

January 23, 2002

Mr. M. S. Tuckman  
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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 2.3.2, System Scoping and Screening Results - Engineered Safety Features

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

2.3.2 System Scoping and Screening Results - Engineered Safety Features

General Ventilation System Questions (from Sections 2.3.2 and 2.3.3 of LRA)

2.3-1 The following are seven staff observations pertaining to fan housings and air handling unit housings identified on various McGuire and Catawba ventilation system flow diagrams that were referenced in the LRA:

1. Fan housings are not consistently highlighted on McGuire annulus ventilation system flow diagrams. Fan housings are highlighted on McGuire unit 2 (MC-2564-1 at I-7 and F-7), but not on unit 1 (MC-1564-1 at I-7 and G-7).

2. Fan housings are highlighted on auxiliary building ventilation system flow diagrams for McGuire (MC-1577-1 at H-11 and G-11; MC-1577-2 at F-2, F-13, H-2 and H-13; MC-2577-1 at G-12 and F-12) and Catawba (CN-1577-1.2 at F-3, F-5, F-10 and F-12; CN-1577-1.8 at H-9, H-12, K-9 and K-12).

3. Fan housings are highlighted on control area ventilation system flow diagrams for McGuire (MC-1577-1 at H-11 and G-11; MC-1578-1 at I-6, G-7 and E-6; MC-1578-3 at B-8 and C-9; MC-1578-4 at C-2, C-9, E-2, E-9, I-2, I-9, K-2 and K-9) and Catawba (CN-1578-1 at E-10 and H-10).

4. Air handling unit housings are highlighted on control area ventilation system flow diagrams for McGuire (MC-1578-1 at H-10 and E-10; MC-1578-1.1 at I-8 and D-8) and Catawba (CN-1578-1 at H-7 and E-7; CN-1578-1.1 at I-5 and I-10; CN-1578-1.3 at C-4, C-10, E-4, E-10, H-4, H-10, K-4 and K-10).

5. Fan housings are highlighted on diesel building ventilation flow diagrams for McGuire (MC-1579-1 at C-6, E-6, G-6, H-6, J-6 and K-6; MC-2579-1 at C-6, E-6, G-6, H-6, J-6 and K-6) and Catawba (CN-1579-1 at C-6, D-6, F-6, G-6, I-6 and K-6). However, Catawba Unit 2 diesel building ventilation fan housings are not highlighted (CN-2579-1 at C-6, D-6, F-6, G-6, I-6 and K-6). The highlighting of diesel building ventilation fan housings on the flow diagrams is inconsistent.

6. Fan housings are highlighted on the fuel handling building ventilation system flow diagrams for McGuire (MC-1577-1 at H-11 and G-11; MC-1577-3 at K-12 and J-12; MC-2577-1 at G-12 and F-12; MC-2577-3 at K-12 and J-12) and Catawba (CN-1577-2.0 at K-6, K-13, C-6 and C-13; CN-2577-2.0 at K-6, K-13, D-6 and D-13).

7. Ventilation fan housings are highlighted on the McGuire turbine building ventilation system flow diagram (MC-1614-4 at J-5, J-11, H-11 and G-9).

Some, but not all fan housings, were highlighted to indicate that they were within scope, presumably based on the ventilation pressure boundary intended function. Ventilation fan housings and air handling unit housings are passive, long-lived components that

serve a pressure boundary function. However, these components were not identified in the ventilation aging management review results tables to indicate that they were subject to an AMR. The staff also notes that containment air return fan housings were not included in Table 3.2-3 of the LRA for either McGuire or Catawba. Please indicate if ventilation fan housings and air handling unit housings are subject to an AMR and, if so, provide the relevant information about these components to complete the AMR results tables of the LRA. If these components are not considered subject to an AMR, provide a justification for their exclusion.

