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10 CFR 50.90

October 30, 2012

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

Subject: Duke Energy Carolinas, LLC
Oconee Nuclear Station (ONS), Units 1, 2, and 3
Docket Numbers 50-269, 50-270, and 50-287
License Amendment Request for Approval to Operate a Reverse Osmosis System to Remove Silica from the Borated Water Storage Tanks and Spent Fuel Pools during Unit Operation and associated proposed Technical Specifications and Bases
License Amendment Request (LAR) No. 2012-05

In accordance with 10 CFR 50.90, Duke Energy Carolinas, LLC (Duke Energy) proposes to amend Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55 for ONS Units 1, 2, and 3. The proposed amendment requests Nuclear Regulatory Commission (NRC) approval to operate a Reverse Osmosis (RO) System to remove silica from the Borated Water Storage Tanks (BWSTs) and Spent Fuel Pools (SFPs) during Unit operation and approval of associated proposed new Technical Specifications (TSs) and Bases that impose requirements for RO System operation and isolation requirements.

On November 15, 2010, Duke Energy Carolinas, LLC (Duke Energy) submitted License Amendment Request (LAR) 2010-03 requesting approval to operate the RO System during Unit operation at ONS. Duke Energy supplemented the LAR by letters dated February 18, 2011; May 12, 2011; August 2, 2011; October 10, 2011; and December 15, 2011. In the December 15, 2011, Supplement, Duke Energy provided a response to the two remaining LAR 2010-03 issues. These two issues were associated with operating restrictions credited to preclude the need to re-evaluate the dose impact of potential radiological releases from the system should a design basis accident occur when the RO system is not isolated. They are addressed by the proposed TSs in this submittal. On February 29, 2012, Duke Energy was advised that NRC Staff would not approve the LAR without the addition of TSs to address the operating restrictions and the components credited to isolate the RO System from the BWSTs and SFPs. Duke Energy had previously proposed to impose the operating restrictions by a Selected Licensee Commitment (SLC) added to the ONS SLC Manual, which is Chapter 16 of Updated Final Safety Analysis Report.

Based on discussions between Duke Energy and the NRC on February 29, 2012, Duke Energy agreed to withdraw and re-submit a new LAR with proposed Technical Specifications to facilitate the NRC review and approval of this proposed licensing change. The NRC stated

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there would be no need to re-submit information associated with the withdrawn LAR and Supplements. Rather, this LAR would only need to propose TSs for RO System operating restrictions and refer to the previously submitted information as a basis for approval to operate the RO system during unit operation. Duke Energy formally withdrew the LAR by letter dated April 3, 2012. The NRC formally acknowledged the withdrawal by letter dated April 12, 2012.

The enclosure provides the technical justification for proposed TSs and associated TS Bases to impose RO System operating restrictions and isolation requirements. The enclosure also incorporates by reference and provides a summary of the previously submitted LAR and Supplements. Duke Energy previously evaluated the effect of potential failures and identified precautionary measures that must be taken before and during RO System operation and specified required operator actions to protect affected structures, systems, and components. This evaluation concluded that periodic limited RO System operation during Unit operation does not have a significant impact on safety. The proposed TSs establish TS requirements for the credited operating restrictions and components used to isolate the RO System. Regulatory evaluation (including the significant hazards consideration) and environmental considerations are provided in Sections 4 and 5 of the enclosure. Attachment 1 provides copies of the proposed TS pages. Attachment 2 provides copies of the proposed TS Bases pages. Marked up pages of the TSs and TS Bases are not provided since the proposed change adds new TSs and Bases. Attachment 3 provides a list of regulatory commitments being made as a result of this LAR.

In accordance with Duke Energy administrative procedures and the Quality Assurance Program Topical Report, the proposed changes have been reviewed and approved by the Plant Operations Review Committee. Additionally, a copy of this LAR is being sent to the State of South Carolina in accordance with 10 CFR 50.91 requirements.

Based on our discussions on February 29, 2012, and as documented in Duke Energy withdrawal letter dated April 3, 2012, NRC agreed to provide an expedited review and approval of the re-submitted LAR. As such, Duke Energy requests review and approval by January 31, 2013. Approval by this date will allow Duke Energy to operate the RO System beginning in March of 2013. Lower RCS silica levels will allow continuous zinc addition, which has long term benefits of lowering dose rates and decreasing corrosion product release rates.

Duke Energy will update applicable sections of the ONS Updated Final Safety Analysis Report (UFSAR), as necessary, and submit these changes in accordance with 10 CFR 50.71(e).

Inquiries on this submittal should be directed to Boyd Shingleton, ONS Regulatory Affairs Group, at (864) 873-4716.

I declare under penalty of perjury that the foregoing is true and correct. Executed on October 30, 2012.

Sincerely,

T Gillespie

T. Preston Gillespie, Jr., Vice President
Oconee Nuclear Station

Enclosure: Evaluation of Proposed Changes

Attachments:
1. Proposed Technical Specifications
2. Proposed Technical Specifications Bases
3. List of Regulatory Commitments

cc w/enclosure and attachments:

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License Amendment Request No. 2012-05
October 30, 2012

ENCLOSURE

EVALUATION OF PROPOSED CHANGE

Subject: License Amendment Request for Approval to Operate a Reverse Osmosis System to Remove Silica from the Borated Water Storage Tanks and Spent Fuel Pools during Unit Operation and associated proposed Technical Specifications and Bases

1.0 SUMMARY DESCRIPTION

In accordance with 10 CFR 50.90, Duke Energy Carolinas, LLC (Duke Energy) proposes to amend Renewed Facility Operating License Nos. DPR-38, DPR-47, and DPR-55 for ONS Units 1, 2, and 3. The proposed amendment requests Nuclear Regulatory Commission (NRC) approval to operate a Reverse Osmosis (RO) System to remove silica from the Borated Water Storage Tanks (BWSTs) and Spent Fuel Pools (SFPs) during Unit operation and approval of associated proposed new Technical Specifications (TSs) and Bases that impose requirements for RO System operation and isolation requirements.

