

January 28, 2002

Mr. M. S. Tuckman
Executive Vice-President
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Duke Energy Corporation
PO Box 1006
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SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF THE
MCGUIRE NUCLEAR STATION, UNITS 1 AND 2, AND CATAWBA NUCLEAR
STATION, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (LRA)

Dear Mr. Tuckman:

By letter dated June 13, 2001, Duke Energy Corporation (Duke) submitted for Nuclear Regulatory Commission (NRC) review an application, pursuant to 10 CFR Part 54, to renew the operating licenses for the McGuire Nuclear Station, Units 1 and 2, and Catawba Nuclear Station, Units 1 and 2. The NRC staff is reviewing the information contained in this license renewal application and has identified, in the enclosure, areas where additional information is needed to complete its review. Specifically, the enclosed request for additional information (RAI) is from the following section(s) of the LRA:

Section 2.3.3, System Scoping and Screening Results: Auxiliary Systems

Please provide a schedule by letter, or electronic mail for the submittal of your response within 30 days of the receipt of this letter. Additionally, the staff would be willing to meet with Duke prior to the submittal of the response to provide clarification of the staff's request for additional information.

Sincerely,

/RA/

Rani L. Franovich, Project Manager
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket Nos. 50-369, 50-370, 50-413 and 50-414

Enclosures: As stated

cc w/encl: See next page

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Division of Regulatory Improvement Programs
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DATE: January 23, 2002

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR THE REVIEW OF
THE MCGUIRE NUCLEAR STATION, UNITS 1 AND 2, AND CATAWBA
NUCLEAR STATION, UNITS 1 AND 2, LICENSE RENEWAL
APPLICATION

ORIGINATOR: Rani Franovich

SECRETARY: S. Chey

●●●DRIP ROUTING LIST●●●		
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ADAMS ACCESSION NUMBER: **ML** DATE ENTERED: / /02

FORM 665 ATTACHED and filled out: **YES NO**

COMMITMENT FORM ATTACHED: **YES NO**

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Request for Additional Information
McGuire Nuclear Station, Units 1 and 2, and
Catawba Nuclear Station, Units 1 and 2

2.3.3.3 Building Heating Water System

- 2.3.3.3-1 The building heating water system is a non-safety system whose postulated failure could prevent satisfactory accomplishment of certain safety-related functions. To preclude these postulated failures, portions of this system are seismically designed (i.e., Duke Class F) and are within the license renewal boundary. Catawba drawings CN 1606-1.0 (at J-14), CN 1606-1.6 (at J-3), CN 1606-1.7 (at J-7/8), CN 1606-1.8 (at J-5 and J-9), and CN-1606-1.9 (at K-14) indicate that the boundaries end in segments of pipe that are non-isolable and do not appear to coincide with structural boundaries (e.g., building walls). The staff questions the termination of Class F piping depicted on the license renewal drawings at locations other than building walls or valves. Please provide the function(s) that is (are) being protected from failure of the building heating water Class F piping at these locations and the nature of the postulated failure (e.g., pipe whip, flooding, etc.) so that the staff can confirm that the safety-related functions are being adequately protected considering the extent of the boundaries for the Class F pipe designations.

2.3.3.5 Component Cooling System

- 2.3.3.5-1 For Catawba Unit 1, component cooling water (KC) pumps 1, 2, 3 and 4 on drawing CN-1573-1.0 contain license renewal boundary changes at what appear to be two 3/4" lines from each pump with an apparent class change (2 to 3) immediately adjacent to the pumps. Similarly sized lines for these pumps have boundary changes at the first valve. For Unit 2 drawing CN-2573-1.0, the analogous pipe segments are also not highlighted; however, these segments do not have a License Renewal Flag to indicate the boundary. What are the functions of these lines and why is it acceptable to have a boundary that is non-isolable (i.e., are these non-valved leak-off lines)?
- 2.3.3.5-2 The Post Accident Liquid Sample Panel II+ cooler is depicted as outside the license renewal boundary on drawings CN-1573-1.0 and CN-2573-1.0. The KC pipe class changes to Class E (nonsafety-related; QA CONDITION 2 which is applied to systems designed to normally carry a radioactive fluid; however, they are considered non-nuclear safety systems, since a component failure would not result in a calculated potential exposure in excess of the limits established in 10 CFR 20) at the boundaries. However, failure of this piping would appear to prevent satisfactory accomplishment of the functions of 10 CFR 54.4(a) (prevention or the mitigation of an accident based on results obtained from the sample panel). Explain why these lines are not within scope of license renewal.

- 2.3.3.5-3 Note 9 on drawing CN-1573-1.1 states that “Crossover/overflow line connects near the top of each surge tank.” Does this note apply separately to what appears to be a single crossover line (J-5 to J-10) and a single overflow line (I-5 to I-10) connecting KC Surge Tanks 1A and 1B? If so, and since the overflow line is depicted as outside the license renewal boundary, how can the crossover line fulfill its license renewal function if the overflow line is not intact? Also address the analogous situation for Catawba Unit 2, which is described in note 10 on drawing CN-2573-1.1.
- 2.3.3.5-4 Catawba Unit 1 Drawing CN-1573-1.2 depicts what appears to be a (non-highlighted) blank flange at coordinates G-2. Is this component within the license renewal boundary? If not, state the basis. If so, is there a stated convention for depicting such components on the license renewal drawings?
- 2.3.3.5-5 Catawba Unit 1 and Unit 2 Drawings CN-1573-1.3 and CN-2573-1.3 identify that the KC coolers for the reactor vessel supports and associated piping are classified safety-related (line listing 01 and 37; both class C). Similarly, McGuire Unit 1 and Unit 2 Drawings MCFD-1573-03.01 and MCFD-2573-03.01 identify that the KC coolers for the reactor vessel supports and associated piping are classified safety-related (line listing 16 and 40; both class C). Why are these coolers and piping considered outside the scope of license renewal?
- 2.3.3.5-6 Catawba Unit 2 Drawing CN-2573-1.3 appears to have been erroneously drafted omitting the highlighting to depict the reactor coolant drain tank heat exchanger as within the scope of license renewal. The similar heat exchanger for Unit 1 on drawing CN-1573-1.3 is within scope; and Table 3.3-7 Aging Management Review Results – Component Cooling System, has appropriate entries for the reactor coolant drain tank heat exchanger. Please confirm above understanding of the correct boundary highlighting.
- 2.3.3.5-7 Catawba Unit 1 and Unit 2 Drawings CN-1573-1.4, CN-1573-1.7, CN-2573-1.4, and CN-2573-1.7 have indications that are unclear to the reviewer (not explained in the drawings for flow diagrams) for the various reactor coolant pump motor coolers and thermal barriers. Confirm whether these (D, E, H, I, J, K, and U) are bolted connection points or some other component.
- 2.3.3.5-8 Note 5 on Catawba Unit 1 and Unit 2 Drawings CN-1573-1.4, CN-1573-1.7, CN-2573-1.4, and CN-2573-1.7, indicates that the reactor coolant pump upper motor bearing cooler connection “T” on the top of the bearing cooler should be plugged. It appears there is no listing on Table 3.3-7 Aging Management Review Results – Component Cooling System corresponding to this plug. A plug valve is discussed in Table Note 4, but this appears to correlate to valve 1KC401 (as well as other valves), which is described as a valve inside the oil enclosure. Address why this plug is not subject to an AMR for its apparent pressure boundary intended function, or clarify the discussion in table.
- 2.3.3.5-9 It is unclear how temperature elements in pipe segments that are within scope of license renewal have been addressed. For example, Catawba Unit 1 and Unit 2 Drawings CN-1573-1.4, CN-1573-1.7, CN-2573-1.4, and CN-2573-1.7 depict

temperature elements (1KCTE5880, 1KCTE5920, 1KCTE5890, 1KCTE5930, etc.), which appear to be installed in thermowells in piping within scope of license renewal. The thermowells for these temperature elements are not highlighted nor are the wells or temperature elements included within Table 3.3-7, Aging Management Review Results – Component Cooling System. Section 2.5 Scoping And Screening Results: Electrical And Instrumentation And Controls, notes that the pressure boundary function associated with RTDs and thermocouples is included in the process of identifying the mechanical pressure boundaries and is included in the applicable mechanical reviews within the application (e.g., Sections 2.3, 3.1, 3.2, 3.3, and 3.4).

