

September 21, 2005

Paul A. Harden  
Site Vice President  
Nuclear Management Company, LLC  
27780 Blue Star Memorial Highway  
Covert, MI 49043

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION (RAI) FOR THE REVIEW OF  
THE PALISADES NUCLEAR PLANT, LICENSE RENEWAL APPLICATION  
(TAC NO. MC6433)

Dear Mr. Harden:

By letter dated March 22, 2005, Nuclear Management Company, LLC, (NMC or the applicant) submitted an application pursuant to Title 10 of the *Code of Federal Regulations* Part 54 (10 CFR Part 54), to renew the operating license for Palisades Nuclear Plant (PNP), for review by the U.S. Nuclear Regulatory Commission (NRC). Subsequently, on May 5, 2005, the NRC received a supplement to the license renewal application. The NRC staff is reviewing the information contained in the license renewal application (LRA) and supplement and has identified, in the enclosure, areas where additional information is needed to complete the review.

The question was discussed with your staff, Mr. Robert Vincent, and a mutually agreeable date for this response is within 30 days from the date of this letter. If you have any questions, please contact me at 301-415-2232 or via e-mail at [MJM2@nrc.gov](mailto:MJM2@nrc.gov).

Sincerely,

***/RA R. Auluck for/***

Michael J. Morgan, Project Manager  
License Renewal Section A  
License Renewal and Environmental Impacts Program  
Division of Regulatory Improvement Programs  
Office of Nuclear Reactor Regulation

Docket No.: 50-255

Enclosure: As stated

cc w/encl: See next page

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OFFICE	PM:RLEP	LA:RLEP	SC:RLEP
NAME	MMorgan (R. Auluck for)	MJenkins	SLee (R. Auluck for)
DATE	09/21 /05	09/21/05	09/21/05

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Palisades Nuclear Plant

cc:

Robert A. Fenech, Senior Vice President  
Nuclear, Fossil, and Hydro Operations  
Consumers Energy Company  
1945 Parnall Rd.  
Jackson, MI 49201

Arunas T. Udryns, Esquire  
Consumers Energy Company  
1 Energy Plaza  
Jackson, MI 49201

Regional Administrator, Region III  
U.S. Nuclear Regulatory Commission  
801 Warrenville Road  
Lisle, IL 60532-4351

Supervisor  
Covert Township  
P.O. Box 35  
Covert, MI 49043

Office of the Governor  
P.O. Box 30013  
Lansing, MI 48909

U.S. Nuclear Regulatory Commission  
Resident Inspector's Office  
Palisades Plant  
27782 Blue Star Memorial Highway  
Covert, MI 49043

Michigan Department of Environmental  
Quality  
Waste and Hazardous Materials Division  
Hazardous Waste and Radiological  
Protection Section  
Nuclear Facilities Unit  
Constitution Hall, Lower-Level North  
525 West Allegan Street  
P.O. Box 30241  
Lansing, MI 48909-7741

Michigan Department of Attorney General  
Special Litigation Division  
525 West Ottawa St.  
Sixth Floor, G. Mennen Williams Building  
Lansing, MI 48913

Manager, Regulatory Affairs  
Nuclear Management Company, LLC  
27780 Blue Star Memorial Highway  
Covert, MI 49043

Director of Nuclear Assets  
Consumers Energy Company  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043

John Paul Cowan  
Executive Vice President & Chief Nuclear  
Officer  
Nuclear Management Company, LLC  
700 First Street  
Hudson, WI 54016

Jonathan Rogoff, Esquire  
Vice President, Counsel & Secretary  
Nuclear Management Company, LLC  
700 First Street  
Hudson, WI 54016

Douglas E. Cooper  
Senior Vice President - Group Operations  
Palisades Nuclear Plant  
Nuclear Management Company, LLC  
27780 Blue Star Memorial Highway  
Covert, MI 49043

Robert A. Vincent  
Licensing Lead - License Renewal Project  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043

Palisades Nuclear Plant

- 2 -

cc:

Darrel G. Turner  
License Renewal Project Manager  
Palisades Nuclear Plant  
27780 Blue Star Memorial Highway  
Covert, MI 49043

Mr. James Ross  
Nuclear Energy Institute  
1776 I Street, NW, Suite 400  
Washington, DC 20006-3708