On November 15, 2010, Duke Energy Carolinas, LLC (Duke Energy) submitted License Amendment Request (LAR) 2010-03 requesting approval to operate the RO System during Unit operation at ONS. Duke Energy supplemented the LAR by letters dated February 18, 2011; May 12, 2011; August 2, 2011; October 10, 2011; and December 15, 2011. In the December 15, 2011, Supplement, Duke Energy provided a response to the two remaining LAR 2010-03 issues. These two issues were associated with operating restrictions credited to preclude the need to re-evaluate the dose impact of potential radiological releases from the system should a design basis accident occur when the RO system is not isolated. They are addressed by the proposed TSs in this submittal. On February 29, 2012, Duke Energy was advised that NRC Staff would not approve the LAR without the addition of TSs to address the operating restrictions and the components credited to isolate the RO System from the BWSTs and SFPs. Duke Energy had previously proposed to impose the operating restrictions by a Selected Licensee Commitment (SLC) added to the ONS SLC Manual, which is Chapter 16 of Updated Final Safety Analysis Report.

Based on discussions between Duke Energy and the NRC on February 29, 2012, Duke Energy agreed to withdraw and re-submit a new LAR with proposed Technical Specifications to facilitate the NRC review and approval of this proposed licensing change. The NRC stated there would be no need to re-submit information associated with the withdrawn LAR and Supplements. Rather, this LAR would only need to propose TSs for RO System operating restrictions and refer to the previously submitted information as a basis for approval to operate the RO system during unit operation. Duke Energy formally withdrew the LAR by letter dated April 3, 2012. The NRC formally acknowledged the withdrawal by letter dated April 12, 2012.

The technical justification for proposed TSs and associated TS Bases to impose RO System operating restrictions and isolation requirements is provided in Section 3.1 of this enclosure. This LAR incorporates by reference and provides a summary of the previously submitted LAR and Supplements in Section 3.2 of this enclosure. Duke Energy previously evaluated the effect of potential failures and identified precautionary measures that must be taken before and during RO System operation and specified required operator actions to protect affected structures, systems, and components. This evaluation concluded that periodic limited RO System operation during Unit operation does not have a significant impact on safety. The proposed TSs establish TS requirements for the credited operating restrictions and components used to isolate the RO System.

Based on our discussions on February 29, 2012, and as documented in Duke Energy withdrawal letter dated April 3, 2012, NRC agreed to provide an expedited review and approval

of the re-submitted LAR. As such, Duke Energy requests review and approval by January 31, 2013. Approval by this date will allow Duke Energy to operate the RO System beginning in March of 2013. Lower RCS silica levels will allow continuous zinc addition, which has a long term benefit of lowering dose rates and decreasing corrosion product release rates.

2.0 DETAILED DESCRIPTION

2.1 Reverse Osmosis System Description

Note: The following information is provided for information only. More detailed information can be obtained by reviewing LAR 2010-03 and associated Supplements. At the time of the November 15, 2010, RO LAR submittal, the RO system had not been installed. This system is now nearly complete and waiting NRC approval to allow silica removal from Spent Fuel Pool (SFP) and Borated Water Storage Tank (BWST) water.

The RO System, which consists of an RO unit and supply and return piping from the BWSTs and SFPs, 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 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. New RO System piping and existing Spent Fuel (SF) Purification Loop piping are used for these alignments.

New RO System supply piping is routed from the Unit 1&2 SFP to the RO unit. New RO System piping is routed from the Unit 3 SFP to the RO unit. To establish a path from the Unit 1 and Unit 2 BWSTs, new RO System piping is connected to the Unit 1&2 SF Purification Loop (QA-1, Duke Energy Class C - USAS B31.7, seismic). The new branch line begins as Class C and contains a new Class C seismic boundary valve (Units 1&2 share a common boundary valve and orifice to limit flow in the event of a pipe break) before changing to Duke Energy Class E (USAS B31.1.0, non-seismic). The Unit 3 BWST is connected to the RO unit line via a branch line from the Unit 3 SF Purification loop (QA-1, Duke Energy Class C - USAS B31.7, seismic). The branch line begins as Class C and contains a new Class C seismic boundary valve and orifice to limit flow in the event of a pipe break before changing to Class E where it ties into the new RO System piping from the Unit 3 SFP downstream of the Unit 3 SFP isolation valves.

The return piping from the RO unit is routed back to the purification portion of the SF Cooling Systems (Units 1&2 and Unit 3). The RO System return piping is Class E up to the point where connections are made to the SF purification piping. An isolation valve and a check valve are installed in series in each of the return lines to the SF purification piping. The check valve and its downstream piping are classified as Class C. 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 suction piping from each SFP is designed as a "candy cane" that is inserted into the water from above the pool. Although the "candy cane" piping is Class E, it is seismically supported so that it will not fall into the SFP. Priming of the "candy cane" is initially required to start the flow from the SFP to the RO unit. The piping for the SFP suction inlet does not extend below the

required minimum SFP water level specified in TS Limiting Condition for Operation (LCO) 3.7.11 to ensure the TS level is not reached due to the use of the RO System. Part of the Unit 3 SFP suction piping is Class D where the pipe is routed through the Unit 3 Purge Fan Room and Unit 3 West Penetration Room.

The BWST water is routed to the RO System from the SF purification loop. This connection is at a lower elevation than the BWST so a break in the RO System piping will cause the BWST to drain if not isolated. Operator action and flow restriction by the orifice is credited to isolate an RO System piping break as described in the November 15, 2010 LAR.