Similarly for McGuire, Drawing MCFD-573-02.02 depicts temperature transmitters (1KCTX5340 and 1KCTX5380) in piping within scope of license renewal. It is not clear whether these instruments are located in thermowells or whether there are wells included within Table 3.3-6, Aging Management Review Results – Component Cooling System.

For both stations, clarify whether these are wells or temperature elements and whether they are within scope for pressure boundary intended function. If wells are used, address whether the heat transfer intended function should be subject to an aging management review.

- 2.3.3.5-10 It is unclear if several interfacing components, depicted on Catawba Unit 1 and Unit 2 Drawings CN-1573-2.2, CN-1573-2.3, CN-2573-2.2, and CN-2573-2.3, that are cooled by KC are considered within or outside the scope of license renewal. These components (from drawing CN-1573-2.2, analogous components on other drawings) include various pump oil coolers (e.g., the safety injection pump bearing; the centrifugal charging pump speed reducer; and the centrifugal charging pump bearing). These components interface with vendor supplied oil. Please confirm that there is no separate system (pump and tubing) that circulates the oil through the pump coolers. If there is a separate oil system that performs this function, please indicate if that system is within the scope of license renewal and subject to an AMR.
- 2.3.3.5-11 For McGuire Unit 1 drawing MCFD-1573-01.01, explain why vacuum breaker 1KC0123 (at I-5) for the component cooling surge tank and the associated pipe segment are not depicted in scope of license renewal. It would appear that protection from vacuum conditions is an intended function, considering the tank can be automatically isolated from vent path. The similar vacuum breaker for McGuire Unit 2 is shown on drawing MCFD-2573-01.01 to be within scope.

- 2.3.3.5-12 For McGuire Unit 1 drawing MCFD-1573-02.00, it appears that vent valve 1KC0884 (at C-10) and associated 1" line were erroneously not depicted in scope of license renewal for pressure boundary intended function. Please confirm or explain why these are not in scope.
- 2.3.3.5-13 For drawings MCFD-1573-03.00 and MCFD-2573-03.00, clarify the status of flow transmitters and associated instrument lines for the reactor coolant pump motor upper bearing coolers. These are noted as abandoned in place; however most (6 of the 8 transmitters) remain depicted as connected to the remaining instrumentation lines. The drawing notes that all instrument lines normally open to the process system; through and including the instrument, are included in license renewal scope, however in general these lines are not flagged. Are the instruments/lines in question included in scope for pressure boundary intended function?

2.3.3.6 Condenser Circulating Water System

- 2.3.3.6-1 Section 10.4.5.1 of the McGuire UFSAR notes that the condenser circulating water (RC) system is designed to use water from Lake Norman to remove rejected heat from the main and feedwater pump turbine condensers and other selected plant heat exchangers. It also serves as the normal supply for the conventional low pressure service water system and the fire protection system jockey pumps and a secondary supply for the nuclear service water (RN) system. However, the LRA notes that the RC system provides a suction source of water for the turbine driven auxiliary feedwater pump, and does not mention an intended function for the fire protection jockey pump or the secondary supply for the RN system mentioned above.

Why are the secondary supply to the RN system and/or the supply to the fire protection system jockey pumps not considered to be intended functions of the RC system? If these connections are on other drawings please provide the reference.

- 2.3.3.6-2 Is the path(s) to supply water from the RC system to the turbine driven auxiliary feedwater pump through the two connections to the RN system discharge headers which are shown on drawing MCFD-1604-01.02 (C-7), with a continuation of the license renewal boundaries noted on the drawing? If not, where is this suction source provided and depicted on the RC system license renewal drawings?
- 2.3.3.6-3 Are the connections for the RN system shown on drawing MCFD-1604-01.02 (C-7) intended to provide a path for discharge of water as an intended function? If so, clarify how this function is provided by the RC system.
- 2.3.3.6-4 According to all three McGuire flow diagrams reference in the LRA for the RC system scoping review, the license renewal boundaries are, for the most part, placed in the middle of pipe runs and not at isolable boundaries such as valves. The boundaries coincide with flags for the standby shutdown facility. Does the basis of these boundaries relate to a particular volume of water that is contained

within the piping? If not, state the basis for identifying the license renewal boundary at locations that are not isolable by a valve. If so; provide isometric drawings or calculations which depict where/how the water is entrapped for its intended function to allow verification that the boundaries have been correctly shown on the LRA drawings.

- 2.3.3.6-5 For drawings CN-1604-1.0 and CN-2604-1.0, clarify whether the non-highlighted 4" drain lines on the suction of the Catawba RC pumps up to the discharge of the drain valves (e.g., 1RC34) are included in license renewal scope. The drawing convention states that vents and drains attached to license renewal piping are within scope unless otherwise indicated, and that license renewal flags are not shown in general. For example, on the same drawing, the 4" vent lines on the circulating water pump casings are depicted as within license renewal scope (by highlighting) up to the valve discharge, even though a license renewal flag is not drawn at that point. If these drain lines are not within scope, please address how the pressure boundary intended function is satisfied.
- 2.3.3.6-6 The expansion joints (2RC7, etc.) on the discharge of the condenser circulating water pumps are highlighted in red for Catawba Unit 2 on drawing CN-2604-1.0. The similar joints (1RC7, etc.) are just depicted as within the license renewal boundary without a highlight change on Catawba Unit 1 drawing CN-1604-1.0. Is there a significance to the highlight change for these expansion joints between units? Why aren't expansion joints listed as a component subject to aging management review in Table 3.3-8 Aging Management Review Results – Condenser Circulating Water System (Catawba only)?
- 2.3.3.6-7 Why are license renewal boundary flags placed on the suction and discharge flanges of the RC pumps? The pump casings are depicted as within scope on both Catawba Unit 1 drawing CN-1604-1.0 and Catawba Unit 2 on drawing CN-2604-1.0; however, the flags point in different directions on these drawings. Pump casings are listed as subject to aging management review in Table 3.3-8 Aging Management Review Results – Condenser Circulating Water System (Catawba only). The attached piping is highlighted as within scope for both units.
- 2.3.3.6-8 Please confirm that the license renewal boundary flag at coordinates C-4 on Catawba Unit 1 drawing CN-1604-1.2 is apparently erroneously single-sided. (The continuation on drawing CN-1592-1.0 remains within license renewal scope).
- 2.3.3.6-9 Section 10.4.5.3 of the McGuire UFSAR addresses flooding of the Turbine Building from failure of the circulating water system. A failure of the expansion joint at the condenser connection to the cooling water pipe is considered in the design. The UFSAR notes that the flooding analyses credit reduced clearance of the expansion joint, together with curbs 1.25 feet high at all openings to the Auxiliary Building, to contain this flood water in the Turbine Building basement. This expansion joint design and curbing provides 40.2 minutes of storage in the Unit 1 Turbine Building basement and allows time for action to be taken to control the flooding while protecting safety related equipment in the Auxiliary

Building from this potential flood level. Why aren't the circulating water system expansion joints and the Turbine Building basement curbs protecting the openings to the Auxiliary Building within the scope of license renewal in accordance with 10 CFR 54.4 paragraph (a)(2)?

