Duke Energy® Carolinas

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May 27, 2008

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Subject: Duke Energy Carolinas, LLC (Duke)
Catawba Nuclear Station, Units 1 and 2
Docket Numbers 50-413 and 50-414
Proposed Technical Specifications (TS) and Bases Amendment
TS and Bases 3.7.8, Nuclear Service Water System (NSWS)
Response to Request for Additional Information (RAI)

Reference: Letter from Duke to NRC dated July 30, 2007

The reference letter requested to modify the subject TS and Bases to allow single supply header operation of the NSWS (Duke designation "RN") for a time period of 35 days. The request was made to facilitate future maintenance of the NSWS supply headers.

On March 19, 2008, an internal NRC memorandum was sent from Donald Harrison, Chief of the Balance of Plant Branch, to Melanie Wong, Chief of Plant Licensing Branch II-1, to transmit RAIs associated with the reference letter. The purpose of this letter is to respond to these RAIs.

The attachment to this letter documents Duke's RAI response. The format of the response is to restate each RAI question, followed by our response.

There are no regulatory commitments contained in this letter or its attachment.

Pursuant to 10 CFR 50.91, a copy of this letter and its attachment is being sent to the appropriate State of South Carolina official.

A001
NRR

Inquiries on this matter should be directed to L.J. Rudy at (803) 701-3084.

Very truly yours,

James R. Morris

LJR/s

Attachment

James R. Morris affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.

James R. Morris, Vice President

Subscribed and sworn to me: 5-27-08
Date

Notary Public

My commission expires: 1/31/2018
Date

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ATTACHMENT

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION

<u>REQUEST FOR ADDITIONAL INFORMATION
WITH REGARD TO CATAWBA PROPOSED TECHNICAL SPECIFICATIONS
(TS) AND BASES 3.7.8, NUCLEAR SERVICE WATER SYSTEM AMENDMENT
REQUEST, DATED JULY 30, 2007 DOCKET NUMBERS 50-413/414</u>

1. Please expand the background section discussion on page 1 to include the historical events (i.e., past amendments and recommendations) leading to this amendment request.

Duke Response: Following is a synopsis of Catawba licensing activities associated with improvements made to the NSWS:

1999 - Catawba performed an inspection of the Train A and Train B buried NSWS supply header piping in mid-1999 in response to system trending, which indicated an increase in piping flow resistance and a corresponding reduction in supply header flow to essential components. The inspections revealed that the carbon steel piping had developed corrosion tubercles which interfered with NSWS flow. While the flow to the essential components was still above the minimum flow rate required for operability, Catawba decided to clean both NSWS supply headers to bare metal in order to restore flow margin to essential components.

2000 - Catawba requested and received a 288-hour (12-day) TS Completion Time on the NSWS, as well as NSWS supported systems to facilitate cleaning of the Train A and Train B buried NSWS supply headers. The approved amendments (189 for Unit 1 and 182 for Unit 2) were issued on October 4, 2000 (TAC Numbers MA9067 and MA9068). A significant amount of corrosion products, silt, and sediment was removed from the piping. A post-cleaning video of the piping was taken to verify cleanliness, and it was discovered that the longitudinal and circumferential piping welds had intermittent pitting due to preferential weld attack. Catawba assessed the condition of the piping and developed plans for arresting further degradation of the circumferential and longitudinal welds, as well as the overall corrosion of the carbon steel pipe wall due to exposure to service water.

2003 - As a result of the assessment of the weld degradation in the NSWS Train A and Train B buried supply headers, Catawba replaced a section of piping (approximately 20 feet long) on Train A that had the worst-case weld pitting. The piping was replaced in January 2003 per Catawba modification

CNCE-71424. To perform the replacement, Catawba requested a 168-hour (7-day) TS Completion Time on the NSWS and NSWS supported systems. The approved amendments (203 for Unit 1 and 196 for Unit 2) were issued on January 7, 2003 (TAC Numbers MB6311 and MB6312). The removed section of piping was extensively examined (including destructive examination and hydrostatic testing) in order to assess the extent of weld degradation. The results of the examination contributed to the development of repair plans and timeframes for the implementation of repairs.

