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January 20, 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."

Amendments 394/396/395 were issued for Oconee to revise ONS TS 3.4.15, to define a new time limit for restoring inoperable Reactor Coolant System (RCS) leakage detection instrumentation to operable status and to establish alternate methods of monitoring RCS leakage when one or more required monitors are inoperable in accordance with TS Task Force Traveler (TSTF) 513, Revision 3, "Revise Pressurized-Water Reactor Operability Requirements and actions for Reactor Coolant System Leakage Instrumentation."

The associated TSTF-513 revision to TS Bases 3.4.15 was to clearly define the RCS leakage detection instrumentation Operability requirements in the Limiting Condition for Operation (LCO) Bases and to eliminate discussion from the Bases that could be erroneously construed as Operability requirements. The Bases were also revised to reflect the changes to the Technical specifications and to more accurately reflect the existing Technical Specifications.

Any questions regarding this information should be directed to Stephen C. Newman, ONS Regulatory Affairs Group, at (864) 873-4388.

Sincerely,

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Attachment

A001
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Attachment

Revised Oconee Nuclear Station TSB Manual Pages

TSB List of Effective Pages (LOEPs), Rev. 003	LOEP 1-4
TSB 3.4.15, RCS Leakage Detection Instrumentation	3.4.15-1 thru 6

OCONEE NUCLEAR STATION
TECHNICAL SPECIFICATIONS-BASES REVISED 11/24/15
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
B 3.1.6	000	07/23/12
B 3.1.7	000	07/23/12
B 3.1.8	000	05/16/12
B 3.2.1	000	05/16/12
B 3.2.2	000	05/16/12
B 3.2.3	000	05/16/12
B 3.3.1	001	09/30/15
B 3.3.2	000	12/14/04
B 3.3.3	000	12/10/14
B 3.3.4	000	12/10/14
B 3.3.5	000	12/10/14
B 3.3.6	000	12/10/14
B 3.3.7	000	12/10/14
B 3.3.8	000	05/16/12
B 3.3.9	000	05/16/12
B 3.3.10	000	05/16/12
B 3.3.11	000	05/16/12
B 3.3.12	000	05/16/12

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B 3.3.13	000	05/16/12
B 3.3.14	000	05/16/12
B 3.3.15	000	05/16/12
B 3.3.16	000	05/16/12
B 3.3.17	000	05/16/12
B 3.3.18	000	05/16/12
B 3.3.19	000	05/16/12
B 3.3.20	000	05/16/12
B 3.3.21	000	05/16/12
B 3.3.22	000	05/16/12
B 3.3.23	000	05/16/12
B 3.3.24	000	09/26/01
B 3.3.25	000	11/05/03
B 3.3.26	000	11/05/03
B 3.3.27	000	12/10/14
B 3.3.28	000	05/16/12
B 3.4.1	000	05/16/12
B 3.4.2	000	12/16/98
B 3.4.3	000	03/04/15
B 3.4.4	000	05/16/12
B 3.4.5	000	05/16/12
B 3.4.6	000	05/16/12
B 3.4.7	000	05/16/12
B 3.4.8	000	05/16/12
B 3.4.9	000	05/16/12
B 3.4.10	001	09/21/15
B 3.4.11	000	10/12/12
B 3.4.12	000	06/13/14

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B 3.4.13	000	05/16/12
B 3.4.14	001	09/21/15
B 3.4.15	001	11/24/15
B 3.4.16	000	04/02/07
B 3.5.1	000	05/16/12
B 3.5.2	001	09/21/15
B 3.5.3	001	09/21/15
B 3.5.4	000	05/16/12
B 3.6.1	000	10/20/11
B 3.6.2	000	05/16/12
B 3.6.3	000	05/16/12
B 3.6.4	000	05/16/12
B 3.6.5	001	09/21/15
B 3.7.1	001	09/21/15
B 3.7.2	000	11/13/12
B 3.7.3	001	09/21/15
B 3.7.4	000	05/16/12
B 3.7.5	001	09/21/15
B 3.7.6	000	05/16/12
B 3.7.7	000	12/10/14
B 3.7.8	000	05/16/12
B 3.7.9	000	08/28/14
B 3.7.10	000	09/03/14
B 3.7.10a	000	09/03/14
B 3.7.11	000	05/16/12
B 3.7.12	000	05/16/12
B 3.7.13	000	08/19/10
B 3.7.14	000	05/16/12

OCONEE NUCLEAR STATION
TECHNICAL SPECIFICATIONS-BASES REVISED 11/24/15
LIST OF EFFECTIVE PAGES

SECTION/PAGES	REVISION NUMBER	BASES REVISION DATE
B 3.7.15	000	10/24/07
B 3.7.16	000	05/16/12
B 3.7.17	000	04/12/06
B 3.7.18	000	06/15/06
B 3.7.19	000	06/25/14
B 3.8.1	000	05/21/15
B 3.8.2	000	04/07/11
B 3.8.3	000	04/28/15
B 3.8.4	000	12/18/07
B 3.8.5	000	05/16/12
B 3.8.6	000	05/16/12
B 3.8.7	000	05/16/12
B 3.8.8	000	05/16/12
B 3.8.9	000	05/16/12
B 3.9.1	000	05/16/12
B 3.9.2	000	05/16/12
B 3.9.3	000	05/16/12
B 3.9.4	000	05/16/12
B 3.9.5	000	05/16/12
B 3.9.6	000	05/16/12
B 3.9.7	000	05/16/12
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 3.4 REACTOR COOLANT SYSTEM (RCS)