- 2.3.3.6-10 Catawba UFSAR section 10.4.5.3 notes that the maximum water level due to a simultaneous failure of the KC systems on both units and the subsequent draining of all water in the two closed loop cooling systems back to their respective Turbine Buildings will result in a maximum water elevation of 576.95'. All penetrations and passageways from the Turbine or Service Buildings to the Auxiliary Building are stated to be watertight to EL. 577.5', which will protect safety-related equipment from failure of the KC system. Have the water-tight features of the penetrations and passageways between these buildings and the Auxiliary Building have been included within the scope of license renewal in accordance with 10 CFR 54.4 paragraph (a)(2)?

2.3.3.8 Chilled Water Systems

- 2.3.3.8-1 McGuire Nuclear Station LRA drawing MCFD-1618-01.00 depicts two Airtrol tank fittings at coordinates J-2 and C-2 as within the scope of license renewal. Catawba Nuclear Station LRA drawings CN-1578-2.0 and CN-1578-2.2 each depict an Airtrol fitting at coordinates B-11. However, Tables 3.3-9 and 3.3-10, Aging Management Review Results – Control Area Chilled Water System, do not have explicit entries corresponding to these tank fittings, although there are entries for piping and air tanks. Please explain or add to the AMR Tables.
- 2.3.3.8-2 The vent and drain lines on Control Area Chilled Water (YC) Pump P-1 up to valves 1YC0011 and 1YC0012 (McGuire Nuclear Station LRA drawing MCFD-1618-01.00 - L-7) appear to have been erroneously not highlighted as within license renewal scope, based on the drawing note on license renewal flags and the highlighting shown on drawing for YC Pump P-2. Several other segments of valved vent lines on this drawing appear to have erroneously omitted the license renewal highlighting (1YC0070 and 1YC0059 coordinates E-13 and J-7). Please confirm the correct boundaries.
- 2.3.3.8-3 The compressors are depicted as within license renewal scope on LRA drawings MCFD-1618-04.00 (at G-4 and G-11), and CN-1578-2.4 and CN-1578-2.5 (at H-7). Why are there no entries for the YC compressor shells or cases in Tables 3.3-9 and -10, Aging Management Review Results – Control Area Chilled Water System for McGuire and Catawba?

- 2.3.3.8-4 Two refrigerant lines for YC Chiller C-1 (between the condenser and the economizer and between the compressor and the oil cooler), appear to have been erroneously omitted from license renewal scope on LRA drawing MCFD-1618-04.00. Please confirm these lines are within scope.
- 2.3.3.8-5 On LRA drawing MCFD-1618-04.00, there appear to be two in-line flow indicators that are within the license renewal boundaries, but which don't have tag numbers placed as indicated on the P&ID symbols drawings (E-5, E-11). Although flow indicators are listed in Table 3.3-9, Aging Management Review Results – Control Area Chilled Water System (McGuire Nuclear Station), please confirm whether or not these particular items are flow indicators that are included in the aging management review results.
- 2.3.3.8-6 Catawba Nuclear Station Control Area Chilled Water System LRA drawings CN-1578-2.0, 2.1, 2.2, 2.3, 2.4 and 2.5 each depict one or more thermowells installed within segments of piping that are within the scope of license renewal. However, the thermowells themselves are not highlighted, nor are there any entries in Table 3.3-10, Aging Management Review Results – Control Area Chilled Water System, corresponding to thermowells. Please confirm that these thermowells are within scope for license renewal. Address whether the thermowells should be included for aging management review of their heat transfer component function in addition to pressure boundary. Confirm that thermowells are not used in the McGuire control area chilled water system, or address their use and treatment for license renewal intended function.
- 2.3.3.8-7 Catawba Nuclear Station Control Area Chilled Water System LRA drawings CN-1578-2.0, -2.1, -2.2 and -2.3 all have a note which states “Actuator failed to the normally open position, power/control wiring disconnected and hydraulic fluid drained from actuator. Valve position maintained by actuator spring.” These notes apply to various YC system two-way valves which would bypass flow from the fan coolers if in the alternate position (e.g., valves 1YC58 and 1YC26 on drawing CN-1578-2.0 at E-5 and E-12).
- It would appear that these valves are passive devices held in the intended position by the springs. Address why these springs are not be subject to an AMR to ensure they retain the ability to maintain the position and passive nature of these valves. Alternatively, provide a basis for why these components are considered active and not subject to an AMR.
- 2.3.3.8-8 Why isn't the tubing to (apparent) back-pressure regulating valves 1YC116 and 1YC72, shown on drawings CN-1578-2.0 and -2.2 (at D-11), depicted as within the scope of license renewal for pressure boundary function?

2.3.3.10 Diesel Building Ventilation System

- 2.3.3.10-1 McGuire plant flow diagram, MC-1579-1, for the diesel building ventilation system indicates the diesel building normal heating coils are within the scope of license renewal. McGuire plant flow diagram, MC-2579-1 for the diesel building ventilation system indicates the diesel building normal heating coils are not within the scope of license renewal. Include the diesel building normal heating coils in the scope of license renewal on flow diagram MC-2579-1 and identify where in the LRA is the AMR for the diesel building normal heating coils or provide a justification for excluding these coils from Table 3.3-13 and an AMR.

2.3.3.11 Diesel Generator Engine Air Intake and Exhaust System

- 2.3.3.11-1 McGuire drawings MCFD-1609-05.00 and MCFD-2609-05.00 depict the portions of the diesel generator engine air intake and exhaust system that are within the scope of license renewal. These drawings indicate that the diesel generator air intake manifold, exhaust manifold, and turbo chargers are within the scope of license renewal. The passive portions of these components (e.g., turbo charger housing, etc.) have a pressure boundary intended function, however, they do not appear to be included in Table 3.3-14 as components subject to aging management review (AMR).

Similarly, Catawba drawings CN-1609-5.0 and CN-2609-5.0 depict the portions of the diesel generator engine air intake and exhaust system that are within the scope of license renewal for Catawba, Units 1 and 2, respectively. These drawings indicate that the diesel generator air intake manifold, exhaust manifold, and turbo chargers are within the scope of license renewal. The passive portions of these components (e.g., turbo charger housing, etc.) have pressure boundary intended functions, but are not included in Table 3.3-14 as components subject to AMR.

Please explain where these components are addressed in the application. If these components were not considered to be subject to an AMR, please provide the basis for this conclusion.

2.3.3.12 Diesel Generator Engine Cooling Water System

- 2.3.3.12-1 The staff reviewed the list of components identified as being subject to an AMR in Table 3.3-15 of the application, and compared the list with the passive long lived components identified as being within the scope of license renewal on McGuire drawings MCFD-1609-01.00, MCFD-1609-01.01, MCFD-2609-01.00, and MCFD-2609-01.01. The staff identified two passive, long-lived components identified on the drawings as being within the scope of license renewal that were not identified as being subject to an AMR in Table 3.3-15. These components are the turbo charger turbine cooling supply/return (e.g., heat exchanger tubes) and the flexible hose (located at coordinates K-4 on the drawings). Both of these components

have pressure boundary intended functions. Please explain how these components are addressed in the application, or provide the basis for not subjecting them to an AMR.