2000 to 2006 - Catawba developed plans for the repair of the NSWS Train A and Train B buried supply headers. These plans included the near-term cleaning of the NSWS piping and coating of the circumferential and longitudinal welds. The plans also included modifications to the plant to enable all four NSWS pumps to supply all four NSWS essential headers and diesel generators through one NSWS buried supply header, via the installation of "crossover" piping in the NSWS pumphouse, diesel generator rooms, and Auxiliary Buildings. These modifications would enable Catawba to take one buried supply header out of service for extensive rehabilitation and followup periodic inspections. The alignment of the system in this "Single Header Operation" configuration requires the approval of this license amendment request.

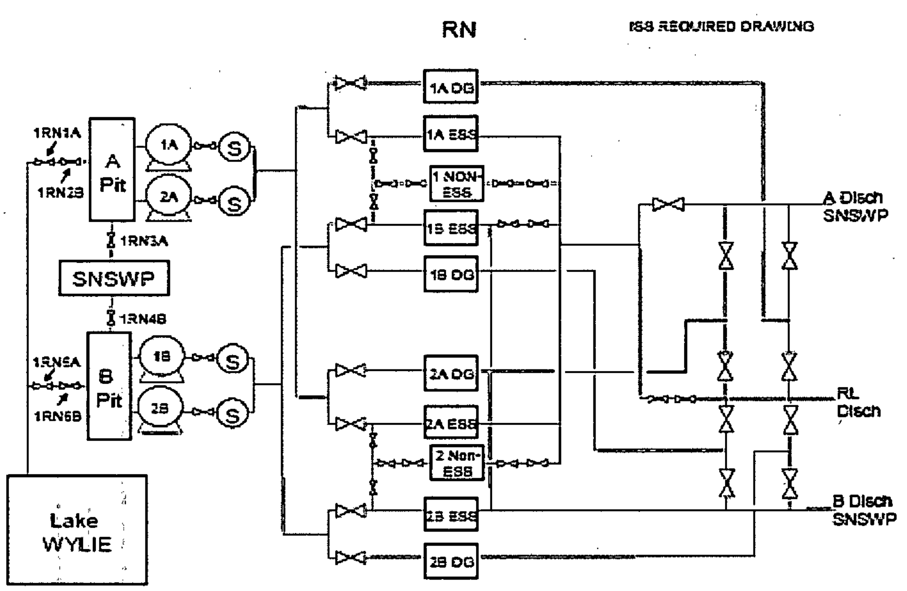
2006 - Catawba performed NSWS Train A and Train B buried supply header weld repair and coating, as well as work supporting NSWS pumphouse crossover installation, Auxiliary Building crossover installation, and diesel generator building crossover installation. To support this work, Catawba requested and received a 336-hour (14-day) TS Completion Time on the NSWS and NSWS supported systems. The approved amendments (228 for Unit 1 and 223 for Unit 2) were issued on November 17, 2005 (TAC Numbers MC5117 and MC5118).

During discussions with the NRC concerning the third license amendment request, the NRC questioned why Duke was submitting multiple amendment requests that were being categorized as "one-time" submittals. The NRC encouraged Duke to submit a permanent amendment request to facilitate future maintenance and refurbishment work on the NSWS.

2. Terms such as "train," "header," and "loop" were used in TS and TS Bases. Clarify these terms in the context of phrasing, terminology, and format consistent with improved standard TS.

Duke Response: The standard term for a redundant subsystem utilized throughout the Improved Standard TS is "train". To this end, this term was utilized in TS 3.7.8 for the redundant NSWS subsystems when Catawba adopted the Improved Standard TS format in 1999. The Catawba TS, while written for a two-unit station, are applied to each unit individually. Therefore, each unit's TS requires two NSWS trains to be operable while in Modes 1, 2, 3, and 4. Each unit's two required NSWS trains are designated A and B (i.e., 1A and 1B for Unit 1 and 2A and 2B for Unit 2).