The RO unit is designed to concentrate and reject silica from water while recovering boric acid to the maximum extent possible. In the RO process, when pressure is applied to a solution on one side of a semi-permeable membrane, some minerals, salts, and colloidal solids are unable to pass through the membrane and are rejected, while the remainder of the solution passes through the membrane and is collected for return to the system. Procedural controls will be used to maintain the reject flow rate, which is adjustable, within analyzed bounds.

Water from the BWSTs or the SFPs will be sent to the RO unit and the majority of the water will be returned to the respective supply source (reject flow with the removed silica and boron will not be returned). Only one BWST or SFP will be aligned to the RO System for treatment at a time. The removal rate (reject flow) is a setting on the unit. The water not returned to the originating source will be routed to the Miscellaneous Waste Holdup Tank (MWHUT). The water that is returned to the source will be at a slightly lower boron concentration.

The RO unit is also connected to de-mineralized water and service air. De-mineralized water is used to assist in establishing the siphon from the SFP to start the flow from the SFP to the RO unit. The de-mineralized water is not borated so its use slightly dilutes the SFP water. Service air is used for maintenance activities.

2.2 Technical Specification Change

The proposed change will add two Technical Specifications (TSs). Proposed TS 3.7.19, RO System Isolation from BWST, provides operability requirements for the seismic boundary valve that isolates the BWST from the RO System. Proposed TS LCO 3.7.19 requires the seismic boundary valve used to isolate the RO System from the BWST be OPERABLE in MODES 1, 2, 3, and 4. If the seismic boundary valve is inoperable, Required Action A.1 requires the RO System flow path be isolated within four hours by use of at least one closed and de-activated automatic valve, one closed and de-activated non-automatic power operated valve, closed manual valve, blind flange, or check valve with flow through the valve secured. The device used for isolation can be seismic or non-seismic. For an RO flow path 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, Required Action A.2 requires verification that the flow path is isolated every 31 days to ensure flow path isolation should an event occur requiring it to be isolated. 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. This Completion Time is consistent with TS 3.6.3, Required Action A.2, which provides a similar action for containment penetration flow paths. Two Surveillance Requirements (SR) are added to

demonstrate OPERABILITY of the seismic boundary valve. SR 3.7.19.1 verifies the RO System seismic boundary valve that is not locked, sealed, or otherwise secured, is closed, except when the valve is open during RO System operation. The Frequency is in accordance with the Surveillance Frequency Control Program. The initial 31 day Frequency specified in the Surveillance Frequency List (SFL) will be 31 days. This periodic frequency is based on engineering judgment and was chosen to provide added assurance of the correct valve position. SR 3.7.19.2 verifies that the seismic boundary valve is OPERABLE in accordance with the Inservice Testing Program.

Proposed TS 3.9.8, RO Operating Restrictions for SFP, provides operating restrictions and isolation requirements for processing SFP water through the RO System. Proposed TS LCO 3.9.8 requires the RO System to be isolated from the SFP by breaking the siphon from the SFP during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP. If the RO System is discovered not isolated during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP, Required Action A.1 and A.2 require movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP be suspended immediately. This does not preclude movement of a fuel assembly to a safe position. This effectively precludes the occurrence of a fuel handling accident. Required Actions A.1and A.2 are modified by a note indicating that LCO 3.0.3 does not apply. If moving irradiated fuel assemblies or a cask while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies or a cask while in MODES 1, 2, 3, and 4, the fuel or cask movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies or a cask is not sufficient reason to require a reactor shutdown. SR 3.9.8.1 requires verification that the RO System is isolated by breaking the siphon from the SFP with a Frequency in accordance with the Surveillance Frequency Control Program. The initial Frequency specified in the SFL will be 7 days. This periodic frequency is considered reasonable since the siphon can only be re-established by deliberate actions and RO operation will be controlled by unit procedures and are acceptable, based on operating experience.

3.0 TECHNICAL EVALUATION

Section 3.1 focuses only on the controls required to address the potential radiological dose consequences of the RO System. Other aspects requiring NRC approval were addressed by LAR 2010-03 and associated supplements and are incorporated by reference. A summary is provided in Section 3.2 below.

3.1 Restrictions to Eliminate Potential Radiological Dose Consequences

The ONS evaluation of the large break loss of coolant accident (LOCA) includes sump back-leakage to the borated water storage tank (BWST). Since the proposed RO system takes suction from the BWST, Duke Energy proposes to use a time critical operator action to isolate the RO system from the BWST at the safety related Class C seismic boundary valve. With this action, the addition of the RO system does not impact the assumptions in the design basis LOCA dose analysis. Duke Energy chose to credit this action rather than analyze the safety significance of this pathway for a design basis LOCA. Duke Energy proposes to isolate the pathway prior to radiation dose rates increasing to the point where the isolation valve cannot be

accessed. Because of this, Duke Energy is now treating the proposed operator action as part of the primary success pathway which functions to mitigate the LOCA and, therefore, meets 10 CFR 50.36, Criterion 3. As such, proposed TS 3.7.19 is being added as described in Section 2.2 above. The isolation of the RO system credits a boundary valve to eliminate the potential unanalyzed release pathway and ensure the plant stays within the bounds of the design basis LOCA. The basis for the proposed TS 3.7.19 Required Actions and SRs is TS 3.6.3, Containment Isolation Valves (CIVs). This is considered appropriate since the safety function of the CIVs is related to minimizing the loss of reactor coolant inventory and establishing the containment boundary during an accident. The function of the RO System boundary valves is to eliminate a potential unanalyzed release pathway and ensure the plant stays within the bounds of the design basis LOCA analysis.