B 3.4.15 RCS Leakage Detection Instrumentation

BASES

BACKGROUND

ONS Design Criteria (Ref. 1) requires means for detecting RCS LEAKAGE. Although ONS is not committed to Regulatory Guide 1.45, Revision 0 (Ref. 2) describes acceptable methods for setting leakage detection systems.

Leakage detection systems must have the capability to detect significant reactor coolant pressure boundary (RCPB) degradation as soon after occurrence as practical to minimize the potential for propagation to a gross failure. Thus, an early indication or warning signal is necessary to permit proper evaluation of all unidentified LEAKAGE. In addition to meeting the OPERABILITY requirements, the monitors are typically set to provide the most sensitive response without causing an excessive number of spurious alarms.

The reactor coolant contains radioactivity that, when released to the containment, may be detected by radiation monitoring instrumentation. Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS LEAKAGE.

Other indications may be used to detect an increase in unidentified LEAKAGE; however, they are not required to be OPERABLE by this LCO. Air temperature and pressure monitoring methods may be used to infer unidentified LEAKAGE to the containment. Containment temperature and pressure fluctuate slightly during unit operation, but a rise above the normally indicated range of values may indicate RCS LEAKAGE into the containment. The relevance of temperature and pressure measurements is affected by containment free volume and, for temperature, detector location. Signals from these instruments can be valuable in recognizing rapid and sizable leakage to the containment. Temperature and pressure monitors are not required by this LCO.

The above-mentioned LEAKAGE detection methods or systems differ in sensitivity and response time. Some of these systems could serve as early alarm systems signaling the operators that closer examination of other detection systems is necessary to determine the extent of any corrective action that may be required.

BASES (continued)

APPLICABLE SAFETY ANALYSES

The need to evaluate the severity of an alarm or an indication is important to the operators, and the ability to compare and verify with indications from other systems is necessary.

The safety significance of RCS LEAKAGE varies widely depending on its source, rate, and duration. Therefore, detecting and monitoring reactor coolant LEAKAGE into the containment area are necessary. Separating the identified LEAKAGE from the unidentified LEAKAGE provides quantitative information to the operators, allowing them to take corrective action should a leak occur detrimental to the safety of the unit and the public.

RCS leakage detection instrumentation satisfies Criterion 1 of 10 CFR 50.36.

LCO

This LCO requires instruments of diverse monitoring principles to be OPERABLE to provide confidence that small amounts of unidentified LEAKAGE are detected in time to allow actions to place the unit in a safe condition when RCS LEAKAGE indicates possible RCPB degradation.

The LCO requires two instruments of diverse monitoring principles (sump level indication and atmosphere radioactivity monitoring) to be OPERABLE.

The containment sump is used to collect unidentified LEAKAGE. The containment sump consists of the normal sump and the emergency sump. The LCO requirements apply to the total amount of unidentified LEAKAGE collected in the normal sump. The monitor on the containment sump detects level and is instrumented to detect when there is leakage of 1 gpm. The identification of an increase in unidentified LEAKAGE will be delayed by the time required for the unidentified LEAKAGE to travel to the containment sump and it may take longer than one hour to detect a 1 gpm increase in unidentified LEAKAGE, depending on the origin and magnitude of the LEAKAGE. This sensitivity is acceptable for containment sump monitor OPERABILITY.

The reactor coolant contains radioactivity that, when released to the containment, may be detected by the gaseous or particulate containment atmosphere radioactivity monitor. Only one of the two detectors is required to be OPERABLE. Radioactivity detection systems are included for monitoring both particulate and gaseous activities because of their sensitivities and rapid responses to RCS LEAKAGE, but have recognized limitations. Reactor coolant radioactivity levels will be low during initial reactor startup and for a few weeks thereafter, until activated corrosion products have been formed and fission products appear from fuel element cladding contamination or cladding defects. If there are few fuel element cladding defects and low levels of activation products, it may not be

BASES (continued)

LCO (continued) possible for the gaseous or particulate containment atmosphere radioactivity monitors to detect a 1 gpm increase within 1 hour during normal operation. However, the gaseous or particulate containment atmosphere radioactivity monitor is OPERABLE when it is capable of detecting a 1 gpm increase in unidentified LEAKAGE within 1 hour given an RCS activity equivalent to that assumed in the design calculations for the monitors (Ref. 3).

The LCO requirements are satisfied when instruments of diverse measurement means are available. Thus, the containment normal sump level indication, in combination with a particulate (RIA-47) or gaseous radioactivity monitor (RIA-49), provides an acceptable minimum.