As indicated in the Background section of the Bases for TS 3.7.8, portions of the NSWS are shared between the Catawba units. (No safety related portions of the NSWS are shared between trains. The two NSWS trains associated with each unit are completely independent of one another.) Portions of the NSWS that are shared between Unit 1 and Unit 2 include the NSWS pits, the NSWS pumps, and certain sections of the NSWS supply and return piping located outside of the Unit 1 and Unit 2 Auxiliary Buildings. The term "loop" is used to refer to the combined Unit 1 and Unit 2 portions of same-train equipment. For example, Loop A comprises both Unit 1 and Unit 2 Train A equipment and Loop B comprises both Unit 1 and Unit 2 Train B equipment. Refer to the simplified flow diagram below for an illustration of the concepts of "train" and "loop" as they pertain to the NSWS.



This figure depicts the shared nature of the NSWS supplies (non-safety related Lake Wylie and the safety related Standby Nuclear Service Water Pond), the NSWS pits, the NSWS pumps, and the shared NSWS piping sections. It also depicts the unit-specific portions of the NSWS, which include the safety related unit related and train related supplies to each diesel generator and each essential header, as well as the non-safety related unit related supplies to each non-essential header.

The term "header", as used in the context of the NSWS and this amendment request, refers to a section of NSWS piping. There are two main NSWS supply headers from the NSWS pumphouse to the plant. The supply headers are designated A and B (for Loop A and Loop B, respectively). Each supply header is shared between Unit 1 and Unit 2. For proposed TS Condition B of the amendment request, it is necessary to utilize the term "header" as opposed to the terms "train" or "loop", since use of the terms "train" or "loop" would imply that the inoperability of other NSWS components (e.g., pumps, valves, other sections of NSWS piping) could be allowed under this Condition.

3. Page 4, first sentence of the full paragraph discussing the description of the proposed change that involves physical modifications to the nuclear service water system (NSWS) to install crossover piping between trains in the pump house, auxiliary, and diesel generator buildings. Discuss the specific activities and schedule, identify associated piping and valves, and process control for these modifications.

Duke Response: The following modifications to the NSWS support the license amendment request:

NSWS Pumphouse Crossover - Adds full flow crossover in NSWS pumphouse and manual valves so that the flow from all four NSWS pumps may be aligned to the Train A or Train B NSWS buried supply header while in single header operation. New manual valves that were added in support of the NSWS pumphouse crossover are 1RNP14, 2RNP14, 1RNP15, and 2RNP15. These valves are locked closed per the NSWS operating procedure, OP/0/A/6400/006C. The following plant modifications are associated with the NSWS Pumphouse Crossover:

- **CD500065, pumphouse interference removal (complete).**

- CD500062, partial installation of crossover valves and piping (complete).
- CD500091, complete installation of NSWS pumphouse crossover piping, to be installed in Unit 1 refueling outage 1EOC17 (May - June 2008). Following installation of plant modification CD500091, NSWS pumphouse crossover isolation valves will be locked closed per procedure.

Unit 1 NSWS Supply Header Crossover in Auxiliary Building - Provides larger diameter crossover piping for either Train A or Train B NSWS supply to NSWS essential headers 1A and 1B. New manual valves that were added in support of the Unit 1 NSWS Supply Header Crossover in Auxiliary Building are 1RNP21 and 1RNP22. These valves are locked closed per the NSWS operating procedure, OP/0/A/6400/006C. Plant modifications associated with the Unit 1 NSWS Supply Header Crossover in Auxiliary Building:

- CD500175, auxiliary building crossover preparation and lugged valve installation (complete).
- CD100139, install 30" auxiliary building crossover piping on Unit 1 (complete).

