

Informal Response to
McGuire Units 1 & 2 and Catawba Units 1 & 2
Safety Evaluation Report with Open Items

* Fire Protection Scoping Related Items *
10/01/2002

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Discussion of Duke's Fire Protection Scoping for License Renewal

As a result of the staff's questions related to fire protection, Duke has recently performed a detailed regulatory and design basis review of all of the documentation that comprises the current licensing basis to determine those systems, structures, and components required to comply with 10 CFR 50.48. Much guidance exists to support the implementation of the regulations related to fire protection. The wording in the regulations and guidance in the numerous guidance documents are not always one-hundred percent consistent. Regulatory Guide 1.70 provides for a fire protection program that focuses not only on the ability to safely shut down the plant and minimize radioactive releases, as the regulations and other guidance documents do, but also to minimize the potential for fire-induced loss of redundant safety-related systems. All three criteria have been used by Duke to identify those fire protection SSCs that perform a function to demonstrate compliance with 10 CFR 50.48. Based on the fire protection SERs and the many fire protection inspections at all three Duke facilities, it is evident to Duke that the NRC's criteria have historically been consistent with Duke's. But in this license renewal process, Duke is seeing criteria from the staff that is different than that which we have seen in the past.

As a result of the aforementioned regulatory and design basis review, Duke has identified several changes to the original April 15, 2002, RAI responses. Additionally, Duke has identified the need for UFSAR changes at both plants to describe only those portions of the fire protection systems required for compliance with 10 CFR 50.48.

Criteria:

In order for an SSC to be 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), it must be discussed as a commitment in both the fire protection SERs and the UFSARs and meet one of the following criteria:

- (1) perform a function related to prevention, detection, or suppression that protects the ability to achieve and maintain safe shutdown in the event of a fire,
- (2) perform a function related to prevention, detection, or suppression to minimize the potential for fire-induced loss of redundant safety-related systems, or
- (3) perform a function related to prevention, detection, or suppression to minimize radioactive release in the event of a fire.

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These criteria are consistent with:

- ◊ the regulation- GDC-3 and 10 CFR 50.48

Criterion 3 of Appendix A of 10 CFR 50, Fire Protection

Structures, systems, and components important to safety shall be designed and located to minimize, consistent with other safety requirements, the probability and effect of fires and explosions. ... Fire detection and fighting systems of appropriate capacity and capability shall be provided and designed to **minimize the adverse effect of fires on structures, systems, and components important to safety.**

10 CFR 50.48, Fire Protection

Each operating power plant must have a fire protection plan that satisfies Criterion 3 of appendix A of this part. ... The plan must also describe specific features necessary to implement the program described above, such as administrative controls and personnel requirements for fire prevention and manual fire suppression activities, automatic and manually operated fire detection and suppression systems, and the **means to limit fire damage to structures, systems or components important to safety so that the capability to safely shut down the plant is ensured.**

- ◊ McGuire and Catawba license conditions and Safety Evaluation Reports

Catawba License Condition, Fire Protection Program

Duke Energy Corporation shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report, as amended, for the facility and as approved in the SER through Supplement 5, subject to the following provisions:

The licensee may make changes to the approved fire protection program without prior approval of the Commission **only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.**

McGuire Fire Protection Safety Evaluation Report

The overall objective of our review of the McGuire Nuclear Plant fire protection program was to ensure that in the event of a fire at the facility, the units would **maintain the ability to safety shutdown and remain in a safe shutdown condition and to minimize the release of radioactivity to the environment.**

- ◊ guidance- NUREG-0800, RG 1.70, RG 1.189, Appendix A to BTP APCS 9.5-1 and NRC web page

NUREG-0800, Standard Review Plan

Section 9.5.1: The purpose of the fire protection program (FPP) is to provide assurance, through a defense-in-depth design, that a fire **will not prevent the performance of necessary safe plant shutdown functions and will not significantly increase the risk of radioactive releases to the environment** in accordance with General Design Criteria 3 and 5.

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RG 1.70, Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants

Section 9.5.1.1.3: Therefore, means are needed to detect and suppress fires with particular emphasis on providing passive and active fire protection of appropriate capability and adequate capacity of the system necessary to **achieve and maintain safe plant shutdown** with or without offsite power. For other safety related systems, the fire protection program should ensure that a fire **will not cause the loss of function of such systems, even though loss of redundancy within a system may occur** as result of a fire.

