

April 10, 2003

LICENSEE: Omaha Public Power District

FACILITY: Fort Calhoun Station, Unit 1

SUBJECT: SUMMARY OF TELECOMMUNICATION WITH OMAHA PUBLIC POWER DISTRICT (OPPD) TO DISCUSS DRAFT REQUESTS FOR ADDITIONAL INFORMATION (RAIs) FOR THE RENEWAL OF THE OPERATING LICENSE FOR FORT CALHOUN STATION, UNIT 1 (FCS)

On August 8, 2002, the NRC staff (the staff) and representatives from OPPD held a telecommunication (telecon) to discuss draft request for additional information (RAIs) resulting from the staff's review of license renewal application (LRA) Sections 2.3.1.2, 2.3.1.3, 2.3.2.1, 2.3.3.3, 2.3.3.4, 2.3.3.6, 2.3.3.7, B.1.2, B.1.5, B.2.1, and B.3.6. A list of telecon participants are enclosed. OPPD has had an opportunity to review and comment on this summary.

2.3.1.2 Reactor Coolant

2.3.1.2-D1 The Fort Calhoun Station (FCS) current licensing basis (CLB) for fire protection (FP) complies with certain sections of Appendix R, particularly Section III.G, which provides the requirements for the fire protection safe shutdown capability. Discuss if the pressurizer spray heads are credited and relied upon in the fire protection safe shutdown analysis to bring the plant to cold shutdown conditions within a given time for compliance with Appendix R. If it is credited in the fire protection safe shutdown analysis, the component would satisfy 10 CFR 50.48, Appendix R requirements and therefore should be included within the scope of the license renewal.

Telecon Discussion:

The staff agreed to revise its RAI to clarify the role of containment spray in 10 CFR 50.48. Specifically, the staff clarified that the concern is whether the pressurizer spray function is required by 10 CFR 50.48 (fire protection), and whether the spray function should be identified in the LRA as a function that will be maintained. OPPD stated that maintenance of the structural integrity of the spray heads will ensure maintenance of the spray function. The revised RAI was sent to OPPD as part of a Draft RAI Set 8 (see revised RAI below).

The FCS CLB for FP complies with certain sections of Appendix R, particularly Section III.G, which provides the requirements for the fire protection safe shutdown capability. Discuss if the pressurizer spray head and associated piping are credited and relied upon in the fire protection safe shutdown analysis to bring the plant to cold shutdown conditions within a given time for

compliance with Appendix R. If it is credited in the fire protection safe shutdown analysis, the pressurizer spray head and associated piping would satisfy 10 CFR 50.48, Appendix R requirements, and therefore, should be included within the scope of license renewal. The specific intended function of the subject components which meets the 10 CFR 54.4(a)(3) requirement is the spray function, and the particular components which help perform this function are the section of piping and the spray head located inside the pressurizer. The subject components do not have pressure boundary function. The staff believes that with the loss of spray function, it may not be possible to bring the plant to cold shutdown conditions within a given time for compliance with Appendix R, and therefore, the spray head and associated piping inside pressurizer, and the spray function should be identified as within the scope of license renewal. Furthermore, the applicant should propose an AMP for the spray head and associated piping inside pressurizer which provides a reasonable assurance that adequate spray function will be maintained during the extended period of operation.

- 2.3.1.2-D2 Pursuant to 10 CFR 50, Appendix R, Sec.III O, the reactor coolant pump (RCP) lube oil collection subsystem is designed to collect oil from the RCPs and drain it to a collection tank to prevent a fire in the Containment Building during normal plant operations. The staff believes that the subsystem and the tank should be within the scope requiring aging management. However, it appears that the subject components were not identified in the LRA (Tables 2.3.1.2-1 or 2.3.3.14-1); and therefore, the staff requests the applicant to provide an explanation.

Telecon Discussion:

OPPD had no questions with this RAI. The RAI will be renumbered to 2.3.1.2-2.

- 2.3.1.2-D3 Steam generators (SG) are generally equipped with flow restrictors, one of whose intended functions is to limit steam line flow during a steam line rupture. Over the extended life of the plant, it is essential to maintain the flow area of the flow restrictors used in the CLB to calculate the amount of steam released. The staff also believes that such components are susceptible to aging effects such as loss of material and cracking. Accordingly, the staff requests the applicant to provide the following information:

- (a) Are the SGs at FCS equipped with such components?