Unit 2 NSWS Supply Header Crossover in Auxiliary Building - Provides larger diameter crossover piping for either Train A or Train B NSWS supply to NSWS essential headers 2A and 2B. New manual valves that were added in support of the Unit 2 NSWS Supply Header Crossover in Auxiliary Building are 2RNP21 and 2RNP22. These valves are locked closed per the NSWS operating procedure, OP/0/A/6400/006C. Plant modifications associated with the Unit 2 NSWS Supply Header Crossover in Auxiliary Building:

- CD500175, auxiliary building crossover preparation and lugged valve installation (complete).
- CD200108, install 30" auxiliary building crossover piping on Unit 2 (complete).

NSWS Supply Header Crossover in Unit 1 Diesel Generator Buildings - Provides crossover piping so that either Train A or Train B NSWS buried supply header can supply both the 1A and 1B diesel generator jacket water coolers while in single header operation. New manual valves that were added in support of the NSWS Supply Header Crossover in Unit 1 Diesel Generator Buildings are 1RNP02, 1RNP03, 1RNP04, 1RNP05, 1RNP06, and 1RNP07. Valves 1RNP02 and 1RNP03 are locked open and valves 1RNP04, 1RNP05, 1RNP06, and 1RNP07 are

locked closed per the NSWS operating procedure, OP/0/A/6400/006C. Plant modifications associated with NSWS Supply Header Crossover in Unit 1 Diesel Generator Buildings:

- **CD100064, installation of supply and crossover isolation valves in Unit 1 NSWS supply to the 1A and 1B diesel generators (complete).**
- **CD100106, installation of crossover piping between the 1A and 1B diesel generators (complete).**

NSWS Supply Header Crossover in Unit 2 Diesel Generator Buildings - Provides crossover piping so that either Train A or Train B NSWS buried supply header can supply both the 2A and 2B diesel generator jacket water coolers while in single header operation. New manual valves that were added in support of the NSWS Supply Header Crossover in Unit 2 Diesel Generator Buildings are 2RNP02, 2RNP03, 2RNP04, 2RNP05, 2RNP06, and 2RNP07. Valves 2RNP02 and 2RNP03 are locked open and valves 2RNP04, 2RNP05, 2RNP06, and 2RNP07 are locked closed per the NSWS operating procedure, OP/0/A/6400/006C. Plant modifications associated with NSWS Supply Header Crossover in Unit 2 Diesel Generator Buildings:

- **CD200141, installation of supply and crossover isolation valves in Unit 2 NSWS supply to the 2A and 2B diesel generators (complete).**
- **CD200154, installation of crossover piping between the 2A and 2B diesel generators (complete).**

4. Page 5, second sentence of the second full paragraph discusses Condition B that allows a 35-day completion time, or allowed outage time (AOT). It is not clear that a deterministic argument and the rationales were well articulated to support this proposed AOT. Provide a thoughtful deterministic justification and the technical bases for a 35-day AOT that exceeds a maximum allowed 30 days in the improved standard TS. Discuss the operational constraints that would preclude the practice of multiple entries into this AOT condition to complete the necessary scheduled and unscheduled activities on the isolated supply header.

Duke Response: The license amendment request submittal is not considered to be risk informed. Nevertheless, as indicated in the submittal, the current PRA model was used to perform risk evaluations to support the request for a 35-day Completion Time by verifying that it would meet the risk

acceptance criteria found in Regulatory Guides 1.174 and 1.177. The evaluation considered the future system configuration which promotes reliability by allowing flow from any of the four NSWS pumps while one of the supply headers is taken out of service. In fact, PRA evaluations were performed for Completion Times well in excess of 35 days and were found to meet the risk acceptance criteria found in Regulatory Guides 1.174 and 1.177.

