water may be supplied from any or all the inlet headers.

There are four CCW crossover header isolation valves (1CCW-40, 2CCW-41, 3CCW-42, 3CCW-94) that are normally open to provide suction to the LPSW pumps from any unit via the 42-inch crossover header. These 42-inch CCW crossover valves are also used as isolation valves for maintenance activities and in support of LPSW System flow testing. The crossover valves are located in valve pits where the piping and valves are exposed.

Valve CCW-72 provides isolation of the shared Unit 1 and Unit 2 LPSW Pump 'A' and 'B' suction headers. Similarly, valve CCW-73 provides isolation of the shared Unit 1 and Unit 2 LPSW Pump 'C' suction header.

The Unit 2 crossover header isolation valve, 2CCW-41, will be replaced upon installation of an alternate suction source to the Unit 1 and Unit 2 shared LPSW pumps. Valves CCW-72 and CCW-73, which provide isolation of the CCW suction header to the Unit 1 and 2 LPSW pumps, will be replaced. Also, LPSW-1 will be replaced to resolve a legacy design issue.

Figure 1 of Attachment 4 provides a simplified diagram of the CCW crossover header along with the CCW valves discussed above. The diagram also displays the interconnection between the CCW System and LPSW System.

Additional information about the design and operation of the CCW System is provided in Section 9.2.2.2.1 of the ONS UFSAR.

2.2 Current Technical Specifications Requirements

The Limiting Condition for Operation (LCO) for TS 3.7.7 specifies that for the LPSW System shared by ONS Units 1 and 2, three LPSW pumps are required to be OPERABLE. However, the LCO is modified by a Note which requires only two LPSW pumps to be OPERABLE for Unit 1 or Unit 2 if either unit is defueled and one LPSW pump can mitigate a design basis accident on the fueled unit. The shared Units 1 and 2 LPSW System requires only two pumps to meet the single failure criterion provided that one of the units has been defueled and the following LPSW System loads on the defueled unit are isolated: Reactor Building Cooling Units, Reactor Building Auxiliary Coolers, Component Cooling, Main Turbine Oil Tank, Reactor Coolant Pumps and Low Pressure Injection Coolers. The LCO further requires that one flow path be OPERABLE for Unit 1 and one flow path be OPERABLE for Unit 2. Per the TS 3.7.7 Bases, an LPSW flow path is considered OPERABLE when the associated piping, valves, heat exchangers and instrumentation and controls required to perform the safety related function are also OPERABLE. Any combination of pathways to supply the required components is acceptable, provided there is no single active failure which can prevent supplying the necessary loads.

Although not directly related to the proposed change in this license amendment request, the LCO for TS 3.7.7 specifies that two LPSW pumps are required to be OPERABLE for Unit 3. One flow path for Unit 3 is also required to be OPERABLE.

The LCO for TS 3.7.7 is required to be met in Modes 1, 2, 3 and 4 (i.e., the Applicability for TS 3.7.7).

TS 3.7.7, Condition A is the condition for one required LPSW pump inoperable. For Units 1 and 2, Condition A is entered when one of the three required LPSW pumps is inoperable unless Unit 1 or Unit 2 is defueled with the appropriate loads isolated. With Unit 1 or Unit 2 defueled with the appropriate loads isolated, Condition A would only be entered for Unit 1 or Unit 2 if two LPSW pumps are inoperable. Required Action A.1 specifies that action must be taken to restore the required LPSW pump to OPERABLE status within the Completion Time of 72 hours. The Completion Time is modified by a note indicating that during Unit 2, Refuel 31 with Unit 2 defueled, appropriate LPSW loads secured, and contingent on implementation of contingency measures described in Attachment 1 of letter RA-22-0089 dated April 14, 2022, the Completion Time is 288 hours can be used for the tie-in and testing of an alternate suction source to the shared Unit 1/2 LPSW Pumps A and B. Applying the existing Applicability NOTE, only two LPSW pumps are required to be OPERABLE to support Unit 1 when ONS Unit 2 is defueled with the appropriate loads secured.

2.3 <u>Reason for the Proposed Change</u>

The current TS 3.7.7 Required Action A.1 Completion Time Note was intended to allow replacement of CCW valves during Unit 2, Refuel 31. Duke Energy was unable to perform the modification during Unit 2, Refuel 31 due to valve vendor delivery delays. As such, the current Completion Time Note expired without being used and another note is needed to support the work during a subsequent Unit 2 refueling outage. Also, during modification planning, Duke Energy determined that the as-built configuration of inlet pump isolation valve LPSW-2 interfered with the installation of the alternate suction source and needed to be replaced prior to installation of the alternate suction source. Since this work must be completed prior to completion Time Note is no longer adequate.

The reason for the Completion Time Note described in Section 2.3 of the Enclosure to the Duke Energy LAR (September 2, 2021) and Supplement (April 14, 2022) that was approved by the NRC by letter dated July 15, 2022 (Amendment Nos. 424, 426, and 425) (except for the need to replace LPSW-2 prior to installing the alternate suction source) remains applicable and is restated below.

"CCW crossover header isolation valve 2CCW-41 is original to ONS and inspection of the valve internals is not possible due to system configuration and lack of available isolations. Efforts have been underway since 2008 to replace this valve due to gross leakage past the valve seat. During ONS Unit 2, Refuel 27, a variable speed portable pump was used to remove water from the Unit 2 CCW intake pipe leaking past valve 2CCW-41. Valves CCW-72 and CCW-73 are also original plant equipment. Duke Energy has determined that the risk of operating these valves as part of the proposed isolation boundary for the replacement of the 42-inch valve 2CCW-41 is too high. Specifically, CCW-72 and CCW-73 have been in service for over forty years and are currently locked in the open position. They are butterfly valves with a small gear operator and there is no plant record of these valves ever being manipulated. There are other identical valves at ONS which are manipulated and have a history of failing the gear operator or coupling between the valve stem and the gear operator. With no history of manipulation for CCW-72 and CCW-73, the concern is that if one of these valves were to be operated and failed, whether full open, full close, or in a

partial position, there would be no easy way to replace the valve within the existing 72-hour Completion Time of TS 3.7.7, Condition A, Required Action A.1. Valves CCW-72 and CCW-73 are also in need of full replacement.

The CCW crossover header isolation valve for Unit 1 (1CCW-40) will also be replaced. However, the proposed change described in this license amendment request is only needed for the replacement of valves 2CCW-41, CCW-72 and CCW-73.

