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ONS-2016-029

March 29, 2016

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Subject: Duke Energy Carolinas, LLC
Oconee Nuclear Station
Docket Numbers 50-269, 50-270, and 50-287
Technical Specification (TS) Bases Change

Please find attached changes to the Oconee Nuclear Station (ONS) TS Bases. These changes were processed in accordance with the provisions of Technical Specification 5.5.15, "Technical Specifications (TS) Bases Control Program."

TS Bases Change 2016-02 resolves an issue associated with the licensing basis requirement for the automatic isolation of the Spent Fuel Pool Cooling (SFPC) Purification System Borated Water Storage Tank (BWST) automatic isolation valves. The last sentence of TS Bases 3.7.19 Background is revised to state that the SFPC Purification System BWST automatic isolation valves are automatically isolated upon receipt of a low BWST level actuation signal prior to Emergency Core Cooling System (ECCS) suction swapover to the sump. This is consistent with the licensing basis, which is to ensure isolation occurs prior to swapover to prevent unanalyzed radiological releases.

Any questions regarding this information should be directed to Boyd Shingleton, ONS Regulatory Affairs, at (864) 873-4716.

Sincerely,

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Attachment

A001
NRR

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ONS-2016-029
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Attachment

TSB List of Effective Pages (LOEPs), Rev. 005	LOEP 1-4
TSB B 3.7.19 1 thru 6, SFPC Purification System Isolation from BWST	3.7.19 1 thru 6

OCONEE NUCLEAR STATION
TECHNICAL SPECIFICATIONS-BASES REVISED 3/10/16
LIST OF EFFECTIVE PAGES

SECTION/PAGES	REVISION NUMBER	IMPLEMENTATION DATE
TOC	000	09/03/14
B 2.1.1	000	05/31/12
B 2.1.2	000	02/06/14
B 3.0	000	10/20/11
B 3.1.1	000	05/16/12
B 3.1.2	000	05/16/12
B 3.1.3	000	06/02/99
B 3.1.4	000	07/23/12
B 3.1.5	000	05/16/12
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B 3.1.7	000	07/23/12
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B 3.2.1	000	05/16/12
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B 3.3.2	000	12/14/04
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B 3.3.25	000	11/05/03
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B 3.4.13	000	05/16/12
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B 3.5.1	000	05/16/12
B 3.5.2	002	01/19/16
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B 3.9.8	000	06/25/14
B 3.10.1	000	11/05/14
B 3.10.2	000	11/05/14

Note: With the introduction of Fusion in June 2015, all controlled documents require a three-digit revision number. Thus, the revision numbers were set to "000" in the summer of 2015. As such, the revision dates for Revision 000 are based on the implementation dates for revisions in effect prior to this change.

B 3.7 Plant Systems

B 3.7.19 Spent Fuel Pool Cooling (SFPC) Purification System Isolation from Borated Water Storage Tank (BWST)

BASES

BACKGROUND

A SFPC purification loop is provided to maintain the purity of the water in the spent fuel pool. This loop is also utilized to purify the water in the BWST following refueling, and to maintain clarity in the fuel transfer canal during refueling. Water from the BWST or fuel transfer canal can be purified by using the borated water recirculation pump.

The BWST recirculation pump removes water from the BWST for demineralization and filtering. The pump may also be used for recirculating the BWST prior to sampling and while demineralizing and filtering the water in the fuel transfer canal during a transfer of fuel. It may also be used for emptying the fuel transfer canal if spent fuel coolant pumps are unavailable for use. There is one pump for Units 1 and 2, and one for Unit 3. (Reference 1)

The Reverse Osmosis (RO) System removes silica from the Spent Fuel Pools (SFPs) and BWSTs by using a reverse osmosis filtering process.

The RO System consists of an RO unit and supply and return piping from the BWSTs and SFPs. The RO unit is located in the Unit 2 Pipe Trench Area Room (Room 349) directly below the Unit 2 West Penetration Room (WPR). A single RO unit is shared by all three Oconee Nuclear Station (ONS) units. The RO unit is capable of being aligned to the Unit 1 & 2 SFP, the Unit 3 SFP, the Unit 1 BWST, the Unit 2 BWST, or the Unit 3 BWST. RO System piping and existing Spent Fuel (SF) Purification Loop piping are used for these alignments.

To establish a path from the Unit 1 and Unit 2 BWSTs, RO System piping is connected to the Unit 1 & 2 Spent Fuel (SF) Purification Loop downstream of two redundant automatic isolation valves. To establish a path from the Unit 3 BWST, RO System piping is connected to the Unit 3 SF Purification Loop downstream of two redundant automatic isolation valves.