As noted above, the PRA risk evaluation allowed for a longer duration than 35 days. Duke arrived at the 35-day Completion Time from our experience in performing similar work in this size piping using the same coating system. Each 35-day train evolution will require the following sequence of activities to be performed on approximately 2500 feet of 42-inch NSWS supply header piping: tag, drain, hydrolaze and remove internal corrosion, inspect and perform required weld repairs, establish environmental conditions, grit blast to bare white metal, remove grit and clean piping, apply safety related coatings, cure coatings, inspect coating film thickness, perform any coating repairs required, close piping manways, remove tags, refill, and place header in service. This duration provides an aggressive schedule that will require multiple teams working in parallel inside the piping. A shorter Completion Time would not allow for completing the piping in one TS Condition entry and would require an additional entry to re-enter the piping and complete the pipe coating. Making multiple TS Condition entries for performance of planned work activities is not a recommended operational practice relative to TS management. Duke fully plans to complete the repairs and coating in one 35-day entry per NSWS header. These evolutions will allow for the completion of the repair and stabilization of the NSWS supply header piping. Future TS Condition entries would only be of durations long enough to perform coating maintenance inspections and repairs per the periodic inspection/maintenance plan. Use of this TS Condition provides no station operational benefit other than allowing for piping entry to make repairs to the passive supply header piping structure or coating system.

5. Page 6, first paragraph, the sentence starts with "finally, surveillance requirement 3.7.8.2 is revised, …, is not required to be met for valves that are maintained in position to support NSWS single supply header operation." Clarify the exclusion of this surveillance requirement during the single supply header operation.

Duke Response: NSWS design includes the repositioning of crossover valves 1RN47A, 1RN48B, 2RN47A, 2RN48B, 1RN53B, and 1RN54B in response to certain plant events. A LOCA on Unit 1 would reposition 1RN47A and 1RN48B (as well as other valves not relevant to NSWS single header operation); while a LOCA on Unit 2 would reposition 2RN47A and 2RN48B (as well as other valves not relevant to NSWS single header operation). For the existing NSWS dual header operation, a loss of the normal heat sink (Lake Wylie) would reposition 1RN47A, 1RN48B, 2RN47A, 2RN48B, 1RN53B, and 1RN54B (as well as other valves not relevant to NSWS single header operation). NSWS single header operation requires that these valves remain open, to enable one NSWS supply header (either A or B) to supply all four NSWS essential headers (1A, 1B, 2A, and 2B). These valves will be prevented from automatically repositioning on a Sp signal (due to a LOCA) or on an emergency low NSWS pump pit level (due to a loss of Lake Wylie) while in single header operation. If these valves were allowed to reposition, flow would be unnecessarily interrupted to one NSWS essential header during a LOCA (on the LOCA unit) and to two NSWS essential headers (i.e., 1A and 2A or 1B and 2B) during a loss of Lake Wylie.

Since crossover valves 1RN47A, 1RN48B, 2RN47A, 2RN48B, 1RN53B, and 1RN54B will be prevented from closing automatically during a LOCA or a loss of Lake Wylie while the NSWS is in single header operation, and it is not desirable for these valves to close automatically while in single header operation, the surveillance requirement to test the valves is not required to be met in this configuration.

6. Page 6, fourth paragraph, the last sentence in parenthesis that starts with "this is contrary to,..., the two train automatically separate on the affected unit during a LOCA (S_P signal) or separate completely on a swapover to the SNSWP." Elaborate how the system alignment would take place during the loss-of-offsite/loss-of-coolant (LOOP/LOCA) event.

Duke Response: See the response to Question 5 for a discussion of the LOCA event. Note that NSWS train separation between Train A and Train B does not occur in response to a LOOP by itself; rather, it occurs in response to a Sp signal (LOCA) or an emergency low NSWS pump pit

level (loss of Lake Wylie). The response of the NSWS to a LOOP for the existing NSWS dual header operation and for single header operation is unchanged. In the existing NSWS dual header operation and in proposed single header operation, all four NSWS pumps receive a start signal in response to a LOOP, Sp, or emergency low NSWS pump pit level.