APPLICABILITY Because of elevated RCS temperature and pressure in MODES 1, 2, 3, and 4, RCS leakage detection instrumentation is required to be OPERABLE.

In MODE 5 or 6, the temperature is $\leq$ 200°F and pressure is maintained low or at atmospheric pressure. Since the temperatures and pressures are far lower than those for MODES 1, 2, 3, and 4, the likelihood of leakage and crack propagation is much smaller. Therefore, the requirements of this LCO are not applicable in MODES 5 and 6.

ACTIONS The Actions are modified by a Note indicating that the provisions of LCO 3.0.4 do not apply. As a result, a MODE change is allowed when the normal sump level indication and required radioactivity monitor are inoperable. This allowance is provided because other instrumentation is available to monitor RCS LEAKAGE.

A.1 and A.2

With the containment normal sump level indication inoperable, no other form of sampling can provide the equivalent information.

However, the containment atmosphere activity monitor will provide indications of changes in leakage. Together with the containment atmosphere radioactivity monitor, the periodic surveillance for RCS inventory balance, SR 3.4.13.1, water inventory balance, must be performed at an increased frequency of 24 hours to provide information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after steady state operation (stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and

BASES (continued)

ACTIONS

A.1 and A.2 (continued)

process all necessary data after stable plant conditions are established.

Restoration of the normal sump level indication to OPERABLE status is required to regain the function in a Completion Time of 30 days after level indication failure. This time is acceptable considering the frequency and adequacy of the RCS water inventory balance required by Required Action A.1.

B.1.1, B.1.2, and B.2

With required gaseous or particulate containment atmosphere radioactivity monitoring instrumentation channel inoperable, alternative action is required. Either grab samples of the containment atmosphere must be taken and analyzed or water inventory balances, in accordance with SR 3.4.13.1, must be performed to provide alternate periodic information. With a sample obtained and analyzed or a water inventory balance performed every 24 hours, the reactor may be operated for up to 30 days to allow restoration of the radioactivity monitor.

The 24 hour interval for SR 3.4.13.1 provides periodic information that is adequate to detect leakage. A Note is added allowing that SR 3.4.13.1 is not required to be performed until 12 hours after steady state operation (stable RCS pressure, temperature, power level, pressurizer and makeup tank levels, makeup and letdown, and RCP seal injection and return flows). The 12 hour allowance provides sufficient time to collect and process all necessary data after stable plant conditions are established. The 30 day Completion Time recognizes at least one other form of leak detection is available.

C.1 and C.2

With containment normal sump level indication inoperable, the only means of detecting LEAKAGE is the required containment atmosphere radioactivity monitor. A Note clarifies that this Condition is applicable when the only OPERABLE monitor is the containment atmosphere gaseous radioactivity monitor. The containment atmosphere gaseous radioactivity monitor typically cannot detect a 1 gpm leak within one hour when RCS activity is low. In addition, this configuration does not provide the required diverse means of leakage detection. Indirect methods of monitoring RCS leakage must be implemented. Grab samples of the containment atmosphere must be taken and analyzed to provide alternate periodic information. The 12 hour interval is sufficient to detect increasing RCS leakage. The Required Action provides 7 days to restore another RCS

BASES (continued)

ACTIONS

C.1 and C.2 (continued)

leakage monitor to OPERABLE status to regain the intended leakage detection diversity. The 7 day Completion Time ensures that the unit will not be operated in a degraded configuration for a lengthy time period.

D.1 and D.2

If a Required Action of Condition A, B or C cannot be met within the required Completion Time, 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.

E.1

If both required leakage detection instruments (normal sump level indication and containment atmosphere radioactivity monitor) are inoperable, no automatic means of monitoring leakage are available, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

SURVEILLANCE REQUIREMENTS

SR 3.4.15.1

SR 3.4.15.1 requires the performance of a CHANNEL CHECK of the required containment atmosphere radioactivity monitor. The check gives reasonable confidence that each channel is operating properly. The Surveillance Frequency is based on operating experience, equipment reliability, and plant risk and is controlled under the Surveillance Frequency Control Program.

SR 3.4.15.2

SR 3.4.15.2 requires the performance of a CHANNEL FUNCTIONAL TEST of the required containment atmosphere radioactivity monitor. The test ensures that the monitor can perform its function in the desired manner. The test verifies the alarm setpoint and relative accuracy of the instrument string.

BASES (continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.4.15.3 and SR 3.4.15.4

These SRs require the performance of a CHANNEL CALIBRATION for each of the required RCS leakage detection instrumentation channels. The calibration verifies the accuracy of the instrument string, including the instruments located inside containment. 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 3.1.16, "Criterion 16 – Monitoring Reactor Coolant Pressure Boundary (Category B)."

2. Regulatory Guide 1.45, Revision 0, "Reactor Coolant Pressure Boundary Leakage Detection System," May 1973.

3. UFSAR, Section 5.2.3.10.5, "Leak Detection."