BASES

BACKGROUND (continued)

The return piping from the RO unit is routed back to the purification portion of the two SFPC Purification Systems (Units 1 & 2 and Unit 3). The RO System return piping is non-seismic up to the point where connections are made to the SF purification piping. A check valve is installed in each of the return lines to the SF purification piping. The check valve and the downstream piping are seismically qualified. The location where the discharge piping connects to the purification loop is such that the return flow can be aligned to the same source supplying the RO unit.

The BWST water is routed to the RO System from the SF purification loop. The two redundant automatic isolation valves are credited to isolate the RO system and the SFPC purification system to prevent unanalyzed radiological releases from either system. The valves are automatically isolated upon receipt of a low BWST level actuation signal prior to ECCS suction swapover to the reactor building sump.

APPLICABLE SAFETY ANALYSES

The large break LOCA assumes back-leakage from the sump to the borated water storage tank (BWST). RO system operation or BWST recirculation using the BWST recirculation pump requires a flow path to be open from the BWST. Two redundant safety related automatic isolation valves are used to isolate each SFPC Purification System (Unit 1 and 2, and Unit 3) prior to ECCS Suction swapover from the BWST to the reactor building sump to prevent unanalyzed radiological releases. With the automatic isolation of this pathway, the use of the SFPC purification system for RO operation or BWST recirculation does not impact the assumptions in the design basis LOCA dose analysis. These automatic valve isolations are part of the primary success pathway which functions to mitigate the LOCA and meet 10 CFR 50.36, Criterion 3 (Reference 2). The isolation of the SFPC purification system credits two safety related automatic isolation valves and several manual valves upstream of the automatic isolation valves to ensure the plant stays within the bounds of the design basis LOCA analysis.

LCO

This LCO requires that the two automatic isolation valves used to isolate the SFPC purification system (one set for Unit 1 & 2 and one set for Unit 3) from the BWST to be OPERABLE. The automatic isolation valves are required to close on an automatic isolation signal. The LCO requires that the SFPC Purification System branch line manual valves located upstream of the automatic valves to be and closed and meet Inservice Testing Program leakage requirements.

BASES (continued)

APPLICABILITY

The SFPC purification system automatic isolation valves are required to be OPERABLE and the branch line manual isolation valves are required to be closed and meet IST Program leakage requirements in MODES 1, 2, 3, and 4 when the SFPC Purification System is not isolated from the BWST, consistent with emergency core cooling system (ECCS) OPERABILITY requirements. These requirements ensure the plant stays within the bounds of the design basis LOCA analysis.

ACTIONS

The ACTIONS are modified by two Notes. Note 1 allows the SFPC purification system flow path from the BWST to be unisolated intermittently under administrative controls. The opening of a closed valve in the flow path on an intermittent basis under administrative control includes the following: (1) stationing an operator, who is in constant communication with control room, at the valve controls, (2) instructing this operator to close these valves in an accident situation, and (3) assuring that environmental conditions will not preclude access to close the valves and that this action will prevent the release of radioactivity outside the SFPC purification system. In this way, the flow path can be rapidly isolated when a need for isolation is indicated. The maximum continuous RO system operating period is 7 days. Procedures controlling RO System operation limit operation to a specified time period to prevent the boron concentration and water level going below the TS limit of the BWST.

A second Note has been added to provide clarification that, for this LCO, separate Condition entry is allowed for each branch line manual valve. This is acceptable, since the Required Actions for each applicable Condition provide appropriate compensatory actions for each inoperable manual valve. Complying with the Required Actions may allow for continued operation, and subsequent inoperable manual valves are governed by subsequent Condition entry and application of associated Required Actions.

A.1 and A.2

In the event one SFPC purification system BWST automatic isolation valve is inoperable, the SFPC Purification System flow path must be isolated within 4 hours. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic isolation valve, a closed and de-activated non-automatic power operated valve, a closed manual valve, or a blind flange. For the SFPC Purification System flow path isolated in accordance with Required Action A.1, the device used to isolate the flow path should be the closest available to the inoperable SFPC Purification System BWST

BASES

ACTIONS

A.1 and A.2 (continued)

automatic isolation valve. The 4-hour Completion Time is considered reasonable, considering the time required to isolate the flow path and the low probability of an accident occurring during this time period requiring isolation of the SFPC Purification System from the BWST.