7. Page 8, first paragraph, the last sentence discusses the assumption for a passive failure flow rate assumption based on visual inspection and detection. Discuss the detection and monitoring capabilities, particularly for the NSWS piping section between the downstream of the supply header at the pump house and the first isolation valves in the auxiliary and diesel generator buildings. Discuss the mitigation actions to isolate the leak and to ensure continued cooling to the required systems and components during single supply header operation.

Duke Response: The only mechanical joints in the buried portion of the NSWS supply headers are the piping access manways. Leakage could also occur if a pinhole developed through the buried piping wall. The ability to detect leaks in buried NSWS piping is dependent on location, depth, surrounding backfill, and size of the leak. Leaks in underground piping are detected when the leakage makes its way to the surface. When detected, leaks in buried NSWS piping can be repaired without isolating or removing the buried supply piping from service, and without interruption of flow to essential components. Mitigating actions for leaks in buried NSWS supply piping include excavating the piping, plugging the leak, and welding an ASME Class III pipe cap over the flaw, without draining the piping or taking the piping out of service.

The ability to detect leaks in above-ground NSWS piping in the NSWS pumphouse, auxiliary building, and diesel generator buildings can be effectively performed since the piping is accessible and is within visual contact by Operations personnel during periodic rounds. Mitigating actions for any leaks in the piping include isolating the leaking piping and performing a Code repair. If the leaking portion of piping is in a section that is not desirable to isolate, the leak may be plugged and a Code repair performed by welding an ASME Class III pipe cap over the flaw, without draining the piping or taking the piping out of service. Mitigating actions for valve packing leakage or other mechanical joint leakage would be addressed with current maintenance

practices, and could be performed without removing the component from service.

8. Page 8, the last sentence starts with "however, with only one of the four nuclear safety related sump pumps operating, the pump down rate exceeds the leakage rate." Clarify the "pump down rate exceeds the leakage rate" statement. Discuss the sump design and maintenance and surveillance requirements that would preclude water from overflowing the sump and potentially creating a flooding event.

Duke Response: The design of the Residual Heat Removal System and Containment Spray System pump room sump is such that the elevation of this sump is the lowest point anywhere in the station. There are four sump pumps which are located in the common sump. Each pump is supplied with emergency power from the diesel generator of the corresponding train. Each sump pump is rated at 100 gpm. The rating of 100 gpm was designed to address 50 gpm of leakage from each Residual Heat Removal System and Containment Spray System pump, plus 50 gpm of undefined leakage. In the event of a large leak of non-radioactive or slightly radioactive water anywhere in the auxiliary building, the Liquid Waste System tanks fill and overflow, and water will collect in this sump. Up to 500 gpm of water can be discharged with these pumps at runout condition. A seismically-designed line has been installed from the Residual Heat Removal System and Containment Spray System pump room sump pump discharge header to the turbine building.

The Residual Heat Removal System and Containment Spray System pump room sump pumps and associated level switches are in the station maintenance program. Periodic preventive maintenance is performed on the sump pumps, as well as on the sump pump level switches, to ensure that these components can perform their design function.

Surveillance of the Residual Heat Removal System and Containment Spray System pump room sump includes a control room annunciator that alarms on sump emergency high level. The annunciator response procedure immediate actions include dispatching an operator to investigate the cause of the emergency high level alarm. The Residual Heat Removal System and Containment Spray System pump room is also monitored periodically by operators during periodic operator

rounds, which consist of a general inspection of the room and associated equipment.

9. Page 11, first large full paragraph, the last sentence starts with "passive failures of NSWS piping located in the auxiliary building may be isolated and repaired, depending upon the failure location." Identify the un-isolable locations, both in the auxiliary and diesel generator buildings that would preclude a successful repair. Discuss the impacts caused by these break locations, the operability of the required systems and components, and the mitigation actions.