Mr. Douglas F. Johnson  
Director, Plant Life Cycle Issues  
Nuclear Management Company, LLC  
700 First Street  
Hudson, WI 54016

Secretary  
Federal Energy Regulatory Commission  
888 First Street, NE, Room 1A  
Washington, DC 20426

Chairperson  
Michigan Public Service Commission  
P.O. Box 30221  
Lansing, MI 48909-7721

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RLEP RF  
M. Morgan (PM)

**E-MAIL:**

RidsNrrDrip  
RidsNrrDe  
G. Bagchi  
K. Manoly  
W. Bateman  
J. Calvo  
R. Jenkins  
J. Fair  
RidsNrrDssa  
RidsNrrDipm  
D. Thatcher  
R. Pettis  
G. Galletti  
C. Li  
K. Winsberg (RidsOgcMailCenter)  
R. Weisman  
M. Mayfield  
A. Murphy  
S. Smith (srs3)  
S. Duraiswamy  
Y. L. (Renee) Li  
RLEP Staff  
-----

P. Lougheed, RIII  
J. Ellegood, RIII  
M. Garza, RIII  
A. Stone, RIII  
L. Raghavan  
T. Mensah  
OPA

**PALISADES NUCLEAR PLANT (PNP)  
LICENSE RENEWAL APPLICATION (LRA)  
REQUEST FOR ADDITIONAL INFORMATION (RAI)**

**Section 2.2 - Plant Level Scoping Results**

**RAI 2.2-3**

LRA Section 2.1.2.2, "Mechanical Discipline - Specific Scoping Methodology," on Page 2-29, states that electrical components contained in the mechanical systems were usually left in their respective systems since the majority are active and were screened out later. Some electrical components were also kept in their respective mechanical systems where they served a passive pressure boundary function.

The electric heaters and motors are listed in LRA Table 2.3.3-6, and transmitters are listed in LRA Tables 2.3.4-2 & 2.3.4-4, as component types subject to an AMR with pressure boundary as their intended function. Explain how these electrical components serve the intended function of pressure boundary. Identify any other electrical components that are included in the mechanical systems. Also, identify the mechanical systems with which these components are evaluated, and explain how these electrical components serve their intended functions.

**RAI 2.2-6**

LRA Section 2.1.3.1, "Active and Passive Determination," second bullet on Page 2-34, states that solenoid valves (SVs) are also typically active components. However, in some cases, the solenoid valve body actually performs a pressure boundary intended function. All SVs were reviewed against this criteria, and those that were needed to maintain a pressure boundary were identified as passive.

LRA Section 2.3 does not identify the solenoid valves that are within the scope of license renewal, but are excluded from being subject to an AMR because they do not serve a pressure boundary intended function. For the staff to determine whether the solenoid valves are properly evaluated in the LRA, list the solenoid valves that are within the scope of license renewal but are excluded from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

**Section 2.3.3.2 - Circulating Water System**

**RAI 2.3.3.2-2**

LRA Section 2.3.3.2 on Page 2-88, identifies the following valves as the boundaries of the portions of the circulating water system within the scope of license renewal: (1) Valves MOV-5315 and MO-5316, which lead from dilution pumps P-40 A/B to cooling towers E-30 A/B Makeup/Fill located outside of the intake structure pump house, and (2) Valves MOV-5326A (Basin 'A' Cooling Tower Blowdown Line Isolation) and MOV-5326B (Basin 'B' Cooling Tower Blowdown Line Isolation).

However, Valves MOV-5315, MOV-5316, MOV-5326A and MOV-5326B are not shown within the scope of license renewal on license renewal Drawing LR-653, Sheet 1, at Locations D-2, F-2, D-1 and G-1 respectively. Clarify if these valves are within the scope of license renewal. If not, justify the exclusion of the above-mentioned valves from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

Enclosure

### **RAI 2.3.3.2-3**

License renewal Drawing, LR-653, Sheet 1, shows metering orifices (FE-5327A/B) at Locations C-1 and G-1, outside the scope of license renewal. It appears that these metering orifices are located in an area where their failure could cause failure of safety-related components. Therefore, they should be within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(2). Also, metering orifices are listed in Table 2.3.3-2 as components groups subject to an AMR. These components serve a fluid pressure boundary intended function and are passive and long-lived. Justify the exclusion of metering orifices from the scope of license renewal and from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

### **Section 2.3.3.3 - Component Cooling Water System**

#### **RAI 2.3.3.3-1**

License renewal Drawing LR-223, Sheet 1B, shows component cooling water going to the component cooling water radiation monitor, RE-0915, to be monitored for activity, at Location D-4. The radiation monitor and the component cooling lines entering and exiting it are shown within the scope of license renewal. However, LRA Tables 2.3.3-3 and 3.3.2-3, do not list radiation monitor as a component group subject to an AMR.