- 2.3-2 Ventilation damper housings are identified and highlighted as within scope on various McGuire and Catawba ventilation system flow diagrams that were referenced in the LRA. For example, ventilation damper housings are highlighted on the McGuire fuel handling building ventilation system flow diagram (MC-2577-1 at H-11 and F-10) and on the McGuire turbine building ventilation system flow diagram (MC-1614-4 at K-5, G-8, G-11, E-11 and D-11). Ventilation damper housings are passive, long-lived components that serve a pressure boundary function. However, these damper housings are not identified in the ventilation system aging management review results tables of the LRA. The staff also notes that containment air return damper housings were not included in Table 3.2-3 of the LRA for either McGuire or Catawba. In addition, most other McGuire and Catawba damper housings are not identified on either system flow diagrams or in aging management results tables, which list the components subject to an AMR. Identify whether ventilation damper housings are subject to an AMR and, if so, provide the relevant information about these components to complete the aging management review results tables of the LRA. If these components are not considered subject to an AMR, provide a justification for their exclusion.
- 2.3-3 The following are seven staff observations pertaining to ventilation system instrument monitors identified on various McGuire and Catawba ventilation system flow diagrams that were referenced in the LRA:
1. McGuire radiation monitors are not highlighted on either auxiliary building ventilation system flow diagrams (MC-1577-1 at H-10; MC-2577-1 at G-9) or identified in Table 3.3-1 of the LRA.
  2. Smoke detectors are identified on Catawba auxiliary building ventilation system flow diagrams (CN-1577-1.0 at H-3, H-6, H-9 and H-11).
  3. Air flow sensors identified in Table 3.3-1 of the LRA are not highlighted on either McGuire or Catawba auxiliary building ventilation system flow diagrams.
  4. Radiation monitors are highlighted on a McGuire control area ventilation system flow diagram (MC-1578-1 at I-1 and F-1). Radiation monitors are shown but not highlighted on a Catawba control area ventilation system flow diagram (CN-1578-1 at J-13 and C-13).
  5. Chlorine and smoke detection monitors are not consistently highlighted on the control area ventilation flow diagrams or Table 3.3-11 of the LRA with respect to the ventilation pressure boundary intended function. These monitors are not mentioned in Section 2.3.3.8 of the LR relative to scope and an AMR.

6. Radiation monitors are highlighted on McGuire fuel handling building ventilation system flow diagrams (MC-1577-3 at K-8) and (MC-2577-3 at K-8).

7. Smoke detectors are highlighted on Catawba fuel handling building ventilation system flow diagrams (CN-1577-2.1 at G-4) and (CN-2577-2.1 at G-4).

These ventilation system instrument monitors would appear to perform a pressure boundary intended function. However, they are not consistently highlighted on the system flow diagrams referenced in the LRA. Nor are they listed in the AMR result tables, which identify those instruments subject to an AMR. Indicate if the identified instruments are open to ventilation process flow, perform a pressure boundary intended function, and are subject to an AMR. If so, provide the relevant information to clarify any discrepancy between the AMR results tables and ventilation system flow diagrams in the LRA. Similarly, provide the relevant information about the chlorine and smoke detection monitors to complete Table 3.3-11 in the LRA. If these monitors or other ventilation system instruments are not considered subject to an AMR, provide a justification for their exclusion.

2.3-4 Clarify whether or not sealants used to maintain the power block building pressure boundary envelopes (e.g., main control room, auxiliary building, fuel handling building, containment) at design pressure with respect to the adjacent area are included in the scope of the application and subject to an AMR. In particular, please indicate if sealant material was used to remove potential bypass leak paths following the McGuire modification (described in the LRA and the UFSAR) to install containment personnel access hatches and pipe penetrations. If so, please indicate if the sealant material is within the scope of license renewal and subject to an aging management review. If so, please provide the relevant information necessary for the staff to complete its review of the aging management review result tables in the LRA. If the sealants are not considered subject to an AMR, provide a justification for their exclusion.