Duke Response: The unisolable locations in the auxiliary building are the areas between the auxiliary building outside wall and the first isolation valves in the NSWS. The amount of piping in the auxiliary building that is not considered to be isolable has been minimized by the addition of manual isolation valves close to the auxiliary building wall. During single supply header operation, the total length of piping in the auxiliary building on the in-service header that cannot be isolated will only be approximately 14 feet per unit. In order to avoid the consideration of a moderate energy pipe break in this section, the reliability of the piping was increased by designing pipe supports to minimize the predicted stress level and by the inclusion of this piping in Catawba's augmented inservice inspection program. If the leaking portion of piping is in a section that is not desirable to isolate, the leak may be plugged and a Code repair performed by welding an ASME Class III pipe cap over the flaw, without draining the piping or taking the piping out of service. Mitigating actions for valve packing leakage or other mechanical joint leakage would be addressed with current maintenance practices, and could be performed without removing the component from service. The value for maximum credible external passive failure leakage is 50 gpm, which bounds the calculated packing leakage rate through the 30-inch butterfly valves located just inside the auxiliary building wall. With this amount of continuous leakage, the NSWS can still provide adequate flow to all essential components. Also, it can be shown that the long-term diversion of flow from returning to the SNSWP can be tolerated without a significant loss of level in the SNSWP. This consideration is required since following a loss of Lake Wylie, the NSWS will be aligned to the SNSWP on a long-term basis.

The unisolable locations in the diesel generator buildings are the areas between the diesel generator building outside walls and the first isolation valves in the NSWS. These unisolable locations comprise approximately 12 feet per unit. In order to avoid the consideration of a moderate energy pipe break in the unisolable piping section between the diesel generator building wall and the first isolation valves, the reliability of this piping has been increased by support design changes which reduced the postulated piping stress to minimal levels (in order to preclude a postulated leak in this piping section). If the leaking portion of piping is in a section that is not desirable to isolate, the leak may be plugged and a Code repair performed by welding an ASME Class III pipe cap over the flaw, without draining the piping or taking the piping out of service. Mitigating actions for valve packing leakage or other mechanical joint leakage would be addressed with current maintenance practices, and could be performed without removing the component from service. For the external leak passive failure flooding consideration of the diesel generator rooms, each diesel generator is provided with a sump and with two nuclear safety related sump pumps. Each sump pump has a 50 gpm capacity. These pumps have adequate capacity to provide long-term mitigation of an external leak passive failure in a diesel generator room. Similar to the auxiliary building piping, the maximum assumed value for credible external passive failure leakage in the diesel generator rooms is 50 gpm. This is conservative compared to the auxiliary building leakage, as the diesel generator room credible source is a packing leak through a smaller 10-inch Fisher butterfly valve. (Currently, the sump pump capability for Unit 1 is not functional. This has no effect on the operability of the Unit 1 diesel generators. Prior to utilizing the TS Condition governing single supply header operation, it will be verified that the sump pump capability for Unit 1 is functional.) With this amount of continuous leakage, the NSWS can still provide adequate flow to all essential components. Also, it can be shown that the long-term diversion of flow from returning to the SNSWP can be tolerated without a significant loss of level in the SNSWP. This consideration is required since following a loss of Lake Wylie, the NSWS will be aligned to the SNSWP on a long-term basis.

10. Page 14, third full paragraph, the first sentence starts with "from a flooding standpoint of flow adequacy, it can be shown that the NSWS can provide adequate flow on a

long-term basis to shutdown the units." Clarify the "adequate flow on a long-term basis" statement. Discuss the alternate cooling capabilities to maintain both units in safe shutdown conditions when the out-of-service supply header could not be returned to service during a single supply header operation with an un-isolable piping rupture.