Section 9.5.1.3 Safety Evaluation (Fire Hazard Analysis): 1. The overall fire protection program should allow the plant to maintain the ability to **perform safe shutdown functions and minimize radioactive release to the environment** in the event of a fire.

RG 1.189, Fire Protection for Operating Nuclear Power Plants

To meet these objectives, the fire protection programs for operating nuclear power plants are designed to provide reasonable assurance, through defense-in-depth, that a fire **will not prevent the performance of necessary safe shutdown functions and will not significantly increase the risk of radioactive releases to the environment.**

Appendix A to BTP APCS 9.5-1

Section A.2: The overall fire protection program should be based upon evaluation of potential fire hazards throughout the plant and the effect of postulated design basis fires relative to **maintaining ability to perform safe shutdown functions and minimize radioactive release to the environment.**

NRC Web Page

To meet these goals, the fire protection programs for operating nuclear power plants are designed to **provide reasonable assurance that a fire will not prevent the performance of necessary safe shutdown functions and will not significantly increase the risk of radioactive releases to the environment.**

It is important to Duke that these criteria be maintained because it is used every day and every time we modify the plant to maintain compliance at the stations. Every time a component is added to the plant, a decision regarding that component's current licensing basis is made. A clear set of rules and criteria are in place in order to properly make that decision. The current licensing basis carries forward for license renewal. Using a different set of criteria for license renewal scoping basis than is used for current licensing basis will yield a plant solution in which license renewal becomes a step change from the current licensing basis.

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Summary Open Item Table:

Open Item	Applicable UFSAR Section	Applicable FP SER Section	Criteria it functions to meet	Conclusion
Yard Hydrants	M- 9.5.1.2.1	M- none	None	Not in scope
	C- none	C- SER 9.5.1.7		
Jockey Pump	M- 9.5.1.2.1	M- SER Supplement 2; II (Fire Protection Systems Description) / A (Water Suppressions Systems)	None	Not in scope
	C- 9.5.1.2.1			
Reactor Building Carbon Filters (CNS only)	C- 9.5.1.2.1	C- SER 9.5.1.7	Minimize radioactive release	In scope, subject to AMR
Turbine Building, et. al., Suppression	M- 9.5.1.2.2	M- SER- none	None	Not in scope
	C- 9.5.1.2.1	C- SER- none		
Main Fire Pump Strainer	M- 9.5.1.2.1	M- SER Supplement 2; II (Fire Protection Systems Description) / A (Water Suppressions Systems)	Maintain safe shutdown, minimize radioactive release, minimize loss of safety-related redundant systems	In scope, subject to AMR
	C- 9.5.1.2.1			
Reactor Building Purge Filters (MNS only)	M- 9.5.1.2.3.1	M- SER Supplement 5, Table 9.5-1	Minimize radioactive release	In scope, subject to AMR

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Open Item 2.3.3.19-1 McGuire UFSAR Section 9.5.1.2.1 states that fire hydrants are connected to the yard main. Furthermore, fire hydrants are considered passive and long-lived components in accordance with 10 CFR 54.21. Since the UFSAR is referenced in the license conditions for both McGuire and Catawba, and these components are discussed therein as providing a fire suppression function (which is required by 10 CFR 50.48), it appears that these components are required to meet the requirements of 10 CFR 50.48. The UFSAR does not distinguish between those fire hydrants that are required by 10 CFR 50.48 and those that are not. 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." Therefore, the applicant should furnish documentation that demonstrates that the excluded fire hydrants are not required by 10 CFR 50.48 or identify these hydrants as being within the scope of license renewal and subject to an AMR.

Duke Response to Open Item 2.3.3.19-1

The hydrants that are required to comply with 50.48 are (1) two hydrants at Catawba that were recently installed to mitigate fires at the Nuclear Service Water Pump Structure and (2) those hydrants connected to the yard main that are not isolable from the flowpath between the main fire pumps and auxiliary and reactor buildings.

The staff is correct in identifying that the UFSAR does not differentiate between those hydrants that are required for compliance with 10 CFR 50.48 and those that are not. Therefore, review of the UFSAR alone cannot determine those hydrants required to comply with 10 CFR 50.48.