2.3-5 The following five passive components associated with ventilation system ductwork are not identified as within scope of license renewal or subject to an AMR:

1. Ductwork turning vanes
2. Ventilation system elastomer seals and flexible collars
3. Ventilation equipment vibration isolators flexible connections
4. Ductwork test connections
5. Supply and return air grilles highlighted on ventilation system flow diagrams

Indicate if these components are subject to an AMR, and if so provide relevant information about the components to complete the aging management review result tables. If these components are not considered subject to an AMR, provide a justification for their exclusion.

2.3-6 Describe the areas that constitute the main control room envelope for the McGuire and Catawba nuclear station units. Verify that all control area ventilation system components inside the main control room envelope relied on to perform safety-related cooling and filtration functions to maintain the control room habitable are identified. Please indicate if components inside the main control room envelope (e.g., air handling

units; fan coil units with their associated ductwork; ventilation dampers; fire dampers; control valves; air intake dampers; exhaust fan with purge ductwork; and transfer grilles) are within the scope of license renewal and, for the active components, please indicate if their housings are subject to an AMR. If these components are not within the scope of license renewal, or if their housings are not considered subject to an AMR, please provide a justification for their exclusion.

2.3-7 The following component housings are identified on ventilation system flow diagrams referenced in the LRA as being within the scope of license renewal:

1. Auxiliary building ventilation moisture eliminators are identified on Catawba flow diagrams (CN-1577-1.3 at J-2, J-7, J-8 and J-13).
2. Control area ventilation system moisture eliminators and pre-filters are highlighted on a Catawba flow diagram (CN-1578-1 at E-12 and H-12).
3. McGuire diesel building duct heater housings are highlighted on McGuire unit 1 flow diagram (MC-1579-1 at E-7 and J-8) and not highlighted on McGuire unit 2 flow diagram (MC-2579-1 at E-8 and J-8).
4. The ductwork connection from the auxiliary building ventilation system to the Catawba unit 1 vent is shown highlighted as within scope (CN-1577-1.2 at F-11) but is not highlighted as within scope on the Catawba interface drawing to the unit 2 vent (CN-2577-3.0 at E-7).
5. A transfer damper is highlighted on a Catawba fuel handling building ventilation system flow diagram (CN-2577-2.0 at J-5).
6. Turbine building ventilation duct heater housings are highlighted on a McGuire flow diagram (MC-1614-4 at J-7 and H-7).
7. A turbine building ventilation system pre-filter housing is highlighted on a McGuire flow diagram (MC-1614-4 at I-5).

These components would appear to perform some pressure boundary intended function; however, they are not included in the aging management review results tables of the LRA. Indicate if these components are subject to an AMR and, if so, provide the relevant information about these components to enable the staff to complete its review of the aging management review result tables in the LRA. If these components are not considered subject to an AMR, provide a justification for their exclusion.

2.3-8 The following components were identified in sections and tables of the LRA as being within scope, but were not highlighted on the referenced ventilation flow diagrams.

1. Control area ventilation system orifices identified in Table 3.3-11 of the LRA are not highlighted on McGuire control area ventilation system flow diagrams.



2. Control area ventilation system air handling unit heat exchanger shells and pre-filters are not highlighted to indicate they are within license renewal scope on a McGuire system flow diagram (MC-1578-4 at K-2, K-8, I-2, I-8, E-2, E-8, C-2 and C-8).

3. McGuire and Catawba valve bodies (or damper housings) are not highlighted on diesel building ventilation system flow diagram drawings.

4. Pipe (McGuire only) is not highlighted on diesel building ventilation system flow diagrams.

5. Catawba unit 1 diesel building ventilation system inlet ductwork (CN-1579-1) is highlighted with a single LR flag. Diesel building ventilation system inlet ductwork at McGuire (MC-1579-1 at 1-E and 1-J; MC-2579-1 at 1-E and 1-J) and Catawba unit 2 (CN-2579-1 at 10 locations) is highlighted with double LR flags.

6. A filter housing located on a McGuire fuel handling building ventilation system flow diagram is not highlighted (MC-1577-3 at J-10).

7. McGuire and Catawba valve bodies (or damper housings) are not highlighted on any fuel building ventilation system flow diagram.