To affect the replacement of the 42-inch diameter Unit 2 CCW crossover header isolation valve (2CCW-41), the 30-inch diameter suction header isolation valve (CCW-73) and the 36-inch diameter suction header isolation valve (CCW-72), an alternate suction source to the shared Units 1 and 2 'A' and 'B' LPSW pumps must first be installed. Once the alternate suction source is installed, with the final tie-in and testing complete, isolation of the 42-inch CCW crossover header can commence while meeting the LCO for TS 3.7.7. Then the three CCW valves (2CCW-41, CCW-72, CCW-73) may be replaced after the header is isolated."

Final connection of the alternate suction line to the Units 1 and 2 'A' and 'B' LPSW pump suction headers may only occur after ONS Unit 2 is defueled and begins with securing any running pump(s) in the 'A'/'B' suction header. The only remaining OPERABLE LPSW pump in this configuration to support Unit 1 (Mode 1) is the 'C' LPSW pump. An entry into TS 3.7.7, Condition A is required for Unit 1 and Required Action A.1 dictates that a required LPSW pump must be restored to OPERABLE status within 72 hours. The final connection (i.e., tie-in) and testing of the alternate suction source piping is estimated to require a window of 360 hours, which is 288 hours beyond the existing Completion Time of 72 hours for Required Action A.1. Therefore, the revised Note for a 360-hour Completion Time associated with Required Action A.1 is necessary to allow for tie-in and testing of the alternate suction source while also allowing continued operation at full power on Unit 1.

Once the functional testing of the alternate suction source is complete, the source will be placed in service providing a flow path to both the shared 'A' and 'B' LPSW pumps for Units 1 and 2. Unit 1 can then declare the LCO for TS 3.7.7 met and exit the TS Action statement.

2.4 Description of the Proposed Change

The following modified Completion Time Note is proposed for the Required Action A.1 Completion Time:

---------NOTE-------During a Unit 2 refueling outage with Unit 2 defueled, appropriate LPSW loads secured, and contingent on implementation of the compensatory measures described in Attachment 1 of letter RA-22-0089 dated April 14, 2022, the Completion Time is 360 hours for the tie-in and testing of an alternate suction source to the shared Unit 1/2 LPSW Pumps A and B. Only applicable one time and expires on December 31, 2027. There are no other proposed TS changes associated with this license amendment request. Only the Completion Time for Required Action A.1 ("Restore required LPSW pump to OPERABLE status.") would be modified during an ONS Unit 2 Refueling Outage and allowed to be used once prior to December 31, 2027, with the proposed change.

Duke Energy is not requesting NRC approval of the plant modification to install the alternate LPSW suction source.

The proposed change is supported by changes to the TS Bases. In addition to reflecting the proposed change to the TS, the TS 3.7.7 Bases are revised for clarity and consistency. The regulation at Title 10 of the Code of Federal Regulations (10 CFR), Part 50.36, states, "A summary statement of the bases or reasons for such specifications, other than those covering administrative controls, shall also be included in the application, but shall not become part of the technical specifications." Changes to the TS Bases will be made in accordance with the Technical Specifications Bases Control Program following approval of the requested amendment. The proposed TS Bases changes are consistent with the proposed TS change and provide the purpose for each requirement in the specifications Improvements for Nuclear Power Reactors, dated July 2, 1993 (58 FR 39132). Therefore, the TS Bases is not requested.

3. TECHNICAL EVALUATION

3.1 Installation of Alternate LPSW Suction Source

An alternate suction source for the Unit 1/2 'A' and 'B' LPSW pumps must first be installed to allow for the isolation of the 42-inch CCW crossover header which will allow the replacement of valves 2CCW-41, CCW-72 and CCW-73. Prior to installing the alternate suction source, LPSW-2 (an inlet isolation valve for LPSW pump A) must be removed and replaced due to its current configuration interfering with the installation. This valve and the inlet isolation valve, LPSW-1, for LPSW pump C are also being replaced to resolve a legacy as-built issue identified in August of 2023 associated with the A, B, and C LPSW pump inlet isolation valves as part of this modification. LPSW-3 will be replaced in a subsequent Unit 2 refueling outage.

A new endbell at the inlet end of the 1B condensate cooler has been installed, as well as approximately 30 feet of QA-1, 36-inch diameter pipe from the 1B condensate cooler to the 'A' and 'B' LPSW pump suction header. Preparation will take place prior to where this modification is performed for the installation of a 36-inch inflatable line stop fitting on the suction header between the suction line for the 'A' high pressure service water (HPSW) pump and 'B' LPSW pump.

During a Unit 2 refueling outage with no fuel in the Unit 2 reactor vessel (i.e., Unit 2 not in a TS MODE), installation of the 36-inch inflatable line stop fitting (i.e., inflatable line stop) on the suction header between the suction line for the 'A' HPSW pump and 'B' LPSW pump will commence. At the point that the inflatable line stop fitting activity is commenced, Unit 1 will enter TS 3.7.7, Condition A since the 'A' and 'B' LPSW pumps will be secured and only the 'C' LPSW pump will remain OPERABLE. Once the inflatable line stop fitting installation is complete, the Unit 1/2 'A' and 'B' LPSW pump suction header will be drained, the interfering LPSW valve (LPSW-2) will be replaced which will allow installation of a piping "T" fitting at the opposite end of the 'A' and 'B' LPSW pump suction header. Completion of piping "T" fitting will

connect the 'A' and 'B' LPSW suction header to the new 36-inch alternate suction pipe from the 1B condensate cooler.

Once watertight, the LPSW System will be returned to Operations for functional testing of the new LPSW-2 valve and the alternate LPSW suction source. Upon successful completion of testing, the alternate suction source will be placed in service, providing a flow path to both the 'A' and 'B' LPSW pumps. Unit 1 can then exit the TS 3.7.7 Action statement because the LCO would be met for Unit 1 with two LPSW pumps and a flow path OPERABLE.