Duke researched all of the documentation that comprises the current licensing basis to determine those systems, structures, and components required to comply with 10 CFR 50.48. Based on the staff's regulations and guidance, Duke's criteria for including a fire protection SSC within the scope of license renewal is that it must be discussed as a commitment in both the fire protection SERs and the UFSARs and perform a function related to prevention, detection, or suppression so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized. The plant evaluation (fire hazards analysis) credits the 3-hour fire barrier around the auxiliary and reactor buildings to perform the function to meet the three criteria above in the event of a fire in any of the yard.

The McGuire UFSAR lists hydrants as a fire protection system component in the System Description- General subsection. The Catawba fire protection SER discusses the existence of

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hydrants located approximately every 250 feet. Of the hydrants in the system, those that are relied on in a plant evaluation or safety analysis to function so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized are included within the scope of license renewal. Those that are not relied upon for one of the above criteria and are isolable from the main flow path are not within the scope of license renewal.

A 10 CFR 50.59 evaluation is in progress to revise the UFSAR to describe only those components that are required to comply with 10 CFR 50.48.

Other statements in Section 2.3.3.19 of the license renewal SER related to this open item are addressed below:

Staff SER Statement	Duke Comment
Hydrants would provide for protection against fires in areas where radioactive releases could be released to the environment. p. 2-116	Duke's design at McGuire and Catawba is such that there are no sources of potential radioactive release in the yard that the out-of-scope hydrants would protect against. Radioactive sources in the reactor building and auxiliary building are separated from the yard by a 3-hour fire barrier.
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. p. 2-116	Duke agrees. McGuire and Catawba are committed to meet the guidelines in these documents.
The staff is concerned that lack of maintenance of fire hydrants over time can result in partially closed or shut valves and clogging of hydrants with debris, which will affect the system flow results. p. 2-116, 2-117	Duke agrees. However, lack of maintenance is not a scoping criteria contained in 10 CFR 54.4.

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Open Item 2.3.3.19-2 Operating license conditions for McGuire and Catawba, Supplement 2 of the McGuire and Catawba Safety Evaluation Reports (SERs) for original licensing, and Section 9.5.1.2.1 of the McGuire and Catawba UFSARs indicate that jockey pumps are provided to prevent frequent starting of the fire pumps by maintaining pressure in the yard mains in accordance with Section 6.b of BTP CMEB 9.5-1 and NFPA 20. The staff is concerned that the applicant has misapplied the QA Condition 3 designation for license renewal scoping purposes and excluded jockey pumps from the scope of license renewal, although the licensing basis of the plants indicates that these jockey pumps are relied upon to perform a function required by 10 CFR 50.48.

Duke Response to Open Item 2.3.3.19-2

Duke researched all of the documentation that comprises the current licensing basis to determine those systems, structures, and components required to comply with 10 CFR 50.48. Based on the staff's regulations and guidance, Duke's criteria for including a fire protection SSC within the scope of license renewal is that it must be discussed as a commitment in both the fire protection SERs and the UFSARs and perform a function related to prevention, detection, or suppression so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized.

The plant UFSARs discuss the jockey pumps in the System Description- General subsection. The fire protection SERs discuss the existence of jockey pumps. The jockey pumps are not relied on in a plant evaluation or safety analysis to function so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized. Because the jockey pumps are not relied upon for one of the above criteria, they are not within the scope of license renewal.

A 10 CFR 50.59 evaluation is in progress to revise the UFSAR to describe only those components that are required to comply with 10 CFR 50.48.

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Other statements in Section 2.3.3.19 of the license renewal SER related to this open item are addressed below:

Staff SER Statement	Duke Comment
<p>The jockey pump's importance is to prevent the main fire pumps from cycling off and on with system pressure changes. p. 2-117</p>	<p>Duke design is that main fire pumps start on low system pressure. They can only be secured by manual operator action at the pump. Operators are directed to investigate why the pumps started. If there is no fire, the corrective action process is entered to investigate and resolve the cause of the actuation.</p>
<p>This [jockey pump] protects the main fire pumps, which are also required for compliance with 10 CFR 50.48, from excessive use which could prevent the fire pumps from being reliable when needed to provide water during a fire event. p. 2-117</p>	<p>McGuire and Catawba's main fire pumps are not traditional fire pumps. They are service water pumps that are designed to run continuously without damage.</p>
<p>...This component [jockey pump] was accepted by the NRC staff in an SER as satisfying the provisions of Appendix A to BTP 9.5-1 for McGuire and Appendix A to CMEB 9.5-1 for Catawba. p. 2-117</p>	<p>Duke agrees. The existence of a jockey pump is a commitment to satisfy the provisions of Appendix A to BTP 9.5-1 for McGuire and Appendix A to CMEB 9.5-1 for Catawba. However, it is not relied on in a plant evaluation or safety analysis to function so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized.</p>