- 2.3.3.12-2 Catawba drawings CN-1609-1.0 and CN-2609-1.0 depict the portions of the diesel engine cooling water system that are within the scope of license renewal for Catawba, Units 1 and 2, respectively. These drawings indicate the turbo charger aftercoolers and engine jacket are within the scope of license renewal. The passive portions of these components (e.g., turbo charger housing, tubes, etc.) have pressure boundary intended functions, but are not included in Table 3.3-16 as components subject to AMR. Please explain where these components are addressed in the application. If these components were not considered to be subject to an AMR, please provide the basis for this conclusion.

2.3.3.13 Diesel Generator Crankcase Vacuum System

- 2.3.3.13-1 McGuire drawings MCFD-1609-06.00 and MCFD-2609-06.00 depict the portions of the diesel generator engine crankcase vacuum system that are within the scope of license renewal. These drawings indicate that there are two flexible hose connections on either side of the diesel generator crankcase vacuum blower that are within the scope of license renewal. The components are passive and should have a pressure boundary intended function, however, they do not appear to be included in Table 3.3-17 as components subject to aging management review (AMR). Please explain how these components are addressed in the application, or provide the basis for not subjecting them to an AMR.
- 2.3.3.13-2 Catawba drawings CN-1609-6.0 and CN-2609-6.0 depict the portions of the diesel generator engine crankcase vacuum system that are within the scope of license renewal. The Catawba UFSAR does not provide any written description of this system. It is not apparent from the drawings how this system accomplishes its intended function of reducing the concentration of combustible gases in the crankcase. As a result, the staff is unable to determine if all inscope, passive, long-lived components have been adequately captured for AMR. For instance, the drawings do not show a blower, nor is one listed for Catawba in Table 3.3-17 (the table of components determined by the applicant to be subject to an AMR). The staff notes that it is not uncommon for this type of system to utilize a vacuum blower. Without an explanation of how the system performs its intended function, the staff cannot determine whether no blower is listed in Table 3.3-17 because of how the system is designed or because of an inadvertent oversight by the applicant. Accordingly, please provide an explanation as to how this system performs its safety function.

2.3.3.14 Diesel Generator Fuel Oil System

- 2.3.3.14-1 McGuire drawings MCFD-1609-03.00, MCFD-1609-03.01, MCFD-2609-03.00 and MCFD-2609-03.01 depict the portions of the diesel generator fuel oil system that are within the scope of license renewal. These drawings indicate that there are flexible hose connections on either side of the diesel generator engine that are within the scope of license renewal. The components are passive and should have a pressure boundary intended function, however, they do not appear to be included in Table 3.3-18 as components subject to AMR. Please explain how these components are addressed in the application, or provide the basis for not subjecting them to an AMR.
- 2.3.3.14-2 The McGuire diesel generator engines are equipped with features that collect leaking fuel oil and route it to the used oil storage tank. Specifically, Section 9.5.4.2 of the McGuire UFSAR states, “A diesel fuel oil drain header is located on each side of the engine. These headers are connected by individual pipes to cavities in the cylinder heads and in the injection pump deck of the frame. Oil leaking past the plunger and barrel of the injector pump and past the fuel injector spring seat returns through these lines to the drip tank. From here the oil is routed to the used oil storage tank.” The intended function of this oil collection feature is not specifically stated; however, in general, oil collection systems function to ensure that leaking oil will not lead to a fire that could damage safety-related equipment. This intended function appears to meet scoping the criteria of 10 CFR 54.4(a)(2) or 10 CFR 54.4(a)(3). As stated above, McGuire drawings MCFD-1609-03.00, MCFD-1609-03.01, MCFD-2609-03.00 and MCFD-2609-03.01 depict the portions of the diesel generator fuel oil system that are within the scope of license renewal. Drawings MCFD-1609-03.00 and MCFD-1609-03.01 do not show the fuel oil collection system as being within the scope of license renewal. Drawings MCFD-2609-03.00 and MCFD-2609-03.01, however, show a portion of the piping for the fuel oil collection system as being within the scope of license renewal. The boundary of the inscope portion of the piping is not clearly defined. If the applicant determined during the preparation of their license renewal application (LRA) that the fuel oil leakage collection piping is within the scope of license renewal, then please provide a clarification as to the extent to which the piping and components (e.g., diesel generator fuel oil drip tank, diesel generator fuel oil drip tank pump, etc.) are within the scope of license renewal, and the basis for the boundary. If the applicant determined that the fuel oil leakage collection system is not within the scope of license renewal, then please provide the basis for this conclusion given the potential fire hazard that could be created if this system failed.
- 2.3.3.14-3 Catawba drawings CN-1609-3.0, CN-1609-3.1, CN-2609-3.0 and CN-2609-3.1 depict the portions of the diesel generator fuel oil system that are within the scope of license renewal. These drawings show the fuel oil day tank retaining wall as not within the scope of license renewal. However, the Catawba UFSAR provides descriptions of the intended functions of this wall. For instance, Section 9.5.4.3 of the Catawba UFSAR states the retaining wall is a fire barrier protecting the fuel oil day tank. Section 7.6.15.1 of the UFSAR further states that the retaining wall serves as a containment for any leakage from the day tank, and

the level in the retaining wall is alarmed to the control room to alert operators to an abnormal operating condition (i.e., excessive leakage). It appears from the UFSAR that the fuel oil day tank retaining wall meets the criteria of 10 CFR 54.4(a)(2) [and possibly 10 CFR 54.4(a)(3)], and therefore, should be included within the scope of license renewal. Please provide either the basis for not including the retaining wall within the scope of license renewal, or an explanation as to where the application addresses this structure.

- 2.3.3.14-4 Catawba drawing CN-2609-3.1, "Flow Diagram of Diesel Generator Engine Fuel Oil System (FD)," indicates that piping from valve 2FD41 to valve 2FD43 (at L-3) is not within the scope of license renewal. These are Duke Class C (ASME Class 3) components. Please indicate if the piping from valve 2FD41 to valve 2FD43 is within the scope of license renewal and, if it is, confirm that this piping is addressed in the AMR table. If this piping is not within the scope of license renewal, please provide a justification for excluding it.

2.3.3.15 Diesel Generator Lube Oil System

- 2.3.3.15-1 Do the McGuire diesel generator engines have a system to collect leaking lube oil? The UFSAR does not discuss one, and there does not appear to be one shown on the diesel generator engine lube oil system drawings (drawings MCFD-1609-02.00, MCFD-1609-02.01, MCFD-2609-02.00 and MCFD-2609-02.01). However, it seems logical that there may be some features incorporated into the diesel generator engine lube oil system to do this. Please indicate if diesel engines are designed to collect lube oil leakage and transport it away from the diesel. If so, please explain how the collection system is addressed in the application. If the applicant does not believe that this system is within the scope of license renewal, please provide the basis for this conclusion.
- 2.3.3.15-2 Do the Catawba diesel generator engines have a system to collect leaking lube oil? Section 9.5.7.2.1 of the Catawba UFSAR states that "Oil leakage from the diesel is collected in a sump in the diesel room." However, a lube oil leakage collection system does not appear to be one shown on the diesel generator engine lube oil system drawings (drawings CN-1609-02.00, CN-1609-02.02, CN-2609-02.00 and CN-2609-02.02). The intended function of this oil collection feature is not specifically stated; however, in general, oil collection systems function to ensure that leaking oil will not lead to a fire that could damage safety-related equipment. This intended function clearly meets the criteria for 10CFR54.4(a)(2). If the applicant determined during the preparation of their license renewal application (LRA) that the lube oil leakage collection system is within the scope of license renewal, then please provide a clarification as to the extent to which the piping and components (e.g., diesel generator lube oil drip tank, diesel generator lube oil drip tank pump, etc.) are within the scope of license renewal, and the basis for the boundary. If the applicant determined that

the lube oil leakage collection system is not within the scope of license renewal, then please provide the basis for this conclusion given the potential fire hazard that could be created if this system failed.