The following list contains the activities that are scheduled to take place during the proposed 360-hour TS 3.7.7 Action statement, along with the projected time allotted for each:

- Tag Out of LPSW Pumps 'A' and 'B' (enter TS 3.7.7 Action statement) and make inflatable line stop wet tap – 12 hours
- Install Inflatable line stop and Red Tag 24 hours
- Drain 'A' and 'B' LPSW Header, sever header at new CCW-522 location, and remove LPSW-2 – 12 hours
- Prepare and weld flanged spool to 'A' and 'B' LPSW Header for CCW-522, install new LPSW-2 72 hours
- Install CCW-522 to new A and B LPSW header flange 12 hours
- Install new header section to CCW-522 and LPSW-2 with associated supports 48 hours
- Install CCW-518 valve to A and B LPSW header 12 hours
- Install 36-inch tee connecting alternate suction source to A and B LPSW header 12 hours
- Clear Tags, fill and vent 'A' and 'B' LPSW Header and alternate suction source line 18 hours
- Test LPSW 'A' and 'B' Pumps and exit TS 3.7.7 Condition A 18 hours

Estimates for each activity above are provided to the nearest half shift (i.e., 6 hours). The total duration of the above activities is 240 hours. Applying a 50% contingency factor, Duke Energy is requesting a TS 3.7.7, Required Action A.1 Completion Time of 360 hours.

The configuration of the CCW system and the Unit 1/2 'A' and 'B' LPSW suction header with the alternate suction source installed will permit for the isolation of the 42-inch CCW crossover header whereby valves 2CCW-41, CCW-72 and CCW-73 may be replaced. As mentioned above, inlet isolation valve LPSW-1 for LPSW pump C will also be replaced to resolve a legacy as-built issue identified in August of 2023.

Figures 2 through 8 of Attachment 4 depict the activities associated with the replacement of LPSW-2, installation of the alternate LPSW suction source, the replacement of the CCW valves, the replacement of LPSW-1 and final return to service of the LPSW System following a Unit 2 refueling outage.

3.2 Defense-in-Depth (Unit 3 LPSW Cross-Connect)

The discussion provided below for the previous LAR (RA-21-005 dated September 2, 2021) and Supplement (RA-22-0089 dated April 14, 2022) is applicable and appropriate to this LAR. The only changes in the discussion below are associated with the replacement of LPSW-2 and the

increased Completion Time required due to the need to replace LPSW-2 prior to installing the alternate suction source.

The alternate suction source described in Section 3.1 above will be placed into service to meet the LCO of TS 3.7.7 while the CCW valves are replaced. However, prior to placing the alternate suction source into service to meet the LCO, only the shared Units 1 and 2 'C' LPSW pump will be OPERABLE to support Unit 1 (see Figure 5 of Attachment 4). The required window to complete the tie-in and perform a functional test of LPSW-2 and the alternate suction source is projected to be 360 hours, which exceeds the TS 3.7.7 Completion Time for Required Action A.1 of 72 hours. Although operability of the single Units 1 and 2 'C' LPSW Pump can provide for the specified safety function of the system for Unit 1, ONS has the capability to procedurally cross-connect the ONS Unit 3 LPSW pumps to the ONS Unit 1 and 2 LPSW header by opening valve LPSW-1095 should the 'C' LPSW Pump become inoperable. This cross connect is the "ACTION/EXPECTED RESPONSE" for a loss of Unit 1 and 2 LPSW pumps in ONS procedure AP/1/A/1700/024, "Loss of LPSW." Refer to the markup of LPSW System flow diagrams and procedure steps provided in Attachment 5 of this license amendment request. This cross connect capability provides defense-in-depth during the proposed 360-hour temporary Completion Time of Required Action A.1 with Unit 2 defueled and required loads isolated.

In a scenario where all Units 1 and 2 LPSW pumps are inoperable (i.e., the Units 1 and 2 'C' LPSW Pump becomes inoperable during the extended one-time Completion Time), Unit 1 and 2 LPSW would be cross connected to Unit 3 LPSW, and there would be two Unit 3 LPSW Pumps (i.e., the Unit 3 'A' and 'B' LPSW Pumps) available to provide LPSW in the event of a design basis accident for either Unit 1 or Unit 3 during the extended one-time Completion Time of Required Action A.1.

The specified TS safety function of the LPSW System will be maintained for the duration of the proposed extended one-time Completion Time of Required Action A.1 with only the Units 1 and 2 'C' LPSW Pump OPERABLE. Furthermore, with the loss of LPSW procedure in place, two LPSW pumps from Unit 3 would be available to support Unit 1 should the remaining Units 1 and 2 'C' LPSW Pump become inoperable and the specified safety function of the LPSW System would still be maintained. Cross-connecting Unit 3 LPSW to Unit 1 LPSW is unanalyzed because the cross-connect design feature is not credited to mitigate the consequences of events considered in Oconee's design basis accident (DBA) and transient analyses, as presented in Chapters 6 and 15 of the Oconee UFSARs (see Duke Energy Response to STSB RAI No. 3 and Compensatory Measure #1 in Section 3.5 below). However, the LPSW System, in conjunction with a 100% capacity reactor building cooling system (a combination of the reactor building spray and reactor building air coolers), will be capable of removing core decay heat following a design basis LOCA on either Unit 1 or Unit 3. The defense-in-depth provided by the availability of the procedural action to cross-connect Units 1 and 2 LPSW with Unit 3 LPSW will continue to afford the capability of the LPSW System to perform its function with a single failure of the Units 1 and 2 'C' LPSW Pump.

3.3 Risk Insights

Duke Energy evaluated the risk associated with extending the Completion Time for one required LPSW pump inoperable (TS 3.7.7, Action A) during O2R31 from 72 hours to 288 hours on a temporary, one-time basis for the previous LAR. The proposed LAR requests a one-time Completion Time of 360 hours during a Unit 2 refueling outage and expires on December 31, 2027. The results are summarized in the following sections. The methodology and analysis provided in subsections 3.3.1 through 3.3.4 of the previous LAR are applicable and appropriate

to this LAR request. The only changes being the adjustment of the previously approved Completion time of 288 hours to requested Completion Time of 360 hours.

3.3.1 <u>Methodology</u>

To obtain risk insights for the operating Unit 1 in the proposed configuration, the ONS probabilistic risk assessment (PRA) models of record for internal events and fire were used. Modifications to the models were made to reflect the proposed configuration. For both internal events and fire, Core Damage Frequency (CDF) results were obtained and deltas between the proposed configuration and baseline CDF values were then determined. From these delta values, a total Incremental Conditional Core Damage Probability (ICCDP) was calculated for the 288-hour period beyond the 72-hour allowed outage time that is being requested to perform the work. In addition to quantification, cutsets were reviewed and risk insights were obtained.

An explicit Large Early Release Frequency (LERF) / Incremental Conditional Large Early Release Probability (ICLERP) analysis was determined to not be necessary for the proposed configuration since CDF / ICCDP is the bounding risk metric in this case. ONS has a large, dry containment and the LPSW and CCW systems do not provide accident mitigation functions for LERF scenarios beyond their functions to mitigate core damage. No additional beneficial risk insights would be obtained from quantifying the ONS PRA models for LERF.