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Open Item 2.3.3.19-3 Duke did not identify Catawba fire suppression equipment to lower containment carbon filters as within the scope of license renewal. Section 9.5.1.2.1 of the UFSAR states that the RF system provides a fixed water suppression system for charcoal filters. On pages 48-50 of Duke's revised response to Appendix A to BTP APCSB 9.5-1, submitted to the NRC by letter dated November 4, 1983, Duke stated that lower containment carbon filters are provided with fire suppression capability. According to NRC Inspection Report 50-369/02-05, 50-370/02-05, 50-413/02-05 and 50-414/02-05 (ML021280003), Duke Specification CNS-1465.00-00-0006 states that carbon filters are protected by built-in water spray systems. The staff does not believe that the applicant's distinction between charcoal and carbon filters is material. Therefore, the applicant should identify water suppression equipment associated with the protection of carbon (or charcoal) filters as within the scope of license renewal.

Duke Response to Open Item 2.3.3.19-3

Duke researched all of the documentation that comprises the current licensing basis to determine those systems, structures, and components required to comply with 10 CFR 50.48. Based on the staff's regulations and guidance, Duke's criteria for including a fire protection SSC within the scope of license renewal is that it must be discussed as a commitment in both the fire protection SERs and the UFSARs and perform a function related to prevention, detection, or suppression so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized.

The UFSAR discusses the suppression of these filters. The fire protection SER discusses the existence of the suppression of these filters. The suppression for these filters is currently relied on in a plant evaluation to function so that radioactive releases are minimized. Because the suppression system is currently relied upon for one of the criteria, they are within the scope of license renewal.

Further review by Duke has determined that the piping, sprinklers, and valve bodies associated with the Catawba Reactor Building Charcoal Filter Unit sprinklers should have been identified as within the scope of license renewal and subject to aging management review. The components of this portion of the Catawba Fire Protection System are listed in Table 3.3-27 of the Application. Please see Section 3.3.1 for a description of each column in this table. For the convenience of the reviewer, the aging management review results for this portion of the Catawba Fire Protection System are repeated below:

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1	2	3	4	5	6
Component Type	Component Function	Material	Internal Environment	Aging Effects	Aging Management Programs and Activities
			External Environment		
Pipe	Pressure Boundary	Carbon Steel	Ventilation	None Identified	None Required
			Reactor Building	Loss of Material	Fluid Leak Management Program (Note 3) Inspection Program for Engineering Structures and Components
Sprinklers	Pressure Boundary & Spray	Brass	Ventilation	None Identified	None Required
			Reactor Building	Loss of Material	Fluid Leak Management Program (Note 3)
Valve Bodies	Pressure Boundary	Stainless Steel	Ventilation	None Identified	None Required
			Reactor Building	None Identified	None Required

Note 3 is from LRA Table 3.3-27 and reads as follows:

The Fluid Leak Management Program is applicable only within the Reactor Building or Auxiliary Building.

Based on the evaluations provided in Appendix B for the aging management programs and activities listed above, the aging effects will be adequately managed such that the intended functions of the components listed in the above table will be maintained consistent with the current licensing basis for the period of extended operation.

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Open Item 2.3.3.19-4 A license condition for McGuire and Catawba states that Duke Energy Corporation shall implement and maintain in effect all provisions of the approved fire protection program as described in the UFSARs for the respective facilities. Sections 9.5.1.2.1 and 9.5.1.2.2 of the UFSARs state that manual hose stations and automatic sprinkler or deluge systems are provided for the protection of 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. The UFSARs do not differentiate between those manual hose station and automatic sprinklers that are required to comply with 10 CFR 50.48 and those that are not. Additionally, the regulations governing fire protection apply to more than the protection of structures and equipment relied upon for safe plant shutdown. Therefore, the applicant should furnish documentation that demonstrates that the fire protection features are not required by 10 CFR 50.48 or identify the components associated with these manual hose stations and automatic sprinkler or deluge systems as being within the scope of license renewal and subject to an AMR.