- (b) If so, include the components within the scope of license renewal and subject to an aging management review (AMR), so that the intended function mentioned above can be maintained over the extended period of operation, or provide a justification for their exclusion.

Telecon Discussion:

The staff asked that the response clarify that the flow limiters are not credited with limiting mass flow in the main steam system as a result of a main steamline break (MSLB). Their only intended function is maintenance of the pressure boundary. RAI will be renumbered 2.3.1.2-3

2.3.1.3 Reactor Vessel

- 2.3.1.3-D1 LRA Section 2.3.1.3 states that the vessel includes two leakage detection lines that are located between the vessel flange O-rings. The staff believes that the inner O-ring, the leakoff lines, and the outer O-ring all support the reactor vessel closure head flange pressure boundary (See letter dated October 27, 1999, from C. I. Grimes of NRC to D. J. Firth of B&WOG). Although in select cases the staff has accepted a site-specific technical justification, in general, the leakoff lines require an aging management review. It appears that the leakage detection lines at FCS have not been identified in the LRA (Table 2.3.1.3-1) as within the scope, nor a plant-specific justification provided. Therefore, please provide a site-specific technical justification for FCS as to why aging management is not required, or perform an aging management review for these components.

Telecon Discussion:

OPPD had no questions with this RAI. The RAI will be renumbered to 2.3.1.3-1.

2.3.2.1 Safety Injection and Containment Spray

- 2.3.2.1-D1 LRA Section 2.3.2.1 states that the function of the Containment Spray (CS) system is to limit the containment structure pressure rise by providing a means for cooling the containment atmosphere after the occurrence of a LOCA. Pressure reduction is accomplished by spraying cool, borated water into the containment atmosphere. The CS System also reduces the leakage of airborne radioactivity by effectively removing radioactive particulates from the containment atmosphere. Removal of radioactive particulates is accomplished by spraying water into the containment atmosphere. The particulates become attached to the water droplets, which fall to the floor and are washed into the containment sump. During recirculation, the CS pumps discharge the borated water through two heat exchangers to a dual set of spray headers and spray nozzles in the containment. These spray headers are supported from the containment roof and are arranged to give essentially complete spray coverage of the containment horizontal cross sectional area. The staff believes that the above mentioned statements in the LRA justify the need to include the spray headers and spray nozzles within the scope of license renewal, and that an

aging management review be submitted in order to preserve the spraying function from degradation due to cracking, corrosion, loss of material and/or blockage. However, it appears that the subject components and the intended functions were not identified in either LRA Table 2.3.2.1-1 or drawing E-23866-210-130 as being within the scope and requiring aging management. Please include these components within the scope and subject to an ARM or justify their exclusion.

Telecon Discussion:

OPPD had no questions with this RAI. The staff asked that the response clarify that the intended functions that must be maintained during the period of extended operation are fission product retention and containment pressure reduction capability; that this is accomplished through maintenance of adequate spray and spray distribution; and that adequate spray and spray distribution is assured by maintaining the structural integrity of the containment spray headers and nozzles, which are identified in LRA Table 2.3.2.1-1, under Pipes & Fittings. RAI will be renumbered to 2.3.2.1-1.

2.3.3.3 Emergency Diesel Generators (EDGs)

2.3.3.3-D1 LRA Section 2.3.3.3 states that EDGs are active and are excluded from the group of equipment that is subject to an aging management review (AMR). This LRA section also states that auxiliary subsystems for the EDGs are treated as separate systems and stop at the connection to the engine skid. Components on the engine side of the auxiliary system connection are considered part of the EDGs for the purposes of license renewal.

With regard to the treatment of the vendor-supplied EDG skid-mounted equipment, the staff's position¹ is that components that perform a passive function and are also long-lived must be subject to an AMR whether they are skid-mounted or not. Please provide a P&ID diagram to clearly identify the EDG evaluation boundaries to ensure that all the long-lived components with a passive function on the EDG skid are subject to an AMR."

Telecon Discussion:

OPPD had no questions with this RAI. However, the staff decided to delete it.

2.3.3.3-D2 The components (expansion joints and mufflers) are identified in drawing E-4183, Rev.1, "Diesel Generator Intake Air & Exhaust Diagram," as being within the scope of license renewal. However, these components are not contained in Table 2.3.3.3-1, which lists components subject to an AMR. The staff believes

¹See staff's evaluation/position as stated in Section 2.3.4.7, Emergency Diesel Generator System, of NUREG-1803, "Safety Evaluation Report Related to the License Renewal of the Edwin I. Hatch Nuclear Plant, Units 1 and 2," dated December 2001.

that these components are passive and long-lived, and therefore should be subject to an AMR. Please clarify whether these components are subject to an AMR, or justify their exclusion.