3.3.2 Internal Events Analysis

With the shared Units 1 and 2 'A' and 'B' LPSW pumps inoperable and Unit 2 not in a Mode of Applicability, the 'C' LPSW Pump remains as a single dedicated running LPSW pump on Unit 1. The internal events model was quantified for this configuration with one remaining LPSW pump, and the resulting CDF was determined to be 3.08E-5 per year of reactor operation. The internal events base case CDF is 2.87E-5 per year of reactor operation. By subtracting the baseline CDF value of 2.87E-5 from the proposed configuration case CDF of 3.08E-5 resulted in a delta CDF of 2.11E-6. Multiplying this by the fractional portion of the year represented by the proposed 288-hour Completion Time extension (i.e., 288/8760) resulted in an internal events (IE) ICCDP of 6.9E-8. Table 1 displays the numerical results.

LAR Configuration IE CDF	3.08E-5
Base Case IE CDF	2.87E-5
Delta IE CDF	2.11E-6
IE ICCDP	6.9E-8

Table 1. Internal Events Analysis Results

Dominant accident sequences involve failure of the only running LPSW pump aligned to the operating Unit 1, resulting in a loss of LPSW. The accident sequences involve failure of the operators to implement the Standby Shutdown Facility (SSF) strategies, failing to trip reactor coolant pumps, and failing to utilize Protected Service Water (PSW) to provide cooling water flow to the High Pressure Injection (HPI) pump motor coolers. A reactor coolant pump seal leak develops which ultimately leads to core damage.

Other sequences involve failure of the only running LPSW pump aligned to the operating Unit 1, resulting in a loss of LPSW. A loss of main feedwater occurs following the turbine trip. The turbine-driven Emergency Feedwater pump fails. Operators fail to establish secondary side cooling by cross-tying another unit, using PSW, or by using the SSF. A complete loss of secondary side heat removal results.

3.3.3 Fire Analysis

The fire PRA model was also quantified for the configuration with one remaining LPSW pump supporting Unit 1, and the resulting CDF was determined to be 3.69E-5. The resulting base case fire CDF is 3.39E-5. Subtracting the base case fire CDF from the license amendment request evaluation case resulted in a delta fire CDF of 3.0E-6. Multiplying this delta value by the fractional portion of the year represented by the proposed 288 -hour Completion Time extension (i.e., 288/8760) results in a fire ICCDP of 9.9E-8. Table 2 displays the numerical results.

LAR Configuration Fire CDF	3.69E-5		
Base Case Fire CDF	3.39E-5		
Delta Fire CDF	3.0E-6		
Fire ICCDP	9.9E-8		

Table	2	Fire	Analysis	Results
IUNIC	_		Ana y 010	1 COULC

For the fire risk analysis, the dominant accident sequences were Main Control Room fires affecting Engineered Safeguards channels, which in turn fails the running 'C' LPSW Pump.

3.3.4 Risk Evaluation Results and Conclusions

The total risk increase associated with extending the Completion Time for TS 3.7.7, Condition A, Required Action A.1 during a ONS Unit 2 refueling outage from 72 hours to 360 hours on a onetime, temporary basis was calculated to be an ICCDP of 1.68E-7, which includes contributions from internal events and fire. CDF was the bounding risk metric. The accumulated risk is below the 1.0E-6 ICCDP and 1.0E-7 ICLERP thresholds established by Regulatory Guide 1.177, "An Approach for Plant-Specific, Risk-Informed Decision Making: Technical Specifications," Revision 1. The risk increase is acceptable, and the analysis supports the proposed change for an extension of the Completion Time associated with one required LPSW pump inoperable on a one-time, temporary basis during an ONS Unit 2 refueling outage. No risk management actions are required to obtain acceptable PRA results.

3.4 <u>Technical Evaluation Conclusion</u>

The design and licensing basis mitigation function of the LPSW System is not affected by the proposed change. The LPSW System capability for performing its specified safety function is the same during the proposed extended one-time Completion Time of 360 hours as it is during the existing Completion Time of 72 hours for TS 3.7.7, Condition A, Required Action A.1.

The evaluation of the LPSW cross connect procedural action as defense-in-depth and the results of the risk insights described above provide assurance that the equipment required to

safely shutdown the plant and mitigate the effects of a design basis accident will remain capable of performing their safety functions when Unit 1/2 LPSW pumps 'A' and 'B' are out-of-service during the proposed temporary Completion Time.

3.5 <u>Evaluation of Duke Energy's Response to NRC Request for Additional Information</u> <u>associated with the Previous License Amendment</u>

Duke Energy provided a response to an NRC request for additional information associated with the previously approved LAR by letter dated April 14, 2022 (RA-22-0089). The following addresses each RAI response and states whether it is applicable and appropriate to this LAR or modifies the response to address any changes due to this new request. For the reviewers' convenience, Duke Energy's responses to STSB RAI No. 3 through 6, related to compensatory measures, are repeated below with the only change being the requested Completion Time of 360 hours versus the previously approved Completion Time of 288 hours.

Technical Specifications Branch

STSB RAI No. 1 – Applicable and appropriate

STSB RAI No. 2 - Applicable and appropriate

STSB RAI No. 3 - Applicable and appropriate

It appears that the loss of all LPSW in Unit 1 would be a beyond-design-basis event (i.e., it is not analyzed in the Oconee FSAR). The licensee has developed Emergency Operating Procedures to provide operators with a procedure to mitigate this event. As stated in Section 3.2 of the LAR, the procedure directs the operators to cross-connect Unit 3 LPSW to provide the safety-related loads in Unit 1. Cross-connecting Units 1 and 3 does not appear to have a corresponding Condition in the LPSW LCO. Please explain if the use of the cross-connect would place one or both of the units in an unanalyzed condition.

Duke Energy Response to STSB RAI No. 3

Based on discussions during the February 10, 2022, virtual regulatory audit and a follow-up audit closure call on March 4, 2022, Duke Energy understands the term "unanalyzed condition" to mean a condition that is not described in the UFSAR analysis or derived from any UFSAR analysis. In that context, yes, cross-connecting Unit 3 LPSW to Unit 1 LPSW is unanalyzed because the cross-connect design feature is not credited to mitigate the consequences of events considered in Oconee's design basis accident (DBA) and transient analyses, as presented in Chapters 6 and 15 of the Oconee UFSAR.