For an automatic isolation valve that cannot be restored to OPERABLE status within the 4 hour Completion Time and that has been isolated in accordance with Required Action A.1, the flow path must be verified to be isolated on a periodic basis. This periodic verification is necessary to ensure that the flow path is isolated should an event occur requiring it to be isolated. This Required Action does not require any testing or device manipulation. Rather, it involves verification, through a system walkdown, that an isolation device capable of being mispositioned is in the correct position. The Completion Time of "once per 31 days" is appropriate considering the fact that the device is operated under administrative controls and the probability of its misalignment is low.

B.1

In the event two SFPC purification system BWST automatic isolation valves are inoperable, the flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic isolation valve, a closed and de-activated non-automatic power operated valve, a closed manual valve, or a blind flange. For the SFPC purification system BWST flow path isolated in accordance with Required Action B.1, the device used to isolate the flow path should be the closest available to the SFPC purification system BWST automatic isolation valves. The 1-hour Completion Time is considered reasonable, considering the time required to isolate the flow path and the low probability of an accident occurring during this time period requiring isolation of the SFPC purification system from the BWST.

In the event the affected SFPC purification system BWST flow path is isolated in accordance with Required Action B.1, the flow path must be verified to be isolated on a periodic basis per Required Action A.2, which remains in effect. This periodic verification is necessary to ensure that the flow path is isolated should an event occur requiring it to be isolated. The Completion Time of once per 31 days for verifying the flow path is isolated is appropriate considering the fact that the device is operated under administrative controls and the probability of its misalignment is low.

BASES

ACTIONS (continued)

C.1 and C.2

If a required manual valve(s) is discovered or not closed or not meeting IST Program leakage requirements, the flow path must be isolated within 1 hour. The method of isolation must include the use of at least one isolation barrier that cannot be adversely affected by a single active failure. Isolation barriers that meet this criterion are a closed and de-activated automatic isolation valve, a closed and de-activated non-automatic power operated valve, a closed manual valve, or a blind flange. The 1-hour Completion Time is considered reasonable, considering the time required to isolate the flow path and the low probability of an accident occurring during the time period requiring this action. This is necessary to ensure that the flow path to the top of the BWST is isolated.

In the event a SFPC purification system branch line flow path is isolated in accordance with Required Action C.1, the flow path must be verified to be isolated on a periodic basis per Required Action C.2. This periodic verification is necessary to ensure that the flow path is isolated should an event occur requiring it to be isolated. The Completion Time of once per 31 days for verifying the flow path is isolated is appropriate considering the fact that the device is operated under administrative controls and the probability of its misalignment is low.

D.1 and D.2

If the Required Actions and associated Completion Times of Condition A, B, or C are not met, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 12 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.19.1

This SR requires verification that the SFPC Purification system branch line manual valves SF-51, 53, 54, and DW-112 for Unit 1 and 2 or 3SF- 51, 53, 54, and 3DW-112 for Unit 3 that are not locked, sealed, or otherwise secured in the closed position, are closed. The SR helps to ensure that post accident leakage of radioactive fluids does not impact the offsite dose analysis. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown,

BASES (continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.19.1 (continued)

that each manual isolation valve is closed. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program. This SR does not apply if a valve is locked, sealed, or otherwise secured, since it was verified to be in the correct position upon locking, sealing, or securing.

SR 3.7.19.2

This SR verifies that the SFPC Purification system branch line manual valves SF-51, 53, 54, and DW-112 for Unit 1 and 2 or 3SF-51, 53, 54, and 3DW-112 for Unit 3 meet IST Program leakage requirements. The specified Frequency is in accordance with the Inservice Testing Program requirements.

SR 3.7.19.3

This SR verifies that the SFPC Purification System BWST automatic isolation valves are OPERABLE in accordance with the Inservice Testing Program. As part of this SR, the IST Program leakage requirements are verified met. The specified Frequency is in accordance with the Inservice Testing Program requirements.

SR 3.7.19.4

This SR requires verification that each SFPC Purification System automatic isolation valve (SF-166 and SF-167 for Unit 1 & 2 and 3SF-166 and 3SF-167 for Unit 3) actuates to the isolation position on an actual or simulated isolation signal. This SR is not required for valves that are locked, sealed, or otherwise secured in position under administrative controls. The SR helps to ensure that post accident leakage of radioactive fluids do not impact the offsite dose analysis. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

REFERENCES

1. UFSAR, Section 9.1.3.

2. 10 CFR 50.36.