The RO System creates the potential for a new release pathway from the SFP water to the environment. This pathway is not currently considered in the Fuel Handling Accident (FHA) analyses because it did not exist prior to the installation of the RO System. Rather than analyze the safety significance of this pathway for a design basis FHA, Duke Energy proposes to revise the Technical Specifications to require the RO system be isolated from the SFP prior to movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP. Proposed TS 3.9.8 is being added to prescribe operating restrictions for processing SFP water through the RO System and isolation requirements. The proposed restriction credits breaking the siphon seal between the SFP and the RO system. The basis for proposed TS 3.9.8 Required Actions and SRs is TS 3.7.11, Spent Fuel Pool Water Level. This is considered appropriate since the specified water level preserves the assumptions of the fuel handling and cask drop accident analyses. The requirement to isolate the RO System from the SFP during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP prevents an unanalyzed release of radioactivity should a fuel handling accident occur concurrent with an RO System pipe break thus ensuring the plant stays within the bounds of the FHA.

As such, the requirements imposed by the proposed TSs eliminate the potential for a new release pathway from the spent fuel pool or back-leakage from the BWST. Therefore, there is no need to analyze the safety significance of these release pathways for design basis accidents.

3.2 Summary of LAR 2010-03 and Supplements 1 through 5

On November 15, 2010, Duke Energy Carolinas, LLC (Duke Energy) submitted License Amendment Request (LAR) 2010-03 requesting approval to operate a Reverse Osmosis (RO) System to remove silica from the Borated Water Storage Tanks (BWSTs) and Spent Fuel Pools (SFPs) during Unit operation at ONS. Duke Energy supplemented the LAR by letters dated February 18, 2011 (Supplement 1); May 12, 2011 (Supplement 2); August 2, 2011 (Supplement 3); October 10, 2011 (Supplement 4); and December 15, 2011 (Supplement 5). In the December 15, 2011 supplement, Duke Energy provided a response to the remaining two LAR 2010-03 issues. These issues were associated with operating restrictions credited to preclude the need to re-evaluate the dose impact of potential radiological releases from the system should a design basis accident occur when the RO system is not isolated.

3.2.1 LAR 2010-03

LAR 2010-03 requested NRC approval to operate a RO System to remove silica from the BWSTs and SFPs during Unit Operation. Specifically, Duke Energy requested NRC to review and approve design features and controls that will be used to ensure that operation of a RO System during Unit operation does not significantly impact the BWST or SFP function or other plant equipment. The proposed LAR described the RO modification, UFSAR changes, and an evaluation on the impact of RO system operation on existing TS requirements. Duke Energy provided a technical evaluation that justified the planned operating duration and frequency of the RO system and evaluated the impact of RO system operation on the SFP and the BWST, as well as the impact of an RO system piping failure on Auxiliary Building flooding. The technical evaluation also addressed postulated pipe ruptures in high energy portions of the RO system and the potential release of radioactivity due to RO System operation.

3.2.2 LAR 2010-03 Supplement 1

This supplement dated February 18, 2011, responds to electronic RAIs transmitted on December 20, 2010. In this supplement, Duke Energy confirmed structural design and analyses (including seismic evaluation) and HELB analyses and evaluations for the new RO system were complete except for the seismic design of the piping going through the Hot Machine Shop. Duke Energy also provided a quantitative evaluation of the potential for boron dilution to allow the staff to assess whether the current surveillance interval would be adequate to satisfy the requirements of 10 CFR 50.36. In response to an NRC question on whether RO operation would have an effect on the isotopic composition of boron, Duke Energy advised that according to the vendor, the membranes are not capable of differentiating between B-10 and B-11; therefore, the isotopic composition is not expected to change. However, Duke Energy committed to confirm vendor assertions during initial testing and to take appropriate actions based on test results.

3.2.3 LAR 2010-03 Supplement 2

This supplement, dated May 12, 2011, responds to RAIs transmitted by electronic mail dated March 16, 2011, and April 24, 2011. The NRC requested Duke Energy to provide an evaluation of the impact of the proposed change on all accidents and anticipated operational occurrences in the design bases or include a justification supporting why an evaluation of the impact is not needed. Duke Energy's evaluation addressed the impact of RO system operation on the safety related function of the BWST or the SFP. However, the evaluation did not address the potential for sump back-leakage to the BWST being transported to the Auxiliary Building by the continued operation of the RO System when aligned to that BWST. Rather than evaluate the impact of the RO System circulating post LOCA fluids in the Auxiliary Building, Duke Energy committed to add a Time Critical Operator Action (TCOA) to isolate the RO System at the safety related Class C seismic boundary valve to preclude intake of post LOCA fluids into the RO system. Based on adding the TCOA, Duke Energy eliminated the commitment to install a non-QA1 cut off switch at an alternate accessible remote location that was made in the initial LAR. Duke also committed to prohibit fuel movement when operating the RO System aligned to SFP. Since only the LBLOCA and FHA Chapter 15 dose analyses include credit for the BWST or SFP and since the RO System will not impact any inputs or assumptions in those analyses, no changes to the Chapter 15 design basis accident dose analyses were considered

necessary to implement this proposed change. Duke Energy confirmed that at least 33 minutes (based on time to switch over to the sump for ECCS pump suction) is available to isolate the seismic boundary valve and that it will remain accessible during that time period.

3.2.4 LAR 2010-03 Supplement 3

This supplement, dated August 2, 2011, responds to RAIs transmitted by electronic mail on July 11, 2012, and is associated with the information provided in Supplement 2 on May 12, 2011. Specifically, it responds to five RAIs related to the 33 minute TCOA to isolate the BWST post LOCA, including providing a time study for performing the operator action. The supplement revises the Significant Hazards Consideration to state that Duke Energy will prohibit fuel movement and cask handling activities during operation of the RO System when aligned to the SFP, so a FHA will not occur while the RO System is in operation. The supplement also revised the Significant Hazards Consideration to credit the TCOA to isolate the BWST prior to switchover to recirculation phase.