- 2.3.3.15-3 McGuire drawings MCFD-1609-02.00, MCFD-1609-02.01, MCFD-2609-02.00 and MCFD-2609-02.01 are highlighted to indicate the portions of the diesel generator lube oil system (LD) that are within the scope of license renewal for McGuire, Units 1 and 2, respectively. During our review of these drawings, we identified an inconsistency between the two Unit 2 drawings regarding the boundaries of piping/valves that are included within the scope of license renewal. Specifically, on drawing MCFD-2609-02.00, the 1 inch system low point drain piping and associated valve 2LD0092 (located at G-12 on the drawing) and the 1 inch system drain piping and associated valve 2LD0060 (located at G-11 on the drawing) are not shown as being within scope. The same piping and valves (2LD0094 and 2LD0061) on drawing MCFD-2609-02.01 are shown as being within the scope of license renewal. It appears that in both cases, drawing MCFD-1609-02.01 may be correct. The drain and test vent piping and valves should be within scope to ensure the pressure boundary of the in scope LD system piping. Please verify that the drain connections cited above are within the scope of license renewal. If they are not within the scope of license renewal, please provide the basis for their exclusion.
- 2.3.3.15-4 As noted in the previous question, McGuire drawings MCFD-1609-02.00, MCFD-1609-02.01, MCFD-2609-02.00 and MCFD-2609-02.01 depict the portions of the diesel generator lube oil system that are within the scope of license renewal. These drawings indicate that the diesel generator lube oil heater pump is within the scope of license renewal. The passive portions of this component (i.e., pump housing) has a pressure boundary intended function, however, it does not appear to be included in Table 3.3-20 as a component subject to AMR. Please explain how this component is addressed in the application, or provide the basis for not subjecting it to an AMR.

2.3.3.16 Diesel Generator Room Sump Pump System

- 2.3.3.16-1 McGuire drawings MCFD-1609-07.00 and MCFD-2609-07.00 depict the portions of the diesel generator room sump pump (WN) system that are within the scope of license renewal. Both drawings indicate that the diesel generator room sump is not within the scope of license renewal. According to Section 9.5.10 of the McGuire UFSAR, the WN system is a Class C system. Similarly, Section 9.5.9 of the Catawba UFSAR state that the WN system is a Class C system starting at the room sump. The staff's review of the WN system, however, raises the question as to whether the WN system could perform its safety function should the sump fail. Since the sump collects fluid leakage within the diesel generator room, the WN sump is needed for the WN system to perform its function of protecting the diesel generators from flooding. In addition, significant degradation of the sump walls could potentially create debris that may damage or clog the sump pumps. It appears from the staff's review that the sump meets the criteria of

10 CFR 54.4(a)(2) as a non-safety structure whose failure could prevent the WN system from remaining functional during a design basis event. As such, please provide the basis for not including the McGuire and Catawba diesel generator room sumps within the scope of license renewal.

2.3.3.17 Diesel Generator Starting Air System

- 2.3.3.17-1 McGuire drawings MCFD-1609-04.00 and MCFD-2609-04.00 are highlighted to indicate the portions of the diesel generator engine starting air (VG) system that are within the scope of license renewal for McGuire, Units 1 and 2, respectively. During our review of these drawings, we identified an inconsistency between the two units regarding the boundaries of piping/valves that are included within the scope of license renewal. Specifically, on drawing MCFD-2609-04.00, the 1- $\frac{1}{4}$ inch drain piping and associated valve 2VG0040 coming off the bottom of the 2B2 diesel generator starting air tank located at coordinates B-7 on the drawing are not shown as being within scope. The equivalent piping and valves (2VG0039, 2VG0038, and 2VG0037) for starting air tanks 2B1, 2A2, and 2A1 on the same drawing are shown as being within the scope of license renewal. It appears that the 2B2 diesel generator starting air tank drain piping and valve should actually be within scope to ensure the pressure boundary of the in scope FW system piping. Please verify that this drain connections is within the scope of license renewal. If they are not within the scope of license renewal, please provide the basis for their exclusion.
- 2.3.3.17-2 Table 3-4 of the McGuire UFSAR states that the diesel generator starting air system "Filter - Moisture Traps" are safety class 3 components. However, these components are not listed in Table 3.3-23 as components subject to an AMR, and drawings MCFD-1609-04.00 and MCFD-2609-04.00 do not show these components as being within the scope of license renewal. Please provide the basis for their exclusion from the scope of license renewal.
- 2.3.3.17-3 The staff reviewed the list of components identified as being subject to an AMR in Table 3.3-24 of the application, and compared the list with the passive long lived components identified as being within the scope of license renewal on Catawba drawings CN-1609-4.0, CN-1609-4.1, CN-2609-4.0, and CN-2609-4.1. The staff identified three passive, long-lived components identified on the drawings as being within the scope of license renewal that were not identified as being subject to an AMR in Table 3.3-24. These components are the diesel generator engine starting air compressor body, the diesel generator engine starting air dryers, and the governor oil pressure boost cylinder filter. These components have pressure boundary intended functions. Please explain how these components are addressed in the application, or provide the basis for not subjecting them to an AMR.

2.3.3.19 Fire Protection System

- 2.3.3.19-1 As stated in the teleconference summary dated November 2, 2001, the staff asked the applicant to indicate if the Updated Fire Safety Analysis Report (UFSAR) was reviewed during the scoping evaluation. As stated in the

teleconference summary dated October 2, 2001, the staff also asked the applicant to address if fire protection (FP) structures, systems, and components (SSCs) identified in the UFSAR as required for 10 CFR 50.48 are also identified in the applicant's Quality Assurance (QA) Condition 3 program.

As documented in the November 2, 2001 teleconference summary, the licensee indicated that the UFSAR was reviewed during the scoping evaluation, but that not all of the FP SSC's referred to in the UFSAR were part of the QA Condition 3 program (such as those in areas listed in Section 9.5.1.2.2 of the McGuire UFSAR and those in the turbine, service, and administration building areas listed in Section 9.5.1.2.1 of the Catawba UFSAR). These components were excluded from within scope of license renewal on the basis that they were not required for compliance to 10 CFR 50.48 and are not QA Condition 3.

This does not appear to be consistent with the applicant's QA program, Section 17, "Quality Assurance" which states that QA Condition 3 covers systems, components, items, and services which are important to FP as defined in the fire hazards analysis (FHA) for each station. It also goes on to say that the hazards analysis is in response to Appendix A to Branch Technical Position (BTP) 9.5-1. The staff's position is that exclusion of FP SSC's on the basis that its intended function is not required for protection of safety-related equipment is not acceptable if that SSC is required for compliance to 10 CFR 50.48. 10 CFR 50.48 provides for the protection of all SSC's important to safety to minimize the effects of a fire, as shown in Appendix A to BTP 9.5-1 and as written in General Design Criterion (GDC) 3. It appears that the applicant's QA Condition 3 designation applied to scoping is not inclusive of the entire 10 CFR 50.48 FP program.

Please provide technical justification for the exclusion of the UFSAR components from within the scope of license renewal from UFSAR Sections 9.5.1.2.2 and 9.5.1.2.1 for McGuire and Catawba, respectively. In addition, please submit the current FHA to the staff for McGuire and Catawba.