8. Nuclear service water pump structure ventilation system valve bodies (or damper housings) identified in Table 3.3-38 of the LRA as being within scope are not included in the Catawba nuclear service water pump structure ventilation system flow diagram.

Please indicate if these components are within the scope of license renewal and subject to an AMR. If so, provide the relevant information about the components to coordinate between the table and drawings and complete the aging management review result tables of the LRA. If the components are not in scope or considered subject to an AMR, provide a justification for their exclusion.

2.3-9 The following ventilation components identified in the application and discussed in each plant's respective UFSAR have not been included as part of the application screening process.

1. Catawba refrigerant coils serving the shutdown panel areas for both units 1 and 2 are not highlighted (CN-1577-1.8 at K-9, K-12, H-9 and H-12). Review of Catawba UFSAR design basis section 9.4.3.1 indicates that the auxiliary shutdown panel room

air-conditioning subsystem is an engineered safety feature. This system flow diagram highlighting is inconsistent with a similar Catawba standby shutdown facility (SSF) self contained air-conditioning packages. Contrary to the sectional auxiliary shutdown panel room air-conditioning subsystem highlighting, the entire SSF self-contained air-conditioning components are highlighted to include the condensing unit, air handling unit, and pre-filter (CN-1579-4.3 at H-3).

2. The nuclear service water pump structure ventilation system full capacity fan housings are not identified in the aging management review results table 3.3-38 of the application or highlighted on the system flow diagram (CN-1557-2.0 at G-3, G-5, G-10 and G-12). Section 9.4.8.3 of the Catawba UFSAR identify the nuclear service water pump structure ventilation system as an engineered safety feature.

3. The fuel handling building ventilation 'filtration' intended function is not identified in the aging management review results table 3.3-28 of the LRA for filter component types. This is not consistent with the identified component intended function of another application filter train (refer to table 3.3-11 of the control area ventilation system). Section 2.3.3.20 of the fuel handling building ventilation system section of the application identifies control of airborne radioactivity in the fuel pool area following a postulated fuel handling accident as a design basis. In addition, Section 9.4.2.3 of the Catawba UFSAR safety evaluation identifies the fuel building exhaust system as an engineered safety feature.

Indicate if these ventilation components are subject to an AMR and, if so, provide the relevant information about the components to enable the staff to complete its review of the aging management review result tables in the LRA. If these components are not considered subject to an AMR, provide a justification for their exclusion.

#### 2.3.2.3 Containment Air Return Exchange & Hydrogen Skimmer System

- 2.3.2.3-1 The applicant has not included within the scope of license renewal any of the containment air return ventilation ductwork at the McGuire Nuclear Station. Though this ductwork is non-safety-related, it appears to support the safety function of the containment air return fans. For instance, the containment peak pressure calculation in the McGuire Updated Final Safety Analysis Report (UFSAR) credits the containment air return fans with providing a 30,000 cfm flow rate from upper to lower containment. Without sufficient integrity of the associated ventilation ductwork, it appears that the containment air return fans would not be capable of performing as assumed to assure containment integrity.

Regulation 10 CFR 54.4(a)(2) states that a non-safety related component whose failure could prevent the satisfactory accomplishment of a safety function is Within the scope of license renewal. In that a loss of the integrity of the containment air return ventilation ductwork would apparently prevent satisfactory accomplishment of the accident mitigation function performed by the containment air return fans, the applicant's basis for considering this ductwork outside the scope of license renewal is not understood by the staff.

The staff and the applicant participated in a conference call on October 11, 2001. A summary of this conference call was issued November 14, 2001. The staff and applicant discussed drawings MC-1557-1.0, and MC-2557-1.0, specifically. The staff questioned why the ductwork between the containment air return fans and dampers was not considered to be a pressure boundary and not highlighted as within the scope of license renewal. The staff additionally noted that on drawings CN-1557-1.0 and CN 2557-1.0, the (apparently) analogous ductwork at Catawba was within the scope of license renewal. The applicant indicated that, for McGuire, the dampers are Quality Assurance (QA) Condition 1, safety-related, and within the scope of license renewal as noted by the highlighting on the referenced drawings. The ductwork, however, is classified as QA Condition 4, which is nonsafety-related. As such, only the hangers are within the scope of license renewal because of their function to hold up the ductwork in a seismic event. That is why the MNS drawings are not highlighted for the ductwork between the dampers. The applicant stated that leakage or failure is not a concern for this ductwork (i.e. a failure of the ductwork is not likely) during a non-seismic event. As such, the ductwork is not Class F and is not within the scope of license renewal.