* Expansion joints (C-1, E~F-1, C-8 and E~F-8)

* Mufflers (C-4 and F-4)

Telecon Discussion:

OPPD had no questions with the RAI. The RAI will be renumbered to 2.3.3.3-1 (because the previous RAI was deleted).

2.3.3.3-D3 The components (e.g. inlet air filter boxes, turbocharger housing, aftercoolers, radiator exhaust ductworks, etc.) are neither identified in drawing E-4183 as being within the scope of license renewal nor included in LRA Table 2.3.3.3-1, which lists components subject to an AMR. The staff believes that these components are long-lived components with a passive function, and therefore are subject to an AMR. Please clarify whether these components are subject to an AMR, or justify their exclusion.

- Inlet air filter boxes (A~B-8 and D~E-8)
- Turbocharger housing (A~B-8 and D~E-8)
- Exhaust reducers (B~C-8 and E~F-8)
- Aftercoolers (A-7 and D-7)
- Radiator exhaust ductworks (E~C-1 and E~F-1)
- EDG air boxes (A-2~7 and D~E-2~7)
- EDG exhaust manifolds (B-2~7 and E-2~7)
- EDG crank cases (not shown in drawing)

Telecon Discussion:

The staff informed OPPD that the RAI would be revised (see revised RAI below) to remove all components except the radiator exhaust ductworks. This RAI will be renumbered to 2.3.3.3-2.

Revised RAI:

“The radiator exhaust ductwork is neither identified in drawing E-4183 as being within the scope of license renewal nor included in LRA Table 2.3.3.3-1, which lists components subject to an AMR. The staff believes that this component is long-lived with a passive function, and therefore is subject to an AMR. Please clarify whether this component is subject to an AMR, or justify its exclusion.

- Radiator exhaust ductworks (E~C-1 and E~F-1)”

2.3.3.4 Emergency Diesel Generator Lube Oil and Fuel Oil

2.3.3.4-D1 Air box drain drums and camshaft counter weight housings are identified in drawing B120F03001, sheets 1 and 2, "Lube Oil System Schematic," as being within the scope of license renewal. However, these components are not contained in LRA Table 2.3.3.4-1 which lists components subject to an AMR. The staff believes that these components are passive and long-lived, and therefore are subject to an AMR. Please clarify whether these components are subject to an AMR, or justify their exclusion.

- Air box drain drums (sh.1 C-7~8, sh.2 C-7~8)
- Camshaft counter weight housings (sh.1 D-5~6, sh.2 D-5~6)

Telecon Discussion:

OPPD had no questions with this RAI. RAI will be renumbered to 2.3.3.4-1.

2.3.3.6 Emergency Diesel Jacket Water

2.3.3.6-D1 Instrument manifolds are identified in drawing B120F04002, sheets 1 and 2, "Jacket Water Schematic," as being within the scope of license renewal. However, these components are not contained in LRA Table 2.3.3.6-1, which lists components subject to an AMR. The staff believes that these components are passive and long-lived and therefore are subject to an AMR. Please clarify whether these components are subject to an AMR, or justify their exclusion.

Telecon Discussion:

OPPD had no questions with this RAI. RAI will be renumbered to 2.3.3.6-1.

2.3.3.7 Starting Air

2.3.3.7-D1 LRA Table 2.3.3.7-1, which lists components subject to an AMR, include filters/strainers. However, these components are not shown in drawing B120F07001, sheets 1 and 2, "Starting Air System Schematic," as being within the scope of license renewal. The staff believes that these components meet the scoping criteria of 10 CFR 54.4(a)(1), and therefore should be within the scope. Further, these components are passive and long-lived, and therefore should be subject to an AMR. Please clarify whether these components are within the scope of license renewal and subject to an AMR, or justify their exclusion.

Telecon Discussion:

OPPD had no questions with this RAI. RAI will be renumbered to 2.3.3.7-1.