2.3.3.19-2 through 2.3.3.19-10

The following questions involve components that were identified through the staff's review of license renewal boundaries depicted on flow diagrams. These components were not included in the license renewal boundaries and appear to have FP intended functions required for compliance with 10 CFR 50.48 as stated in 10 CFR 54.4. On this basis, the staff's view is that the components addressed in questions 2.3.3.19-2 through 2.3.3.19-10 should be included within the scope of license renewal.

- 2.3.3.19-2 The McGuire UFSAR, Section 9.5.1.2.3.2, "Reactor Building," specifically states that sprinkler systems are provided for reactor coolant pumps (RCP) 1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D. Flow diagram MCFD-1599-02.02 excludes the FP piping leading to these pumps. As shown in the teleconference summary dated November 2, 2001, the licensee responded that the sprinkler system was installed in response to Oconee operating experience and that this system was never required for compliance to 10 CFR 50.48. In addition, the applicant further indicated that a RCP motor oil collection system had been installed as a backfit

at McGuire and Catawba to isolate oil from potential ignition sources in accordance with Appendix R, Section O. This modification precluded the need for a sprinkler system in these areas. The staff verified that a RCP motor oil collection system had been installed and is satisfied with this information. However, the staff notes that the UFSAR needs to be updated to reflect the modification to the facility and associated obsolescence of the RCP sprinkler system. As such, the staff requests the applicant to indicate that a change to Section 9.5.1.2.3.2 of the UFSAR will be made to indicate that the sprinkler systems that had been provided for reactor coolant pumps (RCP) 1A, 1B, 1C, 1D, 2A, 2B, 2C, 2D are no longer needed to comply with 10 CFR 50.48 because of the modification to install the RCP motor oil collection system.

- 2.3.3.19-3 The McGuire license conditions state that, "Duke Energy shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report (FSAR), as updated, for the facility..." and as approved in the applicable SERs. Section 9.5.1.1 of the McGuire UFSAR states that one of the objectives provided under the design bases for the FP system is to "provide automatic water spray (deluge) systems over oil hazard areas." Specifically, UFSAR Section 9.5.1.2.2, "Fire Protection, Non-Category I Safety Related," specifically states that water spray systems and sprinkler systems are provided for the protection of the oil storage house, the oxygen and acetylene gas storage yard area, compressed flammable gas cylinder storage area, main turbine piping and bearings, unit start-up and standby oil-filled power transformers, main turbine lube oil reservoirs, hydrogen seal oil unit, and the feedwater pump turbines. However, flow diagrams MCFD-1599-01.00 and MCFD-1599-03.00 indicate that the piping leading to these components is excluded from within scope of license renewal. This question and its basis also applies to the lube oil storage house and hazardous waste storage building represented in flow diagram CN-1599-1.0. Since the UFSAR is referenced in the license conditions, and these components are discussed therein, it appears that these components are required to meet the FP license condition as stated above. In addition, in the event of a fire, these components contain flammable liquids, which can be hazardous and can quickly escalate to generate high heat release rates and smoke. Provide justification for the exclusion of this piping from within the scope of license renewal.
- 2.3.3.19-4 The McGuire UFSAR Section 9.5.1.2.1 identifies that hydrants are connected to the yard main. Furthermore, fire hydrants are considered passive and long-lived components in accordance with 10 CFR 54.21. Flow diagrams

MCFD-1599-01.00 and MCFD 1599-03.00 indicate that fire hydrants 07, 24, and 25 are not included within the license renewal boundary. These components appear to have FP intended functions required for compliance with 10 CFR 50.48 as stated in 10 CFR 54.4. The staff asked the applicant to provide the basis for the exclusion of some hydrants, which appear to have FP intended functions with 10 CFR 50.48.

In a teleconference summary dated November 2, 2001, the applicant responded that FP flowpaths that supply water to safety-related areas such as the auxiliary building and reactor building are within the scope of license renewal. These flowpaths are highlighted on the applicable flow diagrams. Some fire hydrants are located along the required fire protection flowpath and are not isolable from the flowpath. These hydrants are shown highlighted on the flow diagrams and are within the scope of license renewal because their pressure boundary loss may prevent water from being supplied to the required areas. Other fire hydrants exist in the fire protection system that are downstream of isolation valves that isolate the required fire protection flowpath from the rest of the system. The license renewal boundaries are located at these isolation valves, as shown on the applicable flow diagrams. Equipment in the portion of the system downstream of the isolation valves and the license renewal boundaries, including any fire hydrants, is not within the scope of license renewal. Furthermore, the applicant stated that no fire hydrants are relied upon to protect safety-related and/or safe shutdown equipment at McGuire.

McGuire is required to meet Appendix A to BTP 9.5-1 and Catawba is required to meet the position documented in CMEB 9.5-1. Accordingly, both documents state that outside manual hose installation should be sufficient to reach any location with an effective hose stream. To accomplish this, hydrants should be installed approximately every 250 feet on the yard main system. Please verify that the hydrants that are excluded from within the scope of license renewal are not located on the yard main system. If there are hydrants on the yard main system which are excluded from within scope of license renewal, address how aging of those hydrants will be managed to ensure that manual hose installation is sufficient to reach any location with an effective hose stream, in accordance with Appendix A to BTP 9.5-1 for McGuire and CMEB 9.5-1 for Catawba. In addition, submit any drawings which can clarify the location of hydrants with respect to plant structures.

- 2.3.3.19-5 Highlighted suction and discharge piping for the fire pumps on flow diagram MCFD-1599-01.00 indicates that the piping is within the scope of license renewal. However, the highlighting does not trace the outline of the fire pumps and associated strainers but passes through them. In a teleconference summary dated November 2, 2001, the applicant responded that the fire pump casings were within the scope of license renewal. However, the convention of highlighting the outline of these components on the flow diagram was not followed such that this was not clear on the flow diagrams. In addition, the strainers were not identified on the flow diagrams as being within the scope of license renewal. Please discuss if the strainers are included in scope and if they

have been included in an aging management program. If they are not, please provide the basis for exclusion.

- 2.3.3.19-6 Flow diagrams MCFD-1599-01.00 and CN-1599-1.0 do not indicate that the jockey pumps are within the scope of license renewal. Operating License Conditions for McGuire and Catawba state, in part, that Duke Energy Corporation shall implement and maintain in effect all provisions of the approved FP program as described in the UFSAR and as approved in the SER through applicable supplements. Supplement 2 of the McGuire SER states that all fire water pumps are installed in accordance with the applicable National Fire Protection Association (NFPA) guidelines. NFPA 20-1980, "Standards for the Installation of Centrifugal Fire Pumps" states that a fire pump shall not be used as a pressure maintenance pump. Section 9.5.1.2.1 of the McGuire UFSAR states that jockey pumps are provided to prevent frequent starting of the fire pumps by maintaining pressure in the yard mains.

Supplement 2 of the Catawba SER states that performance capabilities of the fire pumps meet Section 6.b of the BTP CMEB 9.5-1 and are therefore acceptable. Section 6.b of BTP CMEB 9.5-1 states that the fire pump installation should conform to NFPA 20. NFPA 20-1980 states that a fire pump shall not be used as a pressure maintenance pump. Section 9.5.1.2.1 of the Catawba UFSAR states that jockey pumps are provided to prevent frequent starting of the fire pumps by maintaining pressure on the system.