However, cross-connecting LPSW between Units 1&2 and Unit 3 is scoped into the Maintenance Rule as a specific function for the ONS LPSW System to satisfy 10 CFR 50.65 licensing basis requirements.

Compensatory Measure #1

The capability to cross-connect the Unit 3 LPSW system to support Unit 1 in the event that the remaining 'C' LPSW pump becomes inoperable is a compensatory measure for the proposed change to temporarily extend the Completion Time for one required LPSW pump inoperable for Unit 1. That is, Duke Energy is seeking NRC review and approval of an extended Completion

Time for one required inoperable LPSW pump on a one-time temporary basis with the crossconnect available as a compensatory measure, should a loss of all LPSW on Unit 1 occur.

STSB RAI No. 4 - Applicable and appropriate, the only difference being the 360-hour Completion Time versus the 288-hour Completion Time.

Since the licensee would rely on the LPSW cross-connect to mitigate a loss of all LPSW on Unit 1 and 2, please describe what compensatory measures would be taken to ensure the availability of the Unit 3 LPSW trains (e.g., protect both Unit 3 LPSW trains and required equipment during the Unit 1 and 2 modification window). In addition, to minimize a loss of all LPSW condition, please describe what compensatory measures would be taken to ensure the Unit 1 and 2 pumps maintains operability.

Duke Energy Response to STSB RAI No. 4

Compensatory Measure #2

For the proposed change, the following equipment will be protected as a compensatory measure in accordance with the ONS Protected Equipment Program outlined in procedure AD-OP-ALL-0201, to ensure the operability of the Unit 1&2 C LPSW Pump and the Unit 3 LPSW Trains, including the capability to cross-connect LPSW Systems:

- Unit 1&2 C LPSW Pump
- 2TC-11 (C LPSW Pump Breaker)
- C LPSW Pump Switch
- 3A LPSW Pump
- 3B LPSW Pump
- 3TC-11 (3A LPSW Pump Breaker)
- 3TD-12 (3B LPSW Pump Breaker)
- 3A LPSW Pump Switch
- 3B LPSW Pump Switch
- LPSW-1095 (Unit 1&2 To Unit 3 LPSW X-Connect Block Valve)

Compensatory Measure #3

In addition to protecting the above equipment, ONS will develop an Elevated Risk Activity Plan as a compensatory measure in accordance with AD-WC-ALL-0410 (Work Activity Integrated Risk Management), for the implementation of the alternate suction source to the shared Unit 1 and Unit 2 'A' and 'B' LPSW pumps. This plan will require assigned management oversight, documentation of identified risks associated with implementing the alternate suction source, and mitigation strategies and responsibility for each of the identified risk items.

Attachment 2 of this submittal reflects that the proposed 288-hour Completion Time is contingent upon implementation of the above compensatory measures.

<u>STSB RAI No. 5</u> - Applicable and appropriate, the only difference being the 360-hour Completion Time versus the 288-hour Completion Time and applicable during a Unit 2 refueling outage prior to December 31, 2027, versus Unit 2, Refuel 31.

Please describe what compensatory measures would be taken to ensure the availability of sufficient qualified operators to be able to simultaneously shutdown Units 1 and 3 should they both end up in LCO 3.0.3 or in the postulated scenario of a loss-of-coolant accident (LOCA)/loss of offsite power in one unit and an orderly shutdown in the other.

Duke Energy Response to STSB RAI No. 5

ONS Selected License Commitment (SLC) 16.13.1, "Minimum Station Staffing Requirements," prescribes the minimum station staffing when two units are in Modes 1-4 and are being operated from two Control Rooms. SLCs constitute Chapter 16 of the ONS UFSAR. The minimum staffing required by SLC 16.13.1 alone is sufficient to simultaneously shutdown Units 1 and 3 or to mitigate a LOCA/LOOP on one unit and commence an orderly shutdown of the second.

Compensatory Measure #4

In addition to the staffing prescribed by SLC 16.13.1, a compensatory measure for the proposed change will be to staff 1 additional Shift Manager (SM) qualified individual, who will assist the shutdown of the least affected unit, and 2 additional Auxiliary Operators (AOs), which will be briefed and have paperwork in hand to open the cross-connect valve LPSW-1095 if needed.

These additional operators will be supporting Unit 2, Refuel 31 (Fall 2023) but will not be assigned tasks that would hinder their capability to respond in a timely manner. The Elevated Risk Activity Plan initiated for the implementation of the alternate LPSW suction source (i.e., Compensatory Measure #3 described in response to STSB RAI No. 4 above) will include this compensatory measure for staffing. The staffing of 1 additional SM and 2 additional AOs will be in place for the entire duration of the planned entry into TS 3.7.7, Condition A associated with the proposed change.

Attachment 2 of this submittal reflects that the proposed 288-hour Completion Time is contingent upon implementation of the above compensatory measure.

<u>STSB RAI No. 6</u> - Applicable and appropriate, the only difference being the 360-hour Completion Time versus the 288-hour Completion Time and applicable during a Unit 2 refueling outage prior to December 31, 2027, versus Unit 2, Refuel 31.

The requested approval of the extended CT is solely for the completion of the modifications to the Unit 1 and 2 LPSW system. Please confirm any compensatory measures that will be taken to ensure configuration control in parallel with or subsequent to the tie in testing of an alternate suction path that could render LPSW inoperable and inappropriately extend the completion time beyond the time necessary to complete the modification being evaluated.

Duke Energy Response to STSB RAI No. 6

Compensatory Measure #5

At the completion of the final tie-in and testing of the alternate suction source to the shared Units 1 and 2 'A' and 'B' LPSW pumps, the TS 3.7.7 Action statement (i.e., Condition A for one required inoperable LPSW pump) will be exited immediately, as the LCO for Unit 1 would be considered met at that point in time. As discussed during the February 10, 2022 virtual audit and the follow-up audit closure call on March 4, 2022, the following will be added to the TS 3.7.7 Bases for configuration control regarding the proposed TS Note:

"The NOTE expires at 288 hours or upon completion of the tie-in and satisfactory testing of an alternate suction source to the shared Unit 1 and Unit 2 LPSW Pumps A and B, whichever comes first."

Attachment 4 of this submittal provides the TS 3.7.7 Bases change (i.e., Compensatory Measure #5). Attachment 2 of this submittal reflects that the proposed 288 hour Completion Time is contingent upon the above compensatory measure.

Mechanical Engineering and Inservice Testing Branch (EMIB)

EMIB RAI No. 1 - Applicable and appropriate.