B.1.2 Water Chemistry

B.1.2-D1 LRA Section B.1.2 states that the applicant's Chemistry Program is consistent with chemistry-related portions of the GALL program for the closed-cycle cooling water systems. In order to review the scope of the applicant's Chemistry Program the staff needs to know to what extent the program relies on the GALL's closed-cycle and open-cycle cooling water programs. The applicant should clarify how the features of the GALL closed-cycle and open-cycle cooling water programs are incorporated into the FCS chemistry and cooling water corrosion programs.

Telecon Discussion:

OPPD had no questions with this RAI. RAI will be renumbered to B.1.2-1.

B.1.5 Flow Accelerated Corrosion Program

B.1.5-D1 In LRA Section B.1.5, the referenced EPRI document, NSAC-202L-R2, "Recommendations for an Effective Flow-Accelerated Corrosion Program," recommends use of a predictive method for determining the rate at which component degradation by FAC is occurring. This information was not provided in the LRA. What methods are used in the Fort Calhoun plant for predicting components degradation by FAC?

Telecon Discussion:

The staff asked that the response provide details about FAC Manager (i.e., what it does and how it works with CHECWORKS). This RAI will be renumbered to B.1.5-1.

B.2.1 Boric Acid Corrosion Prevention Program

B.2.1-D1 In LRA Section B.2.1, the applicant described several enhancements which it proposes to introduce to the GALL boric acid corrosion program. Since these enhancements will modify the program, the staff needs to understand to what extent the modification of the program will affect its ability to manage the AERMs caused by leaking boric acid. Therefore, the applicant should provide a description of the expected impacts caused by the enhancement of the program."

Telecon Discussion:

OPPD had no questions with this RAI. RAI will be renumbered to B.2.1-1.

B.3.6 Selective Leaching Program

B.3.6-D1 As stated in LRA Section B.3.6, because of the lack of acceptance criteria, the applicant has removed from its inspection program the hardness testing specified in the GALL program. The Selective Leaching Program in GALL specifies hardness measurement as a method for determining the degree of degradation of the components caused by selective leaching. It is considered to be a complementary method to the visual inspection. Trending hardness measurements could be helpful in estimating degradation of a component due to leaching in the case where visual inspection is ineffective. Therefore, the staff requests the applicant to describe how the degradation due to leaching can be evaluated without hardness measurements, particularly in the case where visual inspection cannot produce meaningful results.

Telecon Discussion:

OPPD stated discussed reasons for not performing hardness measurements. The staff noted that the main reason for not performing hardness measurements is the difficulty in performing the measurements inside the components. The staff asked that OPPD's response include a discussion of this aspect of taking hardness measurements. This RAI will be renumbered to B.3.6-1.

The staff notes that, in GALL XI.M33, "Selective Leaching of Materials," it is recommended that one method of detecting the leaching is to perform Brinell Hardness testing. This recommendation is incorrect because it is impossible to measure hardness of the inside surface of a component using hardness testing equipment. The equipment is too bulky to insert inside the component. The only acceptable method is visual inspection.

/RA/

William F. Burton, Project Manager
License Renewal Section
License Renewal and Environmental Impacts Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation

Docket No. 50-285

Enclosure: As stated

cc w/enclosure: See next page

B.3.6 Selective Leaching Program

B.3.6-D1 As stated in LRA Section B.3.6, because of the lack of acceptance criteria, the applicant has removed from its inspection program the hardness testing specified in the GALL program. The Selective Leaching Program in GALL specifies hardness measurement as a method for determining the degree of degradation of the components caused by selective leaching. It is considered to be a complementary method to the visual inspection. Trending hardness measurements could be helpful in estimating degradation of a component due to leaching in the case where visual inspection is ineffective. Therefore, the staff requests the applicant to describe how the degradation due to leaching can be evaluated without hardness measurements, particularly in the case where visual inspection cannot produce meaningful results.

Telecon Discussion:

OPPD stated discussed reasons for not performing hardness measurements. The staff noted that the main reason for not performing hardness measurements is the difficulty in performing the measurements inside the components. The staff asked that OPPD's response include a discussion of this aspect of taking hardness measurements. This RAI will be renumbered to B.3.6-1.

The staff notes that, in GALL XI.M33, "Selective Leaching of Materials," it is recommended that one method of detecting the leaching is to perform Brinell Hardness testing. This recommendation is incorrect because it is impossible to measure hardness of the inside surface of a component using hardness testing equipment. The equipment is too bulky to insert inside the component. The only acceptable method is visual inspection.

/RA/

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Docket No. 50-285

Enclosure: As stated

cc w/enclosure: See next page

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Enclosure

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