In a teleconference summary dated November 2, 2001, the applicant indicated that the jockey pumps were not within the scope of license renewal because they are not QA Condition 3 components and because a failure of these components would not cause a loss of intended function. The staff does not have confidence that the QA Condition 3 designation includes all of the components required for compliance 10 CFR 50.48. This has resulted in the exclusion of 10 CFR 50.48 required components such as the jockey pump casings for McGuire and Catawba. Provide justification for (1) the exclusion of the jockey pumps; and (2) the appropriateness of the methodology used to identify FP systems and components that are within the scope of license renewal based solely upon their QA Condition 3 designation (or lack thereof).

- 2.3.3.19-7 Piping to the Unit 1 and 2 containment mechanical equipment building fire hose racks (CN-1599-1.0 at K-10) & sprinklers (CN-1599-1.0 at L-11) that appear to have FP intended functions required for compliance to 10 CFR 50.48 are not highlighted on this flow diagram. In a conference call summary dated November 2, 2001, the applicant indicated that because the Unit 1 and 2 containment mechanical equipment buildings house non-safety-related ventilation equipment that cools the containment building to make it habitable for maintenance, operations, and radiation protection during refueling outages, they are not required by 10 CFR 50.48. The applicant also stated that these buildings are remotely located (one to two hundred feet) from the containment structure. This information is useful; however, it appears to be another case of FP components being excluded on the basis that they are not protecting safety-related equipment even though they appear to have fire protection

intended functions in accordance with 10 CFR 50.48, which includes SSCs important to safety provided to minimize the probability and effect of fires and explosions.

Please indicate if the Unit 1 and 2 containment mechanical equipment building fire hose racks (at K-10) & sprinklers are provided to protect equipment important to safety or to protect against the propagation of fire to surrounding structures (e.g. the refueling water storage tanks). In addition, discuss and submit documentation that supports your position that the hose racks and sprinklers are not required for 10 CFR 50.48.

- 2.3.3.19-8 Section 9.5.1.2.1 of the UFSAR states that manual hose stations and automatic sprinkler or deluge systems are provided for the protection of turbine building components. Piping to the Unit 1 and 2 Turbine building (CN-1599-1.0 at J-8, K-6, C-6, and C-7) are not highlighted on the flow diagram. These components appear to have FP intended functions in accordance with 10 CFR 50.48. On this basis, the staff's view is that this piping should be included within scope of license renewal. In a teleconference summary dated November 2, 2001, the applicant indicated that no safety-related or safe shutdown equipment is housed in the turbine buildings and the fire barriers are available to limit the spread of fire in the turbine building to other buildings that contain safety-related or safe shutdown equipment. This information is helpful to the staff but it does not address the principal concern, that the hose stations and sprinkler deluge systems were installed for compliance to 10 CFR 50.48 as part of the applicant's Appendix A to CMEB 9.5-1 FP program for protection of SSC's important to safety. Provide justification for the exclusion of this piping from within scope of license renewal. In addition, verify that the FHA does not rely upon the use of manual hose stations and automatic sprinkler or deluge systems for the Unit 1 and 2 Turbine Building.
- 2.3.3.19-9 Section 9.5.1.2.1 of the UFSAR states that the RF system provides a fixed water suppression system for charcoal filters. Fire protection piping to charcoal filters is not highlighted on flow diagrams CN-1599-2.1 and CN-1599-2.2. In a teleconference summary dated November 2, 2001, the applicant stated that the charcoal filters are associated with a non-safety-related containment ventilation system equipment that cools the containment building to make it habitable for maintenance, operations, and radiation protection of personnel during refueling outages. As stated before, the exclusion of FP SSC's from within scope of license renewal, on the basis that it is not protecting safety-related SSC's is not acceptable since the scope of 10 CFR 50.48 is not limited solely to the protection of safety-related SSC's. Provide justification for the exclusion of this piping.

- 2.3.3.19-10 Flow diagrams CN-1599-2.1 and CN-1599-2.2 indicate that fire protection system piping from the nuclear service water system to the nuclear service water structure that appears to have FP intended functions required for compliance with 10 CFR 50.48 is not highlighted in these flow diagrams. In a teleconference summary dated November 2, 2001, the applicant responded that a modification had been implemented to install fire hydrants 61 and 62 in the yard outside the nuclear service water pump structure. This modification precluded the need to rely on the nuclear service water system for FP of the pump structure. These fire hydrants were governed by the operability requirements specified in Selected Licensee Commitment 16.9-23, which states that fire hydrants 61 and 62 are required to be operable whenever equipment in the nuclear service water system pump structure is required to be operable. The applicant further indicated that a future modification to remove the nuclear service water system piping and components associated with FP of the pump structure is planned. The staff reviewed flow diagram CN-1599-1.2 to verify that hydrants 61 and 62 were within the scope of license renewal. The staff also reviewed Selected Licensee Commitment 16.9-23 to verify the function of these hydrants. Since the drawings imply that the piping from the nuclear service water system to the nuclear service water structure performs FP intended functions required for compliance with 10 CFR 50.48, and the UFSAR does not address this piping or fire hydrants 61 and 62 in sufficient detail to support the staff's review of this issue, please verify that the staff's interpretation of this information is correct. Specifically, please discuss the modification to install fire hydrants 61 and 62; provide the staff with the modification number and the date that the modification was implemented (modification completion date will suffice); and indicate any plans to implement future modifications to remove the nuclear service water system piping and components associated with FP of the pump structure.

2.3.3.24 Liquid Waste System and Waste Gas System

- 2.3.3.24-1 The scoping methodology in Section 2.1.2.1.3 of the LRA indicates that at a system level, the "intended functions" are used by the applicant as the bases for including this system within the scope of license renewal as specified in 10 CFR 54.4(a)(1)-(3). In Section 2.3.3.24, Liquid Waste System of the LRA for McGuire and Catawba, these intended system functions are not identified. Please identify those intended system functions that were used for scoping portions of the liquid waste system to be within the scope of license renewal.

2.3.3.26 Nitrogen System

- 2.3.3.26-1 Catawba Flow Diagram CN-1602-1.0, "Nitrogen System," depicts nitrogen supply lines not in-scope supplying the containment valve injection water system (NW). The NW system prevents leakage of containment atmosphere past certain containment isolation valves (CIV's) following a loss of coolant accident (LOCA) by injecting seal water at a pressure exceeding containment accident pressure between the two seating surfaces of the CIV's. The water that gets injected comes from one of two surge chambers that are pressurized with nitrogen. The nitrogen pressure provides the driving force to flow the water between the valves. Section 6.2.4.2.2 of the UFSAR states that the NW system is designed

to meet all Regulatory and Testing requirements set forth in Paragraph III-C of 10 CFR 50, Appendix J and ASME Code Section IX. Following a LOCA, containment isolation would be required on an ongoing basis for an extended period of time. The staff finds that this function of the nitrogen system falls under the scoping requirements of 10 CFR 54.4(a)(2) for nonsafety-related systems, "whose failure could prevent satisfactory accomplishment of functions identified in paragraphs (a)(1) (i), (ii), or (iii) of this section." In this case 10 CFR 54.4(a)(1)(iii), "the capability to mitigate the consequences of accidents...", appears to apply. The staff finds that the nitrogen supply piping up to the containment valve injection water surge chambers, and the surge chambers, depicted on CN-1602-1.0 should be included in the evaluation boundary for AMR. Please provide the basis for not including these components in scope.