The applicant's statement did not provide a complete resolution, however, because nonsafety-related components may be within the scope of license renewal according to 10 CFR 54.4(a)(2) because their postulated failure could cause the loss of a safety-related function. Specifically, failure of the ventilation ductwork could result from age-related degradation (during the proposed license extension period) and invalidate the UFSAR's assumption concerning containment air return fan performance. Therefore, to complete the staff's evaluation, the following information is requested:

1. Is sufficient integrity of the McGuire containment air return ventilation ductwork necessary in order to satisfy the assumptions made in the UFSAR concerning the safety function of the containment air return fans? (If the applicant believes that the ventilation ductwork is not necessary to support the UFSAR's assumptions, the staff additionally requests a supporting justification and/or analysis.)

2. Considering specifically the criterion given by 10 CFR 54.4(a)(2) and the staff's discussion above, please justify why the McGuire containment air return ductwork has not been included within the scope of license renewal.

2.3.2.3-2 The applicant did not expressly include the safety-related hydrogen analyzers for the McGuire and Catawba Nuclear Stations in LRA Section 2.3.2.3. However, the staff reviewer for Section 2.3.2.3 was unable to locate a treatment of their supporting mechanical components elsewhere in the LRA. Because the hydrogen analyzers appear to support the successful operation of the containment hydrogen recombiners, the staff wishes to verify that the applicant has appropriately reviewed hydrogen analyzers' mechanical components. Mechanical components typically used to support hydrogen analyzers' functionality include components used to handle the sampled gas, such as tubing, valves, and a fan or blower.

The UFSARs for McGuire and Catawba indicate that the containment hydrogen recombiners are manually actuated and controlled following an accident. The Catawba UFSAR further specifies that one of the decision criteria for the manual actuation and control of the hydrogen recombiners would be the indications of containment hydrogen concentration provided by the hydrogen analyzers. Therefore, it appears possible that, if failures of the mechanical components supporting the hydrogen analyzers were postulated, the analyzers' false indications could potentially mislead operators into not actuating the recombiners or securing them too early following an accident. If the hydrogen recombiners are not operated as required, it is possible that the analyzed containment hydrogen concentration could be exceeded.

Exceeding the analyzed containment hydrogen concentration could jeopardize the ability to prevent or mitigate the consequences of an accident. Thus, if the analyzed hydrogen concentration could be exceeded in a scenario similar to that postulated in the previous paragraph, it would appear to the staff that the mechanical components supporting the hydrogen analyzers should be included Within the scope of license renewal based upon either 10 CFR 54.4(a)(1)(iii) or (a)(2), depending upon whether or not the supporting mechanical components are safety-related.

Therefore, to complete the staff's evaluation, the following information is requested:

1. To what extent are the safety-related hydrogen analyzers relied upon in the decision-making process governing the manual actuation and control of the containment hydrogen recombiners at McGuire and Catawba? What other factors are considered?
2. Could failures of the mechanical components supporting the hydrogen analyzers result in a containment hydrogen concentration which exceeds the analyzed value at McGuire and Catawba? For example, if failures of the mechanical components supporting the hydrogen analyzers were postulated, would the false indications from the analyzers mislead the operators into not actuating the hydrogen recombiners or securing them too early following an accident, thereby allowing the containment hydrogen concentration to exceed its analyzed value?
3. What mechanical components are used to support the functioning of the hydrogen analyzers at McGuire and Catawba, and are they safety-related?
4. Does the applicant consider the mechanical components supporting the functioning of the hydrogen analyzers to be within the scope of license renewal for McGuire and Catawba?
5. If piping and instrumentation diagrams exist for the mechanical components supporting the hydrogen analyzers at McGuire and Catawba, the staff would like to receive a copy, with license renewal boundaries marked, as applicable.