Clarify whether radiation monitors are included in a component group already listed in LRA Table 2.3.3-3. If not, justify the exclusion of radiation monitors from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

In addition, it appears that there is an inconsistency between different systems related to the scoping of the radiation monitoring instrument. The radiation monitor associated with the component cooling water system is included in this system. However, radiation monitors associated with the radwaste system and steam generator blowdown systems are included in the radiation monitoring system. Explain the basis for this inconsistency.

### **Section 2.3.3.4 - Compressed Air System**

#### **RAI 2.3.3.4-1**

FSAR Section 9.5.1.5.c for the compressed air system states that “The safety positions and position on a loss of air supply for significant safety-related or important to safety air-operated valves are listed in FSAR Table 9-9. No failure of valves due to degraded instrument air precludes maintaining the plant in a safe condition provided the backup systems are available.” FSAR Table 9-9 for valve CV-2191 indicates that the safety position of this valve is open and the position after loss of air is closed with a note also stating that an accumulator is installed to open the valve upon loss of normal air supply.

However, the air supply line and components between valve CV-2191 and the air reservoir are shown outside the scope of license renewal on license renewal Drawing LR-202, Sheet 1, at Location H-5. Failure of the air supply line, its associated in-line components, and the air reservoir will cause the valve to close when the safety position of the valve is open. Therefore the air supply line and components between valve CV-2191 and the air reservoir should be within the scope of license renewal.

Provide the basis for excluding the above-mentioned components from the scope of license renewal and being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

**RAI 2.3.3.4-2**

Compressed air license renewal drawings show portions of the air line connecting to the control valve/damper operators as within the scope of license renewal. However, the following portions of the control valve/damper operators are shown outside the scope of license renewal. Explain how the valves/dampers perform their functions with a failure (loss of air) in the portions that are excluded from the scope of license renewal:

- (a) The air supply line and solenoid valve to valve CV-2165 on LR-202, Sheet 1A (Location F-5).
- (b) The air supply line beyond the solenoid valve to CV-0522A which is shown with red tick marks on LR-205, Sheet 2 (Location G-3).
- (c) The air supply line connecting to valve CV-0736 up to POC-0736 on LR-207, Sheet 2 (Location C-4).
- (d) The air supply line connecting to valve CV-1061 up to POC-1061 on LR-210, Sheet 2 (Location G-3).
- (e) F-354 and the air supply line beyond SV-1768, F-353 and F-355 and the connecting air supply lines on LR-218, Sheet 6. Also, F-352 and F-351 and the connecting air supply lines on LR-218, Sheet 6A.
- (f) The air supply lines and associated components on both sides of valves CV-0735, CV-1221 and CV-0734 on LR-212, Sheet 2 (Locations F-8, G-8 and H-6), and valves MV-PC-161, MV-PC-162 and MV-PC-163 on LR-219, Sheet 1B (Locations D-5, D-6).

**RAI 2.3.3.4-4**

License renewal Drawing LR-212, Sheet 3 (Locations D-7, F-5), shows air lines within the scope of license renewal. However, the continuing portions of these lines are shown outside the scope of license renewal. Explain how the portions that are within the scope of license renewal will be isolated from the portions that are not within the scope of license renewal without a valve or other component to isolate them.

**RAI 2.3.3.4-6**

License renewal Drawing, LR-225, Sheet 1, shows a silencer (S-966) at Location A-6, within the scope of license renewal. However, silencers are not listed in LRA Table 2.3.3-4 as component groups subject to an AMR. Silencers serve a fluid pressure boundary intended function and are passive and long-lived. The silencer does not perform a mechanical function. It appears that this component is within the scope of license renewal for structural considerations. Clarify if silencers are already included in LRA Table 2.3.3-4 as part of any other component group. If not, justify the exclusion of silencers from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

**RAI 2.3.3.4-7**

License renewal Drawing LR-212, Sheet 1A, shows piping and instrumentation diagrams for air compressors C-2A and C-2C.