3.2.5 LAR 2010-03 Supplement 4

This supplement, dated October 10, 2011, responds to a September 19, 2011, NRC request by telephone that Duke Energy confirm that the RO system piping design and supporting piping analysis associated with the RO System piping are complete. Duke Energy confirmed that RO system piping design and supporting calculations are complete. NRC also requested Duke Energy to revise the Updated Final Safety Analysis Report (UFSAR) to state that no fuel movements or cask handling activities are allowed in a spent fuel pool when the RO System is processing fluids from that pool. Duke Energy committed to add a Selected Licensee Commitment (UFSAR Chapter 16) to specify this requirement.

3.2.6 LAR 2010 Supplement 5

This supplement, dated December 15, 2011, responds to two RAIs requesting Duke Energy to explain why RO system operating restrictions for BWST and SFP alignments should not be in Technical Specifications. These two RAIs were associated with operating restrictions credited to preclude the need to re-evaluate the dose impact of potential radiological releases from the system should a design basis accident occur when the RO system is not isolated. Duke Energy provided a detailed justification as the basis for controlling the RO System by Selected Licensee Commitment rather than by Technical Specification; however, the NRC did not find this acceptable. Duke Energy later agreed to withdraw the LAR and submit a new LAR proposing Technical Specifications and incorporating by reference the initial LAR as supplemented by Supplements 1 through 5.

4.0 REGULATORY EVALUATION

4.1 Significant Hazards Consideration

Duke Energy Carolinas, LLC (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 Title 10, Code of Federal Regulations, Part 50, Section 92 (10 CFR 50.92), "Issuance of Amendment," as discussed below:

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

   No. The proposed change requests Nuclear Regulatory Commission (NRC) approval of design features and controls that will be used to ensure that periodic limited operation of a Reverse Osmosis (RO) System during Unit operation does not significantly impact the Borated Water Storage Tank (BWST) or Spent Fuel Pool (SFP) function or other plant equipment. The proposed change also requests NRC to approve proposed Technical Specification (TS) requirements that will impose operating restrictions and isolation requirements on the RO System. Duke Energy evaluated the effect of potential failures, identified precautionary measures that must be taken before and during RO System operation, and identified specific required operator actions to protect affected structures, systems, and components (SSCs) important to safety.

   The new high energy piping and non-seismic piping being installed for the RO System is non-QA1 and is postulated to fail and cause an Auxiliary Building flood. Duke Energy determined that adequate time is available to isolate the flood source (BWST or SFP) prior to affecting SSCs important to safety.

   The existing Auxiliary Building Flood evaluation postulates a single break in the non-seismic piping occurring in a seismic event. The addition of the RO System will not increase the probability of a seismic event. The existing postulated source of the pipe break in the Auxiliary Building is due to the piping not being seismically designed. The new RO System piping is considered a potential source of a single pipe break for the same reason. The new non-seismic RO System piping is of similar quality as the existing non-seismic piping and is no more likely to fail than the existing piping. As such, the addition of new non-seismic piping does not significantly increase the probability of occurrence of an Auxiliary Building flood due to a single pipe break. An Auxiliary Building flood due to a non-seismic RO System pipe break does not increase the consequences of the flood since the new non-seismic pipe break is bounded by the Auxiliary Building flood caused by existing non-seismic pipe breaks.

   Procedural controls will ensure that the boron concentration does not go below the TS limit as a result of water returned from the RO System with lower boron concentration. Thus, no adverse effects from decreased boron concentration will occur.

The RO System takes suction from the top of the SFP to protect SFP inventory. Plant procedures will prohibit the use of the RO System for the Units 1&2 SFP during the time period directly after an outage that requires the Units 1&2 SFP level to be maintained higher than the Technical Specification (TS) Limiting Condition for Operation (LCO) 3.7.11 level requirement. The higher level is required to support TS LCO 3.10.1 requirements for Standby Shutdown Facility (SSF) Reactor Coolant (RC) Makeup System operability (due to the additional decay heat from the recently offloaded spent fuel). Plant procedures will also specify the siphon be broken during this time period so the SFP water above the RO suction point cannot be siphoned off if the RO piping breaks. The proposed change does not impact the fuel assemblies, the movement of fuel, or the movement of fuel shipping casks. The SFP boron concentration, level, and temperature limits will not be outside of required parameters due to restrictions/requirements on the system's operation. In addition, the proposed new Technical Specification will require the siphon be broken during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP. Therefore, RO System operation cannot occur during these activities, effectively eliminating a FHA from occurring while the RO System is in operation.

The BWST is used for mitigation of Steam Generator Tube Rupture (SGTR), Main Steam Line Break (MSLB), and Loss of Coolant Accidents (LOCAs). The SGTR and MSLB are bounded by the small break (SBLOCA) analyses with respect to the performance requirements for the High Pressure Injection (HPI) System. In the normal mode of Unit operation, the BWST is not an accident initiator. The SFP is evaluated to maintain acceptable criticality margin for all abnormal and accident conditions including Fuel Handling Accidents (FHAs) and cask drop accidents. Both the BWST and SFP are specified by TS requirements to have minimum levels/volumes and boron concentrations. The BWST also has TS requirements for temperature. Prior to RO System operation, procedures will require the minimum required initial boron concentration and initial level/volume to be adjusted. Additionally, they will require the RO System to be operated for a specified maximum time period before readjusting volume and boron concentration prior to another RO session. This ensures that the TS specified boron concentration and level/volume limits for both the SFP and the BWST are not exceeded during RO System operation. Thus, the design functions of the BWST and the SFP will continue to be met during RO System operation.