2.3.2.3-3 The staff wishes to verify that the applicant has properly treated the containment hydrogen recombiners in the LRA. In the containment air return and hydrogen skimmer system diagrams for McGuire, MC-1557-1.0 and MC-2557-1.0, the hydrogen recombiners are shown but not highlighted as being within the scope of license renewal. In the containment air return and hydrogen skimmer system diagrams for Catawba, CN-1557-1.0 and CN-2557-1.0, the hydrogen recombiners are not shown, and thus are also not highlighted as being within the scope of license renewal. It appears to the staff that the containment hydrogen recombiners would meet the scoping criterion of 10 CFR 54.4(a)(1)(iii), and thus be within the scope of license renewal. It also appears possible that there may be recombiner components or components associated with the recombiners which could meet the screening criteria of 10 CFR 54.21 for an AMR.

Furthermore, based upon the treatment of the containment hydrogen recombiners in the drawings cited above and the fact that the recombiners are not described in the UFSAR section which concerns the containment air return and hydrogen skimmer systems for both McGuire and Catawba, the staff is uncertain as to which LRA section the applicant intended to include the containment hydrogen recombiners.

1. For both Catawba and McGuire, in which section of the LRA did the applicant include the containment hydrogen recombiners?
2. For both Catawba and McGuire, did the applicant determine the containment hydrogen recombiners to be within the scope of license renewal? If the applicant has determined the containment hydrogen recombiners to be outside the scope of license renewal, the staff additionally requests a justification for this considering the scoping criterion of 10 CFR 54.4(a)(1)(iii).
3. For both Catawba and McGuire, did the applicant determine any mechanical or electrical components to be subject to an AMR which are either part of or which support the operation of the containment hydrogen recombiners? Though it appears from the information in the UFSAR that the hydrogen recombination reaction may be accomplished through an active process, the staff wishes to verify that the applicant has properly considered any passive components which are necessary to support the operation of the containment hydrogen recombiners.

### 2.3.2.6 Refueling Water System

2.3.2.6-1 Section 3.6.5.1.2 of the McGuire Updated Final Safety Analysis Report (UFSAR), and Section 3.6.1.1.3.1 of the Catawba UFSAR, credits refueling cavity walls as a barrier between reactor coolant loops and other vital equipment or piping to protect against the dynamic effects of a postulated pipe break (e.g., pipe whip, blowdown jet, etc.). Accordingly, the refueling cavity should be within the scope of license renewal because it is relied upon to mitigate the consequences of an accident. Drawings MCFD-1571-01.00, MCFD-2571-01.00, CN-1571-1.0 and CN-2571-1.0 are highlighted to indicate the portions of the refueling water system (FW) that are within the scope of license renewal for McGuire and Catawba. The McGuire unit 1 drawing indicates that the refueling cavity is not within the scope of license renewal. The McGuire unit 2 drawing, however, shows the refueling cavity as being within the scope of license renewal. Similarly, neither Catawba drawing indicates that the refueling cavity is within the scope of license renewal. Please explain which represents the applicant's position on whether the refueling cavity is within the scope of license renewal. If the refueling cavity is not within the scope of license renewal, please provide the basis for its exclusion considering the intended function cited in Section 3.6.5.1.2 of the Section 3.6.1.1.3.1 of the McGuire and Catawba UFSARs. If the refueling cavity is within the scope of license renewal, please explain where the AMR results for the refueling cavity are included in the LRA. [Note that the refueling cavity is not included in Table 3.2-6 of the application. This table provides the aging management review results for the FW system.]