- (a) First and second stages of air compressor C-2A and C-2C are shown as outside the scope of license renewal. Also, a note on the drawing states, "Per NEI 95-10, air compressors are excluded from the scope of license renewal. Therefore all components located inside C-2A and C-2C are excluded from license renewal scope." However, compressors are listed in LRA Table 2.3.3-4 as subject to an AMR. Explain the contradiction between the LRA table and the license renewal drawing.
- (b) Fans for the air compressors C-2A and C-2C are shown as within the scope of license renewal and listed in LRA Table 2.3.3-4 with the fluid pressure boundary intended function. Explain how these air compressor fans serve a fluid pressure boundary.
- (c) The positive displacement pumps for air compressors C-2A and C-2C are shown as within the scope of license renewal. The component type pumps is listed in LRA Table 2.3.3-4 as subject to an AMR with a fluid pressure boundary intended function. Explain how the pumps with an internal fluid of oil are within the scope of license renewal and the oil sump and oil manifold which also maintain fluid pressure boundary and are passive, are excluded from the scope of license renewal in accordance with 10 CFR 54.4(a).
- (d) The oil cooler and aftercooler tube and shell sides for air compressors C-2A and C-2C are shown as within the scope of license renewal. The tube side of each intercooler for air compressors C-2A and C-2A is shown as within the scope of license renewal. However, the shell side of the intercoolers are shown outside the scope of license renewal. Explain why the shell side of the compressor intercoolers is excluded from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

**RAI 2.3.3.4-8**

LRA Table 2.3.3-4 of the compressed air system lists blowers as a component group subject to an AMR with the intended function of fluid pressure boundary in accordance with 10 CFR 54.21(a)(1). However, the staff could not identify any blowers within the scope of license renewal on the license renewal drawings for the compressed air system. Provide drawings or other documents that present the location of the compressed air system blowers that are within the scope of license renewal in accordance with 10 CFR 54.4(a).

**Section 2.3.3.10 - Miscellaneous Gas System**

**RAI 2.3.3.10-1**

The following components are shown on the license renewal drawings for the miscellaneous gas system within the scope of license renewal. However, LRA Table 2.3.3-10 of the miscellaneous gas system does not list these component groups subject to an AMR. These components serve a pressure boundary intended function and are passive and long-lived.

These components are contained in the hydrogen monitoring system. LRA Section 2.3.3.10 states that the hydrogen monitoring system is a portion of the miscellaneous gas system within the scope of license renewal. LRA Section 2.3.3.10 also states in the "System Function Listing" that "HYM-01" is an intended function of the hydrogen monitoring system which provides continuous hydrogen monitoring of the containment atmosphere during post-accident conditions.

Clarify if these components are already included in LRA Table 2.3.3-10 as part of any other component group. If not, justify the exclusion of these components from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

- (a) Containment sampling pumps on LR-224, Sheet 2, at Locations C-6 and G-5
- (b) Moisture separators on LR-224, Sheet 2, at Locations C-5, F-5

**RAI 2.3.3.10-2**

License renewal Drawing LR-222, Sheet 1 (Location B-1), shows the nitrogen supply lines to the spent fuel pool gate within the scope of license renewal. However, the symbol for the spent fuel pool gate and the inner and outer seals are shown as outside the scope of license renewal. Explain why the spent fuel pool gate seals are outside the scope of license renewal while the nitrogen gas, which is required to inflate the seals to perform its intended function, is within the scope of license renewal.

**RAI 2.3.3.10-3**

On license renewal Drawing LR-222, Sheets 2 and 3, almost all of the drawing is shown as within the scope of license renewal except the nitrogen bottles and air containers. These nitrogen bottles and air bottles are required to supply nitrogen and air backup to the safety-related systems. Explain why the nitrogen and air supply bottles are not within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

Similarly, hydrogen bottles on license renewal Drawing LR-222, Sheet 1A (Location E-8), and their associated piping and components to line HB-21-1" are shown as outside the scope of license renewal. Line HB-21-1" from upstream of valve 1"-130-WE-88 to the continuation flag to the volume control tank is shown as within the scope of license renewal for the chemical and volume control system. It appears that these hydrogen bottles supply backup hydrogen to the volume control tank T-54, shown on license renewal Drawing LR-202, Sheet 1A, at Location F-7. Justify the exclusion of the above nitrogen bottles from the scope of license renewal and from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