EMIB RAI No. 2 - Applicable and appropriate.

EMIB RAI No. 3 - Applicable and appropriate.

Nuclear Systems Performance Branch (SNSB)

SNSB RAI No. 1 - Applicable and appropriate. The only difference being the 360-hour Completion Time versus the 288-hour Completion Time.

SNSB RAI No. 2 - Applicable and appropriate. The only difference being the 360-hour Completion Time versus the 288-hour Completion Time.

SNSB RAI No. 3 - Applicable and appropriate.

Containment and Plant Systems Branch (SCPB)

SCPB RAI No. 1 - Applicable and appropriate.

4. REGULATORY EVALUATION

4.1 <u>Applicable Regulatory Requirements/Criteria</u>

The discussion provided below for the previous LAR (RA-21-005 dated September 2, 2021) is applicable and appropriate to this LAR. The only changes in the discussion below are associated with the increased Completion Time required due to the need to replace LPSW-2 prior to installing the alternate suction source.

The following regulatory and ONS licensing basis requirements are applicable to the proposed change.

The regulations at Title 10 of the Code of Federal Regulations (10 CFR) Part 50.36, "Technical specifications," establish the requirements related to the content of the TS. Section 50.36(c)(2) states:

Limiting conditions for operation. Limiting conditions for operation are the lowest functional capability or performance levels of equipment required for safe operation of the facility. When a limiting condition for operation of a nuclear reactor is not met, the licensee shall shut down the reactor or follow any remedial action permitted by the technical specifications until the condition can be met.

10 CFR 50.36 sets forth the regulatory requirements for the content of TS, as quoted above. The regulations require, in part, that the TS contain LCOs and that remedial actions are prescribed for when a nuclear power plant cannot meet an LCO. The proposed change described in this license amendment would increase the time allotted to perform the remedial action associated with TS 3.7.7, Condition A, Required Action A.1. However, Completion Times are not specified by the regulation. Therefore, 10 CFR 50.36 will continue to be met for the proposed change.

The principal design criteria for ONS were developed in consideration of the seventy General Design Criteria (GDC) for Nuclear Power Plant Construction Permits proposed by the Atomic Energy Commission (AEC) in a proposed rule-making published for 10 CFR 50 in the Federal Register on July 11, 1967. The ONS Units 1, 2 and 3 construction permits were issued on November 6, 1967, preceding the issuance of the GDC specified in 10 CFR 50, Appendix A. The following criteria from Chapter 3 of the ONS UFSAR are applicable to the proposed amendment and constitute the ONS licensing basis with respect to compliance with the GDC.

Criterion 1 - Quality Standards

Those components of reactor facilities which are essential to the prevention of accidents which could affect the public health and safety or to mitigation of their consequences shall be identified and then designed, fabricated, and erected to quality standards that reflect the importance of the safety function to be performed. Where generally recognized codes or standards on design, materials, fabrication, and inspection are used, they shall be identified. Where adherence to such codes or standards does not suffice to assure a quality product in keeping with the safety function, they shall be supplemented or modified as necessary. Quality assurance programs, test procedures, and inspection acceptance levels to be used shall be identified. A showing of sufficiency and applicability of codes, standards, quality assurance programs, test procedures, and inspection acceptance levels used is required.

The "Engineered Safeguards System" is listed as one of the "Essential Systems and Components" whose integrity essential to accident prevention and to mitigation of accident consequences has been included in the reactor design evaluations. The Engineered Safeguards System consists of structures, systems (SSC) and components necessary to provide emergency cooling to assure structural integrity of the core, maintain the integrity of the Reactor Building and provide for the collection and control of Reactor Building penetration leakage. These SSCs have been designated QA-1 in Section 3.1.1.1 of the ONS UFSAR. One of the support systems necessary to ensure that these Engineered Safeguards System SSCs

can perform their intended safey functions is the LPSW portions necessary to supply water to the Reactor Building cooling units, decay heat removal coolers and high pressure injection pump motors. These portions of the LPSW System are also designated QA-1. The proposed change described in this license amendment request does not alter compiance with Criterion 1 in the UFSAR.

Criterion 4 - Sharing of Systems

Reactor facilities shall not share systems or components unless it is shown safety is not impaired by the sharing.

As previously discussed in Section 2.1 above, portions of the LPSW System are shared by Units 1 and 2. The LPSW System for Unit 3 is separate. For the proposed change, safety is not impaired by the sharing of LPSW between Units 1 and 2 because the LPSW System capability for performing its specified safety function is the same during the proposed temporary Completion Time of 360 hours as it is during the existing Completion Time of 72 hours for TS 3.7.7, Condition A, Required Action A.1.

Should the procedural action described above in Section 3.2 to cross connect Unit 3 LPSW with Units 1 and 2 be utilized during the proposed temporary Completion Time due to a loss of the Units 1 and 2 'C' LPSW Pump, two LPWS pumps would still be available to support Units 1 and 3 while Unit 2 is defueled. Therefore, the specified safety function of the LPSW System will be maintained with the sharing of the Units 1 and 2 and Unit 3 LPSW Systems and safety will not be impaired.

Conclusion of Regulatory Evaluation

The proposed change does not affect plant compliance with these regulatory and licensing basis requirements and will continue to ensure that the lowest functional capabilities or performance levels of equipment required for safe operation are met.

4.2 No Significant Hazards Consideration Determination Analysis

Duke Energy Carolinas, LLC (Duke Energy) requests an amendment to the Technical Specifications (TS) for Oconee Nuclear Station (ONS) Units 1, 2, and 3. The proposed amendment would revise TS 3.7.7, "Low Pressure Service Water (LPSW) System," to extend the Completion Time associated with one required LPSW pump inoperable once prior to December 31, 2027. Specifically, the proposed change would revise the Note modifying the Completion Time associated with TS 3.7.7, Condition A, Required Action A.1 to 360 hours during a ONS Unit 2 refueling outage to allow for the tie-in and testing of an alternate suction source to the shared Unit 1 and Unit 2 'A' and 'B' LPSW pumps. The revised note is worded so that it can only be used once prior to December 31, 2027. The alternate suction source to the shared Unit 2 'A' and 'B' LPSW pumps is needed to permit draining of the Condenser Circulating Water (CCW) System crossover header for the full replacement of three CCW valves.