2.3.2.6-2 As noted above, drawings MCFD-1571-01.00 and MCFD-2571-01.00 are highlighted to indicate the portions of the FW system that are within the scope of license renewal for McGuire, Units 1 and 2, respectively. During our review of these drawings, we identified two inconsistencies between the two units regarding the boundaries of piping/valves that are included within the scope of license renewal. Specifically,

1. On drawing MCFD-1571-01.00, the 3/4 inch system low point drain piping and associated valve 1FW0003 located at coordinates E-9 on the drawing are not shown as being within scope. The same piping and valve (2FW0003) on drawing MCFD-2571-01.00 are shown as being within the scope of license renewal.

2. On drawing MCFD-1571-01.00, the 3/4 inch test vent piping and associated valve 1FW0006 located at coordinates C-6 on the drawing are not shown as being within scope. The same piping and valve (2FW0006) on drawing MCFD-2571-01.00 are shown as being within the scope of license renewal.

It appears that in both cases, drawing MCFD-1571-01.00 may be incorrect. The drain and test vent piping and valves should be within scope to ensure the pressure boundary of the in scope FW system piping. Please verify that the drain and test 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.

- 2.3.2.6-3 As noted above, drawings CN-1571-1.0 and CN-2571-1.0 are highlighted to indicate the portions of the FW system that are within the scope of license renewal for Catawba, Units 1 and 2, respectively. During our review of these drawings, we identified inconsistencies between regarding the boundaries of piping/valves that are included within the scope of license renewal. Specifically,
1. On drawings CN-1571-1.0 and CN-2571-1.0, the 3/4 inch system low point drain piping and associated valve (1FW3 for Unit 1 and 2FW3 for Unit 2) located at coordinates L-9 on both drawings are shown as not within the scope of license renewal.
  2. On drawings CN-1571-1.0 and CN-2571-1.0, the 3/4 inch test drain piping and associated valve 1FW59 and 2FW59 located at coordinates L-4 on both drawings are shown as not within the scope of license renewal.
  3. On drawing CN-2571-1.0, the vent piping and associated valve (2FW75) located at coordinates L-7 on the drawing are shown as not within the scope of license renewal. No equivalent vent is shown on the Unit 1 drawing, CN-1571-1.0.
  4. On drawing CN-2571-1.0, the test vent piping and associated valve (2FW6) located at coordinates L-4 on the drawing are shown as not within the scope of license renewal. This test vent is shown as being within the scope of license renewal on the Unit 1 drawing, CN-1571-1.0.
  5. On drawing CN-2571-1.0, the piping connection between the refueling water storage tank (RWST) and the safety injection (SI) and charging pump suction headers located at coordinates F-10 on the drawing is shown as not being within the scope of license renewal. This pipe connection to the SI and charging pump suction headers is shown as being within the scope of license renewal on the Unit 1 drawing, CN-1571-1.0.
  6. The system high point vent piping and associated valve (2FW68) located at coordinates F-10 on the drawing are shown as not within the scope of license renewal. This pipe connection to the SI and charging pump suction headers and the vent are shown as being within the scope of license renewal on the Unit 1 drawing, CN-1571-1.0.
- Typically, vent, test and drain piping connected to in scope piping systems are included in the scope of license renewal through the vent, test, or drain piping isolation valve as shown in several other locations on both drawings. It appears that in all of these cases, the piping and associated valves should be within scope to ensure the pressure boundary of the in scope FW system piping. Please verify that the piping and valves 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.
- 2.3.2.6-4 Both drawings MCFD-1571-01.00 and MCFD-2571-01.00 show three piping connections between piping designated as being within the scope of license

renewal (between the RWST and the refueling cavity) and 4 inch diameter piping to the spent fuel pool makeup (one piping connection) and refueling water pump suction and discharge (two piping connections) at coordinates E-8 and E-9 on both drawings. In the case of these three connections, there appears to be no physical boundary (i.e., a valve) separating the in scope piping from the piping that is not within scope. Accordingly, failure of these pipes could prevent the in scope piping from performing its intended function.