**RAI 2.3.3.10-5**

License renewal Drawing, LR-224, Sheet 1 (Location C-7), shows Pump P-2402 as within the scope of license renewal for the miscellaneous gas system. However, the license renewal drawing indicates that the pump is part of a portion of the system which is no longer in service. Identify the license renewal criterion that this pump supports, while it is no longer in service. Also, explain why the pipes leading to this pump are not within the scope of license renewal. In addition, pumps are not listed in LRA Table 2.3.3-10 as a component group subject to an AMR. Justify the exclusion of Pump P-2402 from being subject to an AMR in accordance with the requirements of 10 CFR 54.121(a)(1).

**RAI 2.3.3.10-6**

License renewal Drawing LR-224, Sheet 2 (Locations B-6 and D-6), shows the lines beyond two closed valves continuing on to license renewal Drawing LR-219, Sheet 2 as within the scope of license renewal. On license renewal Drawing LR-219, Sheet 2, the continuation of the lines from Drawing LR-224, Sheet 2, are also shown within the scope of license renewal. However, before entering the post accident sampling monitoring panel C103-1, these lines are shown

outside the scope of license renewal. Explain why these lines are not within the scope of license renewal prior to entering the post accident sampling monitoring panel C103-1.

**RAI 2.3.3.10-7**

LRA Table 2.3.3-10 lists accumulators and tanks as component groups subject to an AMR with a fluid pressure boundary intended function. Clarify whether nitrogen bottles on license renewal Drawing LR-222, Sheet 1 (Locations B-2, E-7, and E-8), or reagent gas and calibration gas bottles on LR-224, Sheet 2, are included in the accumulators/tanks component groups. If these bottles are excluded from being subject to an AMR because they are considered as consumable components, then provide the frequency or condition of their replacement. Also, identify waste gas system accumulators/tanks that are within the scope of license renewal and are subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

**Section 2.3.3.11 - Radwaste System**

**RAI 2.3.3.11-1**

License renewal Drawing LR-650, Sheet 1A, shows an instrument diaphragm at Location F-7, within the scope of license renewal. However, LRA Table 2.3.3-11 does not list instrument diaphragm as a component group subject to an AMR. This instrument diaphragm serves a pressure boundary intended function and is passive and long-lived. Clarify if this component is already included in LRA Table 2.3.3-11 as part of any other component group. If so, identify its intended function. If not, justify the exclusion of this instrument diaphragm from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

**RAI 2.3.3.11-4**

License renewal Drawing LR-654 shows a section of piping HCD-1-1/2" going to the controlled chemical lab drain tank T-76, at Location B-6, within the scope of license renewal. However, the continuation of this piping to license renewal Drawing LR-210, Sheet 1, at Location H-8, is not shown within the scope of license renewal. Resolve this inconsistency between the above-mentioned drawings and provide the basis for the resolution.

**RAI 2.3.3.11-5**

License renewal Drawing LR-210, Sheet 1, shows a section of piping HC-1-1" coming from the controlled chemical lab drain tank T-76, at Location F-8, continuing to the dirty waste drain header outside the scope of license renewal. However, the continuation of this piping on license renewal Drawing LR-211, Sheet 1, at Location E-6, is shown within the scope of license renewal. Resolve this inconsistency between the above-mentioned drawings and provide the basis for the resolution.

**RAI 2.3.3.11-7**

License renewal Drawing LR-210, Sheet 1B, shows the clean resin transfer tank (T-61) at Location D-1 as within the scope of license renewal in accordance with 10 CFR 54.4(a). However, the lines from the clean resin transfer tank to the purification and deborating ion exchangers and to the spent fuel demineralizer, at Location B-1, are excluded from the scope of license renewal. Justify the exclusion of the above mentioned lines (including flow gauge FG-1054) from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

**RAI 2.3.3.11-8**

License renewal Drawing, LR-650, Sheet 1B, shows clean waste transfer pumps P-94 and P-97B, at Location C/D-6, within the scope of license renewal. However, the lines from these clean waste transfer pumps to the continuation license renewal Drawing LR-650, Sheet 1, are shown outside the scope of license renewal. Justify the exclusion of the above mentioned lines, including the restricting orifices R0-5026 and RO-5027, from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

**RAI 2.3.3.11-9**

LRA Section 2.3.3.11, on Page 2-137, states that some SSCs are considered within the scope of license renewal due to environmental qualification in accordance with 10 CFR 54.4(a)(3). LRA Section 2.3.3.11 for the radwaste system states in the "System Function Listing," on Page 2-139 that the radwaste system contains components that are required by the current design basis for environmental qualification in accordance with 10 CFR 50.49. However, based on the information provided in the FSAR and in the LRA, the staff is not able to determine which mechanical components are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(3).