Duke Response to Open Item 2.3.3.19-4

The staff is correct in identifying that the UFSAR does not differentiate between those sprinklers that are required for compliance with 10 CFR 50.48 and those that are not. Therefore, review of the UFSAR alone cannot determine those sprinklers required to comply with 10 CFR 50.48.

Duke researched all of the documentation that comprises the current licensing basis to determine those systems, structures, and components required to comply with 10 CFR 50.48. Based on the staff's regulations and guidance, Duke's criteria for including a fire protection SSC within the scope of license renewal is that it must be discussed as a commitment in both the fire protection SERs and the UFSARs and perform a function related to prevention, detection, or suppression so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized.

The plant UFSARs state that suppression exists in the areas mentioned in the Open Item above. The fire protection SERs do not address suppression in these areas. The suppression systems in these areas are not relied on in a plant evaluation or safety analysis to function so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized are included within the scope of license renewal. The plant evaluation (fire hazards analysis) credits the 3-hour fire barrier around the auxiliary and reactor buildings to perform the function to meet the three criteria above in the event of a fire in any of these areas. Since the suppression systems are not discussed as a

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commitment in the fire protection SER and do not perform a function in a plant evaluation of safety analysis to ensure any of the above three criteria, they are not within the scope of license renewal.

A 10 CFR 50.59 evaluation is in progress to revise the UFSAR to describe only those components that are required to comply with 10 CFR 50.48.

Other statements in Section 2.3.3.19 of the license renewal SER related to this open item are addressed below:

Staff SER Statement	Duke Comment
<p>The staff does not agree that the components listed in the UFSAR as satisfying the FP program can be excluded from the scope of license renewal. p. 2-118</p>	<p>In order for a fire protection SSC to meet the scope of 10 CFR 54.4(a)(3), it must perform a function that demonstrates compliance with 10 CFR 50.48. Duke's criteria for a fire protection SSC that performs a function that demonstrates compliance with 10 CFR 50.48 is that it must be discussed as a commitment in <u>both</u> the fire protection SERs <u>and</u> the UFSARs <u>and</u> perform a function related to prevention, detection, or suppression so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized.</p> <p>These suppression systems are not in the fire protection SERs. They do not perform a function to satisfy any of the three criteria above.</p>

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Staff SER Statement	Duke Comment
<p>From a technical standpoint, water suppression stations and deluge systems are important to provide automatic suppression in areas where the fire is expected to either be controlled until the fire brigade arrives or where due to the hazard, the suppression system is provided to extinguish the fire. p. 2-118</p>	<p>Duke agrees. However, this does not address the scoping criteria of 10 CFR 54.4(a)(3).</p>
<p>Manual hose stations are important because they allow the fire brigade to deliver water to quickly extinguish fires in areas closest to the hose station. p. 2-118</p>	<p>Duke agrees. However, this does not address the scoping criteria of 10 CFR 54.4(a)(3).</p>
<p>Age-related degradation of these components could lead to the inability to control or extinguish a fire, which would allow it to grow uncontrolled. p. 2-118</p>	<p>Duke agrees. However, consideration of age-related degradation of a component is not a scoping criteria per 10 CFR 54.4(a)(3).</p>

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Open Item 2.3.3.19-5 The staff agrees with the applicant that the strainers perform an intended function that meets one of the scoping criteria (specifically 10 CFR 54.4(a)(3)). The staff's technical concern is that Duke uses lake water to supply their fire protection suppression systems at McGuire and Catawba. Lake water is corrosive and may contain sediment, which can potentially clog the fire pumps. In addition, the strainers keep debris from plugging the sprinkler nozzles in fire suppression systems in the event that sprinklers are actuated. This fire protection component should be managed in an AMP. However, the staff is concerned that the strainers were inappropriately screened out. Although the strainers may be in-line with and connected to the main fire pump, their function is passive (as is the pump casing's function). The applicant included the pump casings within the scope of license renewal; the strainers also should be within scope.

Duke Response to Open Item 2.3.3.19-5

Duke will include the main fire pump strainers as subject to aging management review. Provided below is the aging management review for the main fire pump strainers.