Duke Energy has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of Amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

The proposed change revises the LPSW System TS to extend the Completion Time associated with one required inoperable LPSW pump from 72 hours to 360 hours. The note to the extended Completion Time specifies it can be used once prior to December 27, 2027, during a ONS Unit 2 refueling outage. The LPSW System is not an initiator of any accident previously evaluated. Rather, the system provides a heat sink for the removal of process and operating heat from safety related components during a transient or accident. As a result, the probability of an accident previously evaluated is not increased. The consequences of an accident during the proposed 360-hour Completion Time of a Unit 2 refueling outage for the tie-in and testing of an alternate suction source to the LPSW pumps are no different than the consequences of an accident in Modes 1, 2, 3, and 4 during the existing 72-hour Completion Time. For both the existing 72-hour Completion Time and the proposed 360-hour Completion Time, the consequences of an evaluated accident are determined by the operability of the plant systems designed to mitigate those consequences. The consequences with one required inoperable LPSW pump for Units 1 and 2 is not altered by the proposed change and will not affect the consequences of an accident previously evaluated.

Therefore, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change revises the LPSW System TS to extend the Completion Time associated with one required LPSW pump inoperable from 72 hours to 360 hours once during a ONS Unit 2 refueling outage with an expiration date of December 31, 2027. The proposed change will not alter the design or function of the LPSW System. For both the existing 72-hour Completion Time and the proposed 360-hour Completion Time, if Required Action A.1 is not met in the allotted time, a Unit 1 shutdown is required by TS 3.7.7, Action C.

Therefore, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

Response: No.

The proposed change revises the LPSW System TS to extend the Completion Time associated with one required LPSW pump inoperable from 72 hours to 360 hours once during a ONS Unit 2 refueling outage with an expiration date of December 31, 2027. The margin of safety is related to the ability of the fission product barriers to perform their design functions during and following an accident. These barriers include the fuel

cladding, the reactor coolant system, and the containment. The performance of these fission product barriers is not adversely affected by the proposed change. A deterministic evaluation of the proposed Completion Time extension during a ONS Unit 2 refueling outage with an expiration date of December 31, 2027 demonstrates there is sufficient margin to safety during the extended period (i.e., beyond 72 hours) of one required LPSW pump being inoperable. To support the temporary Completion Time extension of Unit 1 for one required LPSW pump inoperable while Unit 2 is defueled, defense-in-depth is provided by the capability to procedurally cross connect the two ONS Unit 3 LPSW pumps to the ONS Unit 1 and 2 LPSW header. By taking this procedural action, there would be two LPSW pumps available (the Unit 3 'A' and 'B' LPSW Pumps) to provide LPSW in the event of a design basis accident for either Unit 1 or Unit 3 during the temporary extended Completion Time. The specified safety function of the LPSW System will be maintained for the proposed change even for a scenario where the shared Units 1 and 2 'C' LPSW Pump becomes inoperable.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Duke Energy concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

4.3 <u>Conclusion</u>

In conclusion, based on the considerations discussed above: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner; (2) such activities will be conducted in compliance with the Commission's regulations; and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5. ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

ATTACHMENT 1

MARKED-UP TECHNICAL SPECIFICATIONS PAGES [1 page follow this cover page]

3.7 PLANT SYSTEMS

3.7.7 Low Pressure Service Water (LPSW) System

LCO 3.7.7 For Unit 1 or Unit 2, three LPSW pumps and one flow path shall be OPERABLE.

For Unit 3, two LPSW pumps and one flow path shall be OPERABLE.

The LPSW Waterhammer Prevention System (WPS) shall be OPERABLE.

-----NOTE-----NOTE------NOTE Unit 1 or Unit 2 defueled and appropriate LPSW loads secured on the defueled Unit, such that one LPSW pump is capable of mitigating the consequences of a design basis accident on the remaining Unit, only two LPSW pumps for Unit 1 or Unit 2 are required.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	RI	EQUIRED ACTION	COMPLETION TIME
Α.	One required LPSW pump inoperable.	A.1	Restore required LPSW pump to OPERABLE status.	NOTE During a Unit 2 , rRefueling outage-31 with Unit 2 defueled, appropriate LPSW loads secured, and contingent on implementation of the compensatory measures described in Attachment 1 of letter RA-22-0089 dated April 14, 2022, the Completion Time is 288 360 hours for the tie-in and testing of an alternate suction source to the shared Unit 1/2 LPSW Pumps A and B. Only applicable one time and expires December 31, 2027.

(continued)

ATTACHMENT 2

REVISED (CLEAN) TECHNICAL SPECIFICATIONS [2 pages follow this cover page]

3.7 PLANT SYSTEMS

3.7.7 Low Pressure Service Water (LPSW) System

LCO 3.7.7 For Unit 1 or Unit 2, three LPSW pumps and one flow path shall be OPERABLE.

For Unit 3, two LPSW pumps and one flow path shall be OPERABLE.

The LPSW Waterhammer Prevention System (WPS) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	RI	EQUIRED ACTION	COMPLETION TIME
Α.	One required LPSW pump inoperable.			NOTE During a Unit 2 refueling outage with Unit 2 defueled, appropriate LPSW loads secured, and contingent on implementation of the compensatory measures described in Attachment 1 of letter RA-22-0089 dated April 14, 2022, the Completion Time is 360 hours for the tie-in and testing of an alternate suction source to the shared Unit 1/2 LPSW Pumps A and B. Only applicable one time and expires December 31, 2027.
		A.1	Restore required LPSW pump to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
В.	LPSW WPS inoperable.	B.1	Restore the LPSW WPS to OPERABLE status.	7 days
C. Required Action and associated Completion Time of Condition A or	C.1 <u>AND</u>	Be in MODE 3.	12 hours	
	B not met.	C.2	Be in MODE 5.	60 hours

ATTACHMENT 3

TECHNICAL SPECIFICATIONS BASES MARKUP (INFORMATION ONLY) [1 page follows this cover page]