Provide information (e.g., EQ database or reports) so that the staff can identify the mechanical components of the radwaste system that are within the scope of license renewal in accordance with the requirements of the environmental qualification regulating event of 10 CFR 54.4(a)(3).

**Section 2.3.3.13 - Shield Cooling System**

**RAI 2.3.3.13-2**

LRA Section 2.3.3.13, on Page 2-148, states that some SSCs are considered within the scope of license renewal due to environmental qualification in accordance with 10 CFR 54.4(a)(3). LRA Section 2.3.3.13, for the shield cooling system in the "System Function Listing," on Page 2-149, states that the shield cooling system contains equipment in compliance with the environmental qualification requirements of 10 CFR 50.49. However, based on the information provided in the FSAR and in the LRA, the staff is not able to determine which mechanical components are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(3) due to environmental qualification regulated event.

Provide information (e.g., EQ database or reports) so that the staff can identify the mechanical components of the shield cooling system that are within the scope of license renewal in accordance with the requirements of the environmental qualification regulating event of 10 CFR 54.4(a)(3).

**RAI 2.3.3.13-3**

License renewal Drawing LR-221, Sheet 1, shows the shield cooling surge tank within the scope of license renewal. It appears that the tank is within the scope of license renewal in accordance with 10 CFR 54.4(a)(2) to protect safety-related components from spray, flooding and seismic II/I considerations. However, it cannot be determined from the information provided in the LRA and the FSAR why the Y-strainers and the motor control switches are included within the scope of license renewal, whereas the piping between the heat exchanger (E-64), including the shield cooling pumps P-77A and P-77B and the shield cooling surge tank is not within the scope of license renewal. Justify the exclusion of the above mentioned piping from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

### **Section 2.3.3.14 - Spent Fuel Pool Cooling System**

#### **RAI 2.3.3.14-1**

LRA Section 2.3.3.14 states in the “System Function Listing,” that “SFP-01” is an intended function meeting Criterion 1 for inclusion of the spent fuel pool cooling system within the scope of license renewal. The spent fuel cooling system removes decay heat from the fuel stored in the spent fuel pool and cool reactor cavity water during spent fuel transfer. Further, SFP-01 states that cooling the reactor cavity water is not an intended function for the spent fuel pool cooling system that meets the requirements of 10 CFR 54.4. Consequently, the piping shown on license renewal Drawing LR-221-2, Sheet 2, for the spent fuel pool cooling system shows piping that supports the cooling of the reactor cavity outside the scope of license renewal and not being subject to an AMR. The piping starts at Location D-1 on license renewal Drawing LR-221, Sheet 2.

Based on the information provided in the LRA and in the license renewal drawings provided for the spent fuel pool cooling system, it appears that although cooling of the reactor cavity water has been correctly identified as not supporting an intended function, failure of the piping supporting this function may affect the intended function of removing decay heat from the fuel stored in the spent fuel pool.

In order for the staff to complete its review, provide information justifying the exclusion of the above-mentioned portions of the spent fuel pool cooling system piping from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

#### **RAI 2.3.3.14-2**

LRA Table 2.3.3-14 identifies “Component Groups” and their intended functions. Within the table, is the component group, “Filters/Strainers” with the intended function of fluid pressure boundary. This LRA section also states in the “System Function Listing,” that “SFP-01” is an intended function meeting criteria Criterion 1 for inclusion of the system within the scope of license renewal. The system intended function is to remove decay heat from fuel stored in the spent fuel pool.

License renewal Drawing LR-221-2 shows basket strainers, BS-2100 and BS-2101 on the suction side of fuel pool cooling pumps, P-51A and P-51B at Location B-5. NEI-95-10, “Industry Guideline for Implementing The Requirements of 10 CFR Part 54 – The License Renewal Rule,” Revision 4, states that “filtration” is an example of a component intended function in Table 4.1-1. Based on the information provided in the LRA and in the license renewal drawings provided for the spent fuel pool cooling system, it appears that in addition to the fluid pressure boundary function, the basket strainers also have a filtration function.