- 2.3.3.26-2 A power operated relief valve (PORV) is provided in the safety grade portion of each main steam line upstream of the isolation valve. These PORVs are required to achieve and maintain a hot shutdown condition and are therefore safety-related. The safety grade mode of operation of the PORVs is provided by the use of an environmentally and seismically qualified nitrogen control system. Nitrogen is supplied by seismically mounted cylinders located in the "doghouse." These cylinders and the piping between them and the main steam line PORVs are apparently not depicted on any nitrogen system drawing. Please explain whether this run of piping and the cylinders are in scope. If not, please provide the basis for not including them in scope.
- 2.3.3.26-3 On Catawba Flow Diagram CN-1602-1.0, "Nitrogen System," at the lower right hand corner of the drawing, an independent nitrogen system is depicted as not in scope. What is the function of this system? It is shown supplying actuators 1CF42, 1CF51, 1CF33, and 1CF60. At this point the diagram indicates NOTE 8. NOTE 8 appears to be missing from the diagram. Please provide NOTE 8.

2.3.3.28 Nuclear Service Water System (Catawba Nuclear Station)

- 2.3.3.28-1 License Renewal Application paragraph 2.1.1.2.1 states that some Duke Class G (non-safety-related) components may be relied upon to remain functional during and following design basis events. Nuclear Service Water flow diagram CN-1574-1.5, Note 16, indicates that buried Class G piping from the auxiliary building to isolation valves 1RL054 and 1RL062 is seismically designed which may indicate it could be Class G piping that may be relied upon to remain functional during and following design basis events. It is not discernable from the flow diagram whether or not this piping is in scope. Is this Duke Class G piping within the scope of license renewal? If not, please provide the basis for not including in scope.

- 2.3.3.28-2 Catawba drawings CN-1574-1.0 and CN-1574-1.2, "Flow Diagram of Nuclear Service Water System (RN)," indicate that the nuclear service water motor coolers are within the scope of license renewal. Identify where in the LRA the AMR is for the nuclear service water motor coolers, or provide a justification for excluding these components from Table 3.3-37 and an AMR.
- 2.3.3.28-3 Catawba drawings CN-1574-1.0 and CN-1574-1.2, "Flow Diagram of Nuclear Service Water System (RN)," indicate the nuclear service water upper and lower oil reservoirs and RN pump motor upper bearing oil coolers are within the scope of license renewal. Identify where in the LRA the AMR is for the nuclear service water upper and lower oil reservoirs, and RN pump motor upper bearing oil coolers, or provide a justification for excluding these components from Table 3.3-37 and an AMR.

2.3.3.31 Reactor Coolant Pump Motor Oil Collection Sub-system

- 2.3.3.31-1 Flow Diagram CN-1553-1.3, "RCS," and MCFD-1553-04.00, "RCS," indicate that a portion of the drawing, with dashed lines surrounding the RCP motor and oil fill tank, is excluded from the scope of license renewal. Verify that this portion is not required for compliance with Appendix R, Section III.O.

2.3.3.35 Standby Shutdown Diesel

- 2.3.3.35-1 Table 3.3-34 lists the components subject to an AMR for Standby Shutdown Diesel. The table lists the engine radiator as being subject to AMR (and therefore, within the scope of license renewal) under the cooling water and jacket water heating sub-system. From McGuire drawing MC-1614-4, it can be seen that the standby shutdown diesel engine radiator is air-cooled by an engine driven fan which draws air from outside the diesel room and discharges it through the radiator to the outside environment. Scoping criterion 10 CFR 54.4(a)(3) states that all systems, structures, and components relied on in safety analyses or plant evaluations to perform a function that demonstrates compliance with the Commission's regulations for fire protection (10 CFR 50.48), environmental qualification (10 CFR 50.49), pressurized thermal shock (10 CFR 50.61), anticipated transients without scram (10 CFR 50.62), and station blackout (10 CFR 50.63) are within the scope of license renewal. Clearly, the standby shutdown diesel and its supporting sub-systems are within the scope of license renewal because they are credited by the applicant for meeting 10 CFR 50.63. Accordingly, it appears the air cooling system for the standby diesel generator radiator should also be within the scope of license renewal. Please provide the basis for excluding this sub-system from the scope of license renewal.

Is a similar design utilized for the Catawba standby shutdown diesel? Table 3.3-34 does not appear to include any components for the air cooling subsystem for the standby shutdown diesel. If an air cooling system for is utilized for the Catawba standby diesel generator radiator to provide cooling for the standby diesel engine, it should also be within the scope of license renewal. Please provide the basis for excluding this sub-system from the scope of license

renewal. If the Catawba standby shutdown diesel does not have an air cooling subsystem for the radiator, then please explain how the standby shutdown diesel engine is cooled.

- 2.3.3.35-2 Table 3.3-34 provides the list of components subject to an AMR for the standby shutdown diesel. The table lists the pump casing for the “fuel oil transfer pump.” However, McGuire drawing MCFD-1560-01.00 and Catawba drawing CN-1560-1.0 do not show a pump by that name. Does the fuel oil transfer pump referred to in Table 3.3-34 actually refer to the standby shutdown fuel oil day tank pump shown on drawings MCFD-1560-01.00 and CN-1560-1.0? If not, please explain where the fuel oil day tank pump is addressed in the LRA.
- 2.3.3.35-3 Drawings MCFD-1560-01.00, MCFD-1560-02.00, CN-1560-1.0 and CN-1560-2.0 depict the portions of the standby shutdown diesel engine sub-systems that are within the scope of license renewal at McGuire and Catawba. These drawings indicate that there are flexible hose connections on the fuel oil sub-system on both sides of the engine that are within the scope of license renewal. The components are passive and should have a pressure boundary intended function, however, they do not appear to be included in Table 3.3-44 as components subject to AMR. Please explain how these components are addressed in the application, or provide the basis for not subjecting them to an AMR.
- 2.3.3.35-4 Drawings MCFD-1560-01.00, MCFD-1560-02.00, CN-1560-1.0 and CN-1560-2.0 depict the portions of the standby shutdown diesel engine sub-systems that are within the scope of license renewal at McGuire and Catawba. The McGuire and Catawba UFSARs do not provide any written description of these sub-systems. It is not apparent from the drawings how the lube oil sub-system accomplishes its intended function of lubricating the engine. As a result, the staff is unable to determine if all inscope, passive, long-lived components have been adequately captured for AMR. For instance, the drawings do not show a lube oil piping, pump, or valves nor are any listed for McGuire or Catawba in Table 3.3-44 (the table of components determined by the applicant to be subject to an AMR). Without an explanation of how the system performs its intended function, the staff cannot determine whether various potential lube oil sub-system components are not listed in Table 3.3-44 because of how the system is designed or because of an inadvertent oversight by the applicant. Accordingly, please provide a system description and explanation as to how this sub-system performs its intended function.
- 2.3.3.35-5 Table 3.3-44 lists the McGuire and Catawba components subject to an AMR for the cooling water and jacket water heating sub-system for the standby shutdown diesel. The table does not list piping or pump casings for this sub-system as being subject to an AMR. Please provide the basis for excluding these components from being subject to an AMR for this sub-system.

2.3.3.38 Waste Gas System

- 2.3.3.38-1 In drawing CN-1567-1.0, the waste gas separator is highlighted to indicate that it is within the scope of license renewal. However, this component is not included in Table 3.3-47. Is this component within the scope of license renewal? And what are the results of Duke's aging management review?
- 2.3.3.38-2 The scoping methodology in Section 2.1.2.1.3 of the LRA indicates that at a system level, the "intended functions" are used by the applicant as the bases for including this system within the scope of license renewal as specified in 10 CFR 54.4(a)(1)-(3). In Section 2.3.3.38, Waste Gas System, of the LRA for McGuire and Catawba, these intended system functions are not identified. Please identify those intended system functions that were used for scoping portions of the waste gas system to be within the scope of license renewal.