LCO (continued)	The LPSW WPS is considered OPERABLE when the associated leakage accumulator, relief valves, seat leakage limits for check valves and pneumatic discharge isolation valves, closure capability of pneumatic discharge isolation valves, and opening capability of the controllable vacuum breaker valves are OPERABLE.
APPLICABILITY	In MODES 1, 2, 3, and 4, the LPSW System is a normally operating system that is required to support the OPERABILITY of the equipment serviced by the LPSW System. Therefore, the LPSW System is required to be OPERABLE in these MODES.
	In MODES 5 and 6, the OPERABILITY requirements of the LPSW System are determined by the systems it supports.
ACTIONS	<u>A.1</u>
	If one required LPSW pump is inoperable, action must be taken to restore the required LPSW pump to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE LPSW pump(s) are adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE LPSW pump(s) could result in loss of LPSW system function. The 72 hour Completion Time is based on the redundant capabilities afforded by the OPERABLE pump, and the low probability of a DBA occurring during this period.
	The Completion Time is modified by a NOTE indicating that the-a 360 hour Completion Time can be used one time during a Unit 2, R refuel 31ing outage is 288 hours for the tie-in and testing of an alternate suction source to the shared Unit 1 and Unit 2 LPSW Pumps A and B with an expiration date of December 31, 2027. An alternate suction source to the shared Unit 1 and Unit 2 LPSW Pumps A and B is needed for replacement of Condenser Circulating Water (CCW) System valves. This 288360-hour Completion Time is an exception to the normal 72 hour Completion Time and shall only be utilized during a Unit 2, Refuel refueling outage31 when Unit 2 is defueled with appropriate LPSW loads secured for the final tie-in and testing of the alternate suction source. For all other instances of an inoperable required LPSW pump, the 72-hour Completion Time applies. The NOTE expires at 288-360 hours or upon completion of the tie-in and satisfactory testing of an alternate suction source to the shared Unit 1 and Unit 2 LPSW Pumps A and B, whichever comes first.

<u>B.1</u>

I

ATTACHMENT 4

SIMPLIFIED CONDENSER CIRCULATING WATER SYSTEM CROSSOVER HEADER DIAGRAMS

[4 pages follow this cover page]





1) Provide an alternate suction source to the U1 and U2 LPSW pumps via the 1B condensate cooler in order to dewater the CCW crossover allowing for valve replacement. This will allow for replacement of 2CCW-41, CCW-72 and CCW-73.

FIGURE 8

ATTACHMENT 5

LOW PRESSURE SERVICE WATER SYSTEM DIAGRAMS AND PROCEDURE (MARKUP) [6 pages follow this cover page]

Duke Energy Oconee Nuclear Station

Loss of LPSW

Procedure No.

AP/**1**/A/1700/024

Revision No. 029

Excerpt from Loss of LPSW procedure is provided to highlight key steps for the cross connect procedural action described in the license amendment request Enclosure.

Go to page 3

4. Subsequent Actions

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
Unit 1 normally handles LPSW System ope	TE ration unless otherwise directed by the CRS.
4.1 Verify Unit 1 is going to handle LPSW system operations.	GO TO Step 4.51.
<u>NC</u> Indications of LPSW pump cavitation may vary d occurred. Indications of cavitation may be any of • Pump amps erratic • Pump amps below normal • LPSW header pressure fluctuating	<u>DTE</u> epending on the length of time since the event 5 the following: {4}
4.2 IAAT any LPSW pump is cavitating, THEN perform Steps 4.3 - 4.4.	GO TO Step 4.5
4.3 Place the Unit 1/2 STANDBY LPSW PUMP AUTO START CIRCUIT in DISABLE.	
4.4 Stop the <u>affected</u> pumps: A LPSW PUMP B LPSW PUMP C LPSW PUMP	
4.5 Verify LPSW header pressure is ≤ 70 psig.	GO TO Step 4.7.
4.6 Ensure the Unit 1/2 STANDBY LPSW PUMP AUTO START CIRCUIT is in DISABLE.	
NC If an LPSW is stopped due to cavitation, i	DTE it is NOT available until filled and vented.
 4.7 IAAT a non-operating LPSW pump is available, AND pump start is desired, THEN start the available pump. 	

AP/**1**/A/1700/024 Page 5 of 27

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED			
<u>NC</u> 1LPSW-1121, 1122, 1123, <u>and</u> 1124 will close to pressure is 18 psig lowering <u>and</u> re-open at 25 psi	<u>TE</u> isolate RB LPSW loads when LPSW header g rising.			
4.8 <u>IAAT LPSW to all RBCUs has been</u> isolated, AND LPSW header pressure is > 25 psig, THEN perform Step 4.9.	GO TO Step 4.10.			
 4.9 Ensure <u>all</u> the following are open using the CR switch: A 1LPSW-1121 B 1LPSW-1122 C 1LPSW-1123 D 1LPSW-1124 4.10 Verify LPSW is maintaining normal system parameters (pressure/flow). 	 IF a failed valve is preventing flow to RB components, THEN dispatch an operator to PERFORM Encl 5.4 (Manual Restoration of LPSW Waterhammer Prevention System). GO TO Step 4.15. 			
 <u>NOTE</u> 1LPSW-1054, 1055, 1061, and 1062 will close to isolate RB Auxiliary Coolers on low LPSW pressure. If RB Auxiliary Coolers are aligned for outage cooling with the portable chiller, sliding links have been positioned such that 1LPSW-1054, 1055, 1061, and 1062 will NOT close. 				
 4.11 Verify that RB Auxiliary Coolers have isolated: 1LPSW-1054 closed 1LPSW-1055 closed 1LPSW-1061 closed 1LPSW-1062 closed 	GO TO Step 4.14.			
4.12 Restore RB Auxiliary Coolers to service using "Startup of RB Aux Coolers" portion of "LPSW Shutdown and Return to Service of RB Aux Coolers" Encl of OP/1/A/1104/010 (Low Pressure Service Water). {3}				

ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
 4.15 Dispatch an operator to perform Encl 5.1 (Local Operator Actions). 4.16 Notify WCC SRO to evaluate any work in progress that could result in degraded or loss of LPSW. 	Dispatches Auxiliary Operator (AO) with enclosure that operates valve LPSW-1095
4.17 _ IAAT a LPSW leak is identified, THEN take appropriate action to isolate the leak.	
 4.18 4.18 IAAT NO Unit 1 & 2 LPSW pumps are available, AND Unit 3 LPSW system is available, THEN perform the following: A. Direct Unit 3 to start an additional LPSW pump, as required. B. Notify the operator performing Encl 5.1 (Local Operator Actions) to cross-tie Unit 1&2 LPSW to Unit 3 per Step 1. 	This step directs the AO to operate valve LPSW-1095. Refer to the preceding LPSW flow diagrams for a depiction of the
4.19 IAAT CC is in service, AND CC related temperature alarms exist, THEN initiate AP/20 (Loss of Component Cooling).	LPSW-1095 cross connect valve.
4.20 Monitor RCP parameters using OAC for in service RCPs (Turn-on code "RCP").	
4.21 IAAT RCP alarms are received on an operating RCP, THEN initiate AP/16 (Abnormal RCP Operation), as necessary.	