Since the BWST and SFP will still have TS boron concentration and level/volume requirements and the RO System will be isolated prior to increasing radiation levels preventing access to the isolation valve, the mitigation of a LOCA or FHA does not result in an increase in dose consequence. Since the design basis LOCA analysis for Oconee assumes 5 gpm back-leakage from the Reactor Building sump to the BWST, the Emergency Operating Procedure will require the RO System be isolated from the BWST prior to switch over to the recirculation phase. The proposed TS will require the RO system to be isolated (by breaking the siphon) from the SFPs during fuel handling activities and will require the seismic boundary valve between the BWST and RO System to be OPERABLE in MODES 1, 2, 3, and 4.

The additional controls imposed by the proposed Technical Specifications will provide additional assurance that isolation valves and operating restrictions credited to eliminate the need to analyze new release pathways introduced by the RO system will be in place.

Therefore, installation and operation of the RO System during Unit operation and the proposed Technical Specifications imposing operating restrictions do not significantly increase the probability or consequences of any accident previously evaluated.

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

No. The RO System adds non-seismic piping in the Auxiliary Building. However, the break of a single non-seismic pipe in the Auxiliary Building has already been postulated as an event in the licensing basis. The RO System also does not create the possibility of a seismic event concurrent with a LOCA since a seismic event is a natural phenomena event. The RO System does not adversely affect the Reactor Coolant System pressure boundary. The suction to the RO System, when using the system for BWST purification, contains a normally closed manual seismic boundary valve so the seismic design criteria is met for separation of seismic/non-seismic piping boundaries.

Duke Energy also evaluated potential releases of radioactive liquid to the environment due to RO System piping failures. Design features, controls imposed by the proposed Technical Specification, and procedural controls will preclude release of radioactive materials outside the Auxiliary Building by ensuring the RO System will be isolated when required.

The SFP suction line is designed such that the SFP water level will not go below TS required levels, thus the fuel assemblies will have the TS required water level over them. Procedural controls will restrict the use of the RO System and require breaking vacuum on the Units 1&2 SFP suction line when the SSF conditions require the SFP level be raised to support SSF RC Makeup System operability. Thus, the SFP water level will not be reduced below required water levels for these conditions. RO System operating restrictions will prevent reducing the SFP boron concentration below TS limits.

Since the BWST and SFP will still have TS boron concentration and level/volume requirements and the RO System will be isolated prior to increasing radiation levels preventing access to the isolation valve, the mitigation of a LOCA or FHA does not result in an increase in dose consequence. Since the design basis LOCA analysis for Oconee assumes 5 gpm back-leakage from the Reactor Building sump to the BWST, the Emergency Operating Procedure will require the RO System be isolated from the BWST prior to switch over to the recirculation phase. The proposed TS will require the RO system to be isolated (by breaking the siphon) from the SFPs prior to movement of irradiated fuel assemblies in the SFP or movement of cask

over the SFP and will require the seismic boundary valve between the BWST and RO System to be OPERABLE in MODES 1, 2, 3, and 4.

The additional controls imposed by the proposed Technical Specifications will provide additional assurance that isolation valves and operating restrictions credited to eliminate the need to analyze new release pathways introduced by the RO system will be in place.

Therefore, operation of the RO System during Unit operation will not create the possibility of a new or different kind of accident from any kind of accident previously evaluated.

3) Does the proposed amendment involve a significant reduction in a margin of safety?

No. The RO System adds non-seismic piping in the Auxiliary Building. Duke Energy evaluated the impact of RO System operation on SSCs important to safety and determined that the proposed TS controls and procedural controls will ensure that TS limits for SFP and BWST volume, temperature, and boron concentration will continue to be met during RO operation. For the BWST, these controls will ensure the TS minimum BWST boron concentration and level are available to mitigate the consequences of a small break LOCA or a large break LOCA. For the SFP, these controls ensure the assumptions of the fuel handling and cask drop accident analyses are preserved. Additionally, the failure of non-seismic RO System piping will not significantly impact SSCs important to safety. Oconee's licensing basis does not assume a design basis event occurs simultaneously with a seismic event. The proposed change does not significantly impact the condition or performance of SSCs relied upon for accident mitigation. This change does not alter the existing TS allowable values or analytical limits. The existing operating margin between Unit conditions and actual Unit setpoints is not significantly reduced due to these changes. The assumptions and results in any safety analyses are not impacted. Therefore, operation of the RO System during Unit operation does not involve a significant reduction in a margin of safety.

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

4.2 Applicable Regulatory Requirements/Criteria

10 CFR 50.36, "Technical specifications"
10 CFR 50.59, "Changes, test, experiments"

4.3 Precedent

May 12, 2000	Diablo Canyon - License Amendment Request to request approval of a Refueling Water Purification System Upgrade and Temporary Reverse Osmosis Skid Installation To Support RWST Cleanup During Power Operation
January 21, 2001	Issuance of Amendment Nos. 144 & 143 to Diablo Canyon Nuclear Power Plant, Units No. 1 and 2
February 20, 2012	Farley Exigent Technical Specification (TS) Revision Request for TS 3.5.4, Refueling Water Storage Tank
March 24, 2012	Issuance of Amendment Nos. 188 & 183 to Joseph M Farley Nuclear Power Plant, Units 1 and 2

4.4 Conclusions

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 adverse to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

Duke Energy Carolinas, LLC, has evaluated this license amendment request against the criteria for identification of licensing and regulatory actions requiring environmental assessment in accordance with 10 CFR 51.21. Duke Energy Carolinas, LLC has determined that this license amendment request meets the criteria for a categorical exclusion set forth in 10 CFR 51.22(c)(9). This determination is based on the fact that this change is being proposed as an amendment to a license issued pursuant to 10 CFR 50 that changes a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or that changes an inspection or a surveillance requirement, and the amendment meets the following specific criteria.