Note: The aging management review of the strainer is generically applicable to both McGuire Nuclear Station and Catawba Nuclear Station.

Each station has three main fire pumps. The pumps are normally in standby and are automatically started on low system pressure. Each pump has a strainer that is within the scope of license renewal and is subject to aging management review because it is long-lived, passive component. The strainer prevents debris from entering the pump when it is in operation thus protecting the pump from damage. The strainer has a 1/2 inch mesh and can be made of either bronze or stainless steel. In order to manage the effects of aging, a new inspection will be implemented. The following is a summary of the aging management review:

Component Type	Component Function (Note 1)	Material	Internal Environment	Aging Effect	Aging Management Programs and Activities
			External Environment		
Main Fire Pump Strainers	Filtration	Bronze or Stainless Steel	Raw Water Note (2)	Loss of Material	Fire Protection Program – Main Fire Pump Strainer Inspection

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- (1) Filtration – Provide filtration of process fluid so that downstream equipment and/or environments are protected.
- (2) The Main Fire Pump Strainers are located on the suction side of the pumps, totally immersed in raw water.

Main Fire Pump Strainer Inspection

The *Main Fire Pump Strainer Inspection* is a new aging management activity. The purpose of the *Main Fire Pump Strainer Inspection* is to identify any loss of material of each main fire pump strainer. The strainer is attached to the base of the suction bell. The raw water flow could result in loss of material of the strainer. The *Main Fire Pump Strainer Inspection* will inspect the strainers for loss of material at least once every ten years.

Scope – The scope of the *Main Fire Pump Strainer Inspection* is the strainer located on the suction bell of each main fire pump.

Preventive Actions – No actions are taken as part of this program to prevent aging effects or to mitigate aging degradation

Parameters Monitored or Inspected – The parameters inspected by the *Strainer Inspection* is loss of material due to exposure to a raw water environment.

Detection of Aging Effects – In accordance with information provided in **Monitoring & Trending** below, the *Main Fire Pump Strainer Inspection* will detect loss of material of the main fire pump strainers prior to loss of component intended function.

Monitoring & Trending – The *Main Fire Pump Strainer Inspection* is a general visual inspection for loss of material of the strainer. The *Main Fire Pump Strainer Inspection* will be performed at least once every ten years.

For McGuire, the initial *Main Fire Pump Strainer Inspection* will be completed following issuance of renewed operating licenses for McGuire Nuclear Station and by June 12, 2021 (the end of the initial license of McGuire Unit 1)

For Catawba, the initial *Main Fire Pump Strainer Inspection* will be completed following issuance of renewed operating licenses for Catawba Nuclear Station and by December 6, 2024 (the end of the initial license of Catawba Unit 1).

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Acceptance Criteria – The acceptance criteria for the *Main Fire Pump Strainer Inspection* is no unacceptable loss of material that could result in a loss of component intended function(s) as determined by engineering.

Corrective Action & Confirmation Process – If engineering evaluation determines that the observed aging effects do not cause a loss of component intended function, then no further actions are necessary. If engineering evaluation determines that the observed aging effects could cause a loss of component intended function, then corrective actions are taken, including cleaning of the strainer or replacement. Specific corrective actions will be implemented in accordance with the corrective action program.

Administrative Controls – The *Main Fire Pump Strainer Inspection* will be implemented in accordance with controlled plant procedures.

Operating Experience – The *Main Fire Pump Strainer Inspection* is a new inspection for which there is no operating experience. The inspection frequency is based on the planned frequency for performing routine maintenance on each main fire pump.

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Proposed Revision to the UFSAR Supplements

The following statements will be added to the summary description of the Fire Protection Program in each station's UFSAR Supplement:

The *Main Fire Pump Strainer Inspection* will identify any loss of material of each main fire pump strainer. The raw water flow could result in loss of material. The acceptance criteria for the *Main Fire Pump Strainer Inspection* is no unacceptable loss of material that could result in a loss of component intended function(s) as determined by engineering. The *Main Fire Pump Strainer Inspection* will inspect the strainers for loss of material at least once every ten years.