Duke Response: The pipe rupture event is considered an initiating event and concurrent design basis events are not assumed, unless they are the result of the pipe rupture. A subsequent failure of an active component is assumed which may hinder the mitigation of the leak. Since the failure of Lake Wylie is not assumed, there will not be a long-term diversion of return flow to the SNSWP which could reduce heat sink inventory. Therefore, leakage from a pipe rupture on the in-service supply header is not limited by the mission time for the NSWS (30 days), since the system remains aligned to Lake Wylie. The postulated leakage rate from a pipe rupture can be tolerated, while still maintaining adequate NSWS flow to essential components, to maintain both units in safe shutdown until the out-of-service supply header can be returned to service.

11. Page 19, Table 1, Figure 9 discussion. Confirm that the single supply header configuration will not be operated and is prohibited (rather than *is not allowed* as proposed) when one unit is at full power and the other is in shutdown or refueling conditions and one diesel generator is out of service. The proposed revision to the Bases 3.7.8-3 LCO 2 should clearly delineate this expectation and prohibition.

Duke Response: The proposed TS Bases changes have been revised to reflect this prohibition (pages B 3.7.8-3 and B 3.7.8-5).

BASES

LCO (continued)

While the NSWS is operating in the single supply header alignment, one of the supply headers is removed from service in support of planned maintenance or modification activities associated with the supply header that is taken out of service. In this configuration, each NSWS train is considered OPERABLE with the required NSWS flow to safety related equipment being fed through the remaining OPERABLE NSWS supply header. While the NSWS is operating in the single supply header alignment, an NSWS train is considered OPERABLE during MODES 1, 2, 3, and 4 when:

a. The associated train related NSWS pumps are OPERABLE; and

b. The associated piping (except for the supply header that is taken out of service), valves, and instrumentation and controls required to perform the safety related function are OPERABLE.

The NSWS system is shared between the two units. The shared portions of the system must be OPERABLE for each unit when that unit is in the MODE of Applicability. Additionally, both normal and emergency power for shared components must also be OPERABLE. If a shared NSWS component becomes inoperable, or normal or emergency power to shared components becomes inoperable, then the Required Actions of this LCO must be entered independently for each unit that is in the MODE of applicability of the LCO, except as noted in a.2 above for operation in the normal dual supply header alignment. In this case, sufficient flow is available, however, this configuration results in inoperabilities within other required systems on one unit and the associated Required Actions must be entered. Use of a NSWS pump and associated diesel generator on a shutdown unit to support continued operation (> 72 hours) of a unit with an inoperable NSWS pump is prohibited.

APPLICABILITY

In MODES 1, 2, 3, and 4, the NSWS is a normally operating system that is required to support the OPERABILITY of the equipment serviced by the NSWS and required to be OPERABLE in these MODES.

In MODES 5 and 6, the requirements of the NSWS are determined by the systems it supports.

BASES

ACTIONS (continued)

In order to prevent the potential for NSWS pump runout, the single NSWS pump flow balance alignment is prohibited while the NSWS is aligned for single supply header operation.

Condition B is modified by two Notes. Note 1 requires immediate entry into Condition A of this LCO if one or more NSWS components become inoperable while in this Condition and one NSWS train remains OPERABLE. With one remaining OPERABLE NSWS train, the NSWS can still perform its safety related function. However, with one inoperable NSWS train, the NSWS cannot be assured of performing its safety related function in the event of a single failure of another NSWS component. The most limiting single failure is the failure of an NSWS pit to automatically transfer from Lake Wylie to the SNSWP during a seismic event. While the loss of any NSWS component subject to the requirements of this LCO can result in the entry into Condition A, the most common example is the inoperability of an NSWS pump. This occurs during periodic testing of the emergency diesel generators. Inoperability of an emergency diesel generator renders its associated NSWS pump inoperable. Note 2 requires immediate entry into LCO 3.0.3 if one or more NSWS components become inoperable while in this Condition and no NSWS train remains OPERABLE. In this case, the NSWS cannot perform its safety related function.

<u>C.1 and C.2</u>

If the NSWS train cannot be restored to OPERABLE status within the associated Completion Time, or if the NSWS supply header cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in 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.