(i) The amendment involves no significant hazards consideration.

As demonstrated in Section 4.1, this License Amendment Request (LAR) does not involve significant hazards consideration.

(ii) There is no significant change in the types or significant increase in the amounts of any effluent that may be released offsite.

The proposed LAR does not result in a significant change in the types or significant increase in the amounts of any effluents released offsite.

(iii) There is no significant increase in individual or cumulative occupational radiation exposure.

This LAR will not impact occupational radiation exposure. Therefore, there will be no significant increase in individual or cumulative occupational radiation exposure.

6.0 REFERENCES

None

LAR 2012-05
October 30, 2012

ATTACHMENT 1

Proposed Technical Specifications

3.7 Plant Systems

3.7.19 Reverse Osmosis (RO) System Isolation from Borated Water Storage Tank (BWST)

LCO 3.7.19 Seismic boundary valve used to isolate the RO System from the BWST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4

ACTIONS

----------NOTE----------
Reverse Osmosis flow path may be unisolated intermittently under administrative controls.

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. Seismic boundary valve inoperable	A.1	Isolate flow path by use of at least one closed and de-activated automatic valve, one closed and de-activated non-automatic power operated valve, closed manual valve, blind flange, or check valve with flow through the valve secured.	4 hours
	AND		
	A.2	Verify the flow path is isolated.	Once per 31 days
B. Required Action and associated Completion Time of Condition A not met	B.1	Be in MODE 3.	12 hours
	AND		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.7.19.1	Verify RO System seismic boundary valve that is not locked, sealed, or otherwise secured, is closed, except when the valve is open during RO System operation.	In accordance with the Surveillance Frequency Control Program
SR 3.7.19.2	Verify RO System seismic boundary valve is OPERABLE in accordance with the Inservice Testing Program.	In accordance with the Inservice Testing Program

3.9 REFUELING OPERATIONS

3.9.8 Reverse Osmosis (RO) System Operating Restrictions for Spent Fuel Pool (SFP)

LCO 3.9.8 The RO System shall be isolated from the spent fuel pool by breaking the siphon from the SFP.

APPLICABILITY: During movement of irradiated fuel assemblies in the SFP,
During movement of cask over the SFP.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. RO System not isolated	----------NOTE---------- LCO 3.0.3 is not applicable ---------- A.1 Suspend the movement of irradiated fuel assemblies in the SFP AND A.2 Suspend the movement of cask over the SFP	 Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.9.8.1	Verify RO System is isolated by breaking the siphon from the SFP.	In accordance with the Surveillance Frequency Control Program

LAR 2012-05
October 30, 2012

ATTACHMENT 2

Proposed Technical Specification Bases

B 3.7 Plant Systems

B 3.7.19 Reverse Osmosis (RO) System Isolation from Borated Water Storage Tank (BWST)

BASES

BACKGROUND

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

The RO System, which consists of an RO unit and supply and return piping from the BWSTs and SFPs, 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 SF Purification Loop. The new branch line begins as seismic and contains a new seismic boundary valve (Units 1&2 share a common boundary valve, SF-181) and a flow limiting orifice before changing to non-seismic piping and valves. The Unit 3 BWST is connected to the RO System piping via a branch line from the Unit 3 SF Purification loop. The branch line is seismically qualified and contains a new seismic boundary valve (3SF-181) and a flow limiting orifice before changing to non-seismic piping, where it ties into the RO System piping from the Unit 3 SFP downstream of the Unit 3 SFP isolation valves.

The return piping from the RO unit is routed back to the purification portion of the SF Cooling 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. An isolation valve and a check valve are installed in series in each of the return lines to the SF purification piping. The check valve and its 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. This connection is at a lower elevation than the BWST so a break in the RO System piping will cause the BWST to drain if not isolated. Operator action is credited to isolate an RO System piping break.

BASES

BACKGROUND (continued)

Credit is taken for a time critical operator action to isolate the RO system from the BWST at the safety related seismic boundary valve to preclude sump back-leakage from being entrained in this unanalyzed potential release pathway. This action is initiated after receipt of an Engineered Safeguards (ES) actuation signal.

APPLICABLE SAFETY ANALYSES

The large break loss of coolant accident (LOCA) assumes back-leakage from the sump to the borated water storage tank (BWST). Since the RO system takes suction from the BWST, a time critical operator action (TCOA) is used to isolate the RO system from the BWST at the safety related seismic boundary valve. With the isolation of this pathway, the use of the RO system does not impact the assumptions in the design basis LOCA dose analysis. The TCOA isolates the pathway prior to increasing radiation levels making the location inaccessible and before post-LOCA fluids can reach the BWST. This operator action, isolation of a component that is part of the primary success pathway which functions to mitigate the LOCA, meets 10 CFR 50.36, Criterion 3 (Reference 2). The isolation of the RO system credits a seismic boundary valve to eliminate the potential unanalyzed release pathway and ensure the plant stays within the bounds of the design basis LOCA analysis.

LCO

This LCO requires that the seismic boundary valve (SF-181 for Unit 1 and 2, 3SF-181 for Unit 3) used to isolate the RO System from BWST to be OPERABLE. The valve is considered OPERABLE when it is closed or capable of being closed within 33 minutes.

APPLICABILITY

In MODES 1, 2, 3, and 4, the RO System isolation valve OPERABILITY requirements are dictated by the BWST, High Pressure Injection (HPI), Low Pressure Injection (LPI) and Reactor Building Spray OPERABILITY requirements. The RO System isolation valves must be OPERABLE to eliminate the potential unanalyzed release pathway and ensure the plant stays within the bounds of the design basis LOCA analysis.