For McGuire, the initial *Main Fire Pump Strainer Inspection* will be completed following issuance of renewed operating licenses for McGuire Nuclear Station and by June 12, 2021 (the end of the initial license of McGuire Unit 1)

For Catawba, the initial *Main Fire Pump Strainer Inspection* will be completed following issuance of renewed operating licenses for Catawba Nuclear Station and by December 6, 2024 (the end of the initial license of Catawba Unit 1).

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New Open Item 2.3.3.19-6 10 CFR 50.48 requires each operating nuclear station to have a fire protection plan. A license condition for McGuire and Catawba states that Duke Energy Corporation shall implement and maintain in effect all provisions of the approved fire protection program as described in the UFSAR for the respective facilities. Section 9.5.1.2.3, "Fire Protection, Category I Safety Related," of the McGuire UFSAR states that the manually operated water spray systems provide fixed spray patterns of water for Reactor Building Purge Exhaust Filters 1A, 1B, 2A and 2B. However, drawing MCFD 1599-02.01, coordinates H-3, G-3, C-5 and B-7, indicates that piping and sprinklers associated with this function are also excluded from scope. The staff is concerned that the manually operated water spray systems for these filters were inappropriately excluded from the scope of license renewal and an AMR.

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Duke researched all of the documentation that comprises the current licensing basis to determine those systems, structures, and components required to comply with 10 CFR 50.48. Based on the staff's regulations and guidance, Duke's criteria for including a fire protection SSC within the scope of license renewal is that it must be discussed as a commitment in both the fire protection SERs and the UFSARs and perform a function related to prevention, detection, or suppression so that (1) the capability to safely shut down the plant is ensured (2) radioactive releases are minimized, or (3) loss of safety-related redundant systems is minimized.

The UFSAR discusses the suppression of these filters. The fire protection SER discusses the existence of the suppression of these filters. The suppression for these filters is currently relied on in a plant evaluation to function so that radioactive releases are minimized. Because the suppression system is currently relied upon for one of the criteria, they are within the scope of license renewal.

Further review by Duke has determined that the flexible hoses, piping, sprinklers, and valve bodies associated with the McGuire Reactor Building Exhaust filters spray system should have been identified as within the scope of license renewal and subject to aging management review. The components of this portion of the McGuire Fire Protection System are listed in Table 3.3-26 of the Application. For the convenience of the reviewer, the aging management review results for this portion of the McGuire Fire Protection System are repeated below:

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Component Type	Component Function	Material	Internal Environment	Aging Effects	Aging Management Programs and Activities
			External Environment		
Flexible Hose	Pressure Boundary	Stainless Steel	Ventilation	None Identified	None Required
			Sheltered	None Identified	None Required
Pipe	Pressure Boundary	Galvanized Steel or Carbon Steel	Ventilation	None Identified	None Required
			Sheltered	Loss of Material	Fluid Leak Management Program (Note 3) Inspection Program for Engineering Structures and Components
Rupture Disk	Pressure Boundary	Carbon Steel	Ventilation	None Identified	None Required
			Sheltered	Loss of Material	Fluid Leak Management Program (Note 3) Inspection Program for Engineering Structures and Components
Spray Nozzles	Pressure Boundary & Spray	Bronze	Ventilation	None Identified	None Required
			Sheltered	Loss of Material	Fluid Leak Management Program (Note 3)
Spray Nozzles	Pressure Boundary & Spray	Carbon Steel	Ventilation	None Identified	None Required
			Sheltered	Loss of Material	Fluid Leak Management Program (Note 3) Inspection Program for Engineering Structures and Components
Spray Nozzles	Pressure Boundary & Spray	Stainless Steel	Ventilation	None Identified	None Required
			Sheltered	None Identified	None Required

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Component Type	Component Function	Material	Internal Environment	Aging Effects	Aging Management Programs and Activities
			External Environment		
Valve Bodies	Pressure Boundary	Cast Iron or Carbon Steel	Ventilation	None Identified	None Required
			Sheltered	Loss of Material	Fluid Leak Management Program (Note 3) Inspection Program for Engineering Structures and Components

Note 3 is from LRA Table 3.3-26 and reads as follows:

The Fluid Leak Management Program is applicable only within the Reactor Building or Auxiliary Building.

Based on the evaluations provided in Appendix B for the aging management programs and activities listed above, the aging effects will be adequately managed such that the intended functions of the components listed in the above table will be maintained consistent with the current licensing basis for the period of extended operation.