Similarly, both drawings CN-1571-1.0 and CN-2571-1.0 show two piping connections between piping designated as being within the scope of license renewal (between the RWST and the refueling cavity) and 4 inch diameter piping to the refueling water pump suction and 8 inch diameter piping from the discharge of the refueling water pump at coordinates J-12 on both drawings. In the case of these two connections, there appears to be no physical boundary (i.e., a valve) separating the in scope piping from the piping that is not within scope. Accordingly, failure of these pipes could prevent the in scope piping from performing its intended function.

Therefore, please provide the basis for not including these McGuire and Catawba FW system pipes within the scope of license renewal through the first shutoff valve on each pipe.

- 2.3.2.6-5 According to the Catawba and McGuire UFSARs, the SI system is provided with a minimum flow bypass line from each pump discharge line to recirculate flow to the refueling storage tank in the event that the pumps are started during shutoff head conditions. This line prevents damage to the pump (e.g., warped vanes, damaged bearings, or binding of pump moving parts) that can occur due to rapid overheating of the water if the pump is operating against shutoff head conditions. If there are transients or design basis events (e.g., small loss-of-coolant accident) where the SI pumps may receive a start signal before reactor coolant system pressure is reduced to a low enough level for the safety injection pumps to provide flow, then it is logical to assume that the minimum flow piping is necessary to ensure that the SI pumps are capable of performing their intended function.

Drawings MCFD-1562-03.00 and MCFD-2562-03.00 show the portions of the SI that are designated as being within the scope of license renewal for McGuire, Units 1 and 2 respectively. The minimum flow line is only designated as being within scope through valve 1NI0147A for Unit 1 and 2NI0147A for Unit 2. The rest of the piping from that valve back to the RWST is designated as not being safety-related and is shown as not within the scope of license renewal.

Similarly, drawings CN-1562-1.2 and CN-2562-1.2 show the portions of the SI that are designated as being within the scope of license renewal for Catawba, Units 1 and 2 respectively. The minimum flow line is only designated as being within scope through valve 1NI147B for Unit 1 and 2NI147B for Unit 2. The rest of the piping from that valve back to the RWST is designated as not being safety-related and is shown as not within the scope of license renewal.



Please provide the basis for not including **all** of the minimum flow piping associated with the McGuire and Catawba SI pumps within the scope of license renewal.

#### 2.3.2.7 Residual Heat Removal System

- 2.3.2.7-1 The Catawba UFSAR (page 5.4-48) states that, "A minimum number of charging auxiliary spray has been included in the piping analysis for inadvertent operation and for emergencies." Also the McGuire UFSAR (page 9.3-25), states that, "After the Residual Heat Removal System is placed in service and the reactor coolant pumps are shut down, further cooling of the pressurizer liquid is accomplished by charging through the auxiliary spray line." If these statements imply that the auxiliary spray is relied upon to mitigate design-basis events, or relied on in safety analyses or plant evaluations to perform a function that demonstrate compliance with the regulated events (e.g., fire protection and station blackout), then the staff requests the applicant to explain why the spray head (the component which actually sprays the water inside the pressurizer) need not require aging management to detect cracking and/or clogging of the spray holes, or any other aging related degradation over the extended period of operation. If the applicant believes that the intended function of the subject component to depressurize the system by spraying water inside the pressurizer is not within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) or (3), then the staff requests the applicant to affirm that the subject component in McGuire and Catawba units are not credited for immediate pressure reduction during design basis events, postulated fire events or station blackout.

#### 2.3.2.8 Safety Injection System

- 2.3.2.8-1 The UFSARs for Catawba (page 6.2-46) and McGuire (page 17.1-2), state that screen assemblies and vortex suppressors are used in the containment sump which provides water for the ECCS recirculation phase, and one of the intended functions is to protect the ECCS pumps from debris and cavitation due to harmful vortex following an LOCA. The staff noted that the sump screens were identified in Table 3.5-1 (AMR results - Reactor Building); however, the vortex suppressors were not identified in the LRA to be within scope that requires an AMR. Please explain why.

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Division of Regulatory Improvement Programs  
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DATE: January XX, 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

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