BASES (continued)

ACTIONS

The ACTIONS are modified by a Note allowing the RO System flow path to be unisolated intermittently under administrative controls. The opening of a closed valve in the RO System 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 RO System. In this way, the flow path can be rapidly isolated when a need for isolation is indicated.

A.1 and A.2

In the event a seismic boundary valve is inoperable, the affected 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, a blind flange, and a check valve with flow through the valve secured. For the RO 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 seismic boundary valve. The device used for the isolation may be seismically or non-seismically qualified. 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 RO system from the BWST.

For an RO flow path 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.

BASES

ACTIONS (continued)

B.1

If the Required Actions and associated Completion Times 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 an RO System seismic boundary valve (SF-181 for Unit 1 and 2 and 3SF-181 for Unit 3) not locked, sealed, or otherwise secured in the closed position, is closed. The SR helps to ensure that post accident leakage of radioactive fluids do not impact the offsite dose analysis. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that the seismic boundary 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. The SR specifies that the seismic boundary valve is not required to be closed during RO System operation. During the time period the seismic boundary valve is open, a TCOA is credited to close the valve should an accident occur requiring isolation of the flow path. This SR does not apply if the 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 RO System seismic boundary valve (SF-181 for Unit 1 and 2 and 3SF-181 for Unit 3) that is used to isolate the BWST from the RO System is OPERABLE in accordance with the Inservice Testing Program. The specified Frequency is in accordance with the Inservice Testing Program requirements.

REFERENCES

1. UFSAR, Section 9.1.3.
2. 10 CFR 50.36.

B 3.9 REFUELING OPERATIONS

B 3.9.8 Reverse Osmosis (RO) System Operating Restrictions for Spent Fuel Pool (SFP)

BASES

BACKGROUND

The RO System removes silica from the SFPs and Borated Water Storage Tanks (BWSTs) by using a reverse osmosis filtering process.

The RO System, which consists of an RO unit and supply and return piping from the BWSTs and SFPs, 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 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. New RO System piping and existing Spent Fuel (SF) Purification Loop piping are used for these alignments.

New RO System supply piping is routed from the Unit 1 & 2 SFP to the RO unit. The return piping from the RO unit is routed back to the purification portion of the SF Cooling 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. An isolation valve, check valve, and isolation valve are installed in series in each of the return lines to the SF purification piping. The check valve, its downstream isolation valve, and its 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 suction piping from each SFP is designed as a "candy cane" that is inserted into the water from above the pool. Although the "candy cane" piping is non-seismic, it is seismically supported so that it will not fall into the SFP. Vacuum priming of the "candy cane" is required to start the flow from the SFP to the RO unit. The piping for the SFP suction inlet does not extend below the required minimum SFP water level specified in TS Limiting Condition for Operation (LCO) 3.7.11 to ensure the TS level is not reached due to the use of the RO System. Part of the Unit 3 SFP suction piping is Class D where the pipe is routed through the Unit 3 Purge Fan Room and the Unit 3 West Penetration Room.

During fuel or cask handling activities in the SFP, the RO System must be isolated from the SFP by breaking the siphon from the SFP.

BASES (continued)

APPLICABLE SAFETY ANALYSES

The possibility of an unanalyzed radioactive release pathway during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP is precluded by adherence to this LCO, which requires that the RO system be isolated from the SFP. Breaking the siphon from the SFP during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP prevents the flow of SFP water to the RO System. These operating restrictions eliminate the potential unanalyzed release pathway and ensure the plant stays within the bounds of the fuel handling accident (FHA).

The RO System operating restrictions satisfy Criterion 2 of 10 CFR 50.36 (Reference 2).

LCO

This LCO requires that the flow path to the RO System from the affected SFP be isolated by breaking the siphon from the SFP during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP to prevent an unanalyzed release of radioactivity should a fuel handling accident occur concurrent with an RO System pipe break.

APPLICABILITY

This LCO applies during movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP since the potential for an unanalyzed release pathway exists.

ACTIONS

Required Actions A.1 and A.2 are modified by a Note indicating that LCO 3.0.3 does not apply.

If moving irradiated fuel assemblies or a cask while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies or a cask while in MODES 1, 2, 3, and 4, the fuel or cask movement is independent of reactor operations. Therefore, in either case, inability to suspend movement of irradiated fuel assemblies or a cask is not sufficient reason to require a reactor shutdown.

A.1 and A.2

When the initial conditions for an accident cannot be met, immediate action must be taken to preclude occurrence of an accident. With the RO not isolated for the SFP, movement of irradiated fuel assemblies in the SFP and movement of cask over the SFP are immediately suspended.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.9.8.1

This SR requires verification that the RO System is isolated by breaking the siphon from the SFP prior to movement of irradiated fuel assemblies in the SFP or movement of cask over the SFP. This eliminates a potential unanalyzed radiological release pathway to the environment. 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.

ATTACHMENT 3

List of Regulatory Commitments

The following commitment table identifies those actions committed to by Duke Energy Carolinas, LLC (Duke Energy) in this submittal. Other actions discussed in the submittal represent intended or planned actions by Duke Energy. They are described to the Nuclear Regulatory Commission (NRC) for the NRC's information and are not regulatory commitments.

	Commitment	Completion Date
1	Duke Energy will confirm that the RO unit membranes do not preferentially remove B-10 during the initial testing of the RO System. If the RO unit membranes are found to preferentially remove B-10, the supporting Duke Energy calculation will be revised to establish limits for operating the RO unit based on the test results so that the necessary concentration of B-10 is maintained.	Prior to RO System operation
2	Duke Energy will add a time critical operator action (TCOA) to isolate the RO System to preclude intake of post LOCA fluids into the RO system.	Prior to RO System operation