In order for the staff to complete its review, justify the exclusion of the filtration function of the spent fuel pool cooling systems basket strainers.

#### **RAI 2.3.3.14-3**

LRA Section 2.3.3.14 states in the “System Function Listing,” SFP-03, that maintaining spent fuel pool boron concentration at or greater than required concentrations meets criteria 10 CFR 54.4(a)(1) and is therefore a system intended function. It further implies that there are components associated with performing this intended function but that they are outside the scope of license renewal.

In order for the staff to complete its review, more information about the method and components used to maintain boron concentration at or greater than its required concentrations is required. Identify the method and the components that perform the intended function. Also, justify the exclusion of those components from the scope of license renewal and from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

### **Section 2.3.3.15 - Waste Gas System**

#### **RAI 2.3.3.15-1**

The following components are shown on the waste gas license renewal drawings within the scope of license renewal. However, LRA Table 2.3.3-15 does not list these components as component groups subject to an AMR. These components serve a pressure boundary intended function and are passive and long-lived. Clarify if these components are already included in LRA Table 2.3.3-15 as part of another component group. If not, justify the exclusion of these components from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

- (a) Drain traps at several locations on LR-211, Sheets 2 and 3.
- (b) A flow indicator on LR-211, Sheet 3, at Location G-4.

#### **RAI 2.3.3.15-2**

License renewal Drawing LR-211, Sheet 3, shows pressure indicator/alarms associated with the waste gas decay tanks within the scope of license renewal. However, pressure transmitters and piping to these transmitters are shown outside the scope of license renewal. LRA Section 2.1.3.1, "Active/Passive Determination," second bullet on Page 2-34 states that all instruments are considered active unless they form an integral part of the pressure retaining boundary. These instruments serve a pressure boundary intended function and should be subject to an AMR. Justify the exclusion of these instruments from the scope of license renewal and from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1), respectively.

#### **RAI 2.3.3.15-3**

LRA Section 2.3.3.15, on Page 2-154, states that the hydrogen recombiners are a subsystem to the waste gas system and are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(1). License renewal Drawing LR-218, Sheet 2, shows hydrogen recombiners inside the containment at Location H-8 within the scope of license renewal. However, LRA Table 2.3.3-15 of the waste gas system does not list hydrogen recombiners as a component group subject to an AMR. Clarify whether the components of the hydrogen recombiners are scoped and screened as complex assemblies. Regarding complex assemblies, Table 2.1-2 of NUREG-1800 states that "some structures and components, when combined, are considered a complex assembly...An applicant should establish the boundaries for each assembly by identifying each structure and component that makes up the complex assembly and determining whether or not each structure and component is subject to an AMR." Clarify if hydrogen recombiners are already included in LRA Table 2.3.3-15 as part of any other component group. If not, justify the exclusion of hydrogen recombiners from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

**RAI 2.3.3.15-4**

FSAR Section 11.3.2.2, on Page 11.3-2, states that “if the surge tank is discharging directly to the ventilation stack, a high-radiation condition (as identified by a continuously operating monitoring system taking samples from the discharge line) will automatically close the discharge valve which is upstream of the stack. On occurrence of high surge tank pressure, a waste gas compressor starts automatically and, taking suction from the surge tank, discharges to the decay tanks.” License renewal Drawing LR-211, Sheet 2, shows waste gas compressors C-54, at Location C-3, within the scope of license renewal. However LRA Table 2.3.3-15 does not list compressors as a component group subject to an AMR. Also, a filter upstream and a cooler downstream of this compressor, with their associated piping, are shown outside the scope of license renewal. Further, waste gas compressors C-50 A/B, at Locations D-3 and E-3, are shown outside the scope of license renewal.

- (a) Justify the exclusion of the waste gas compressor C-54 from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).
- (b) Explain why the filter and cooler associated with C-54 are outside the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).
- (c) Explain how waste gas compressors C-50A/B function differently from C-45 and why C-50A/B are outside the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

**RAI 2.3.3.15-5**

LRA Section 2.3.3.15, “System Description,” second paragraph on Page 2-155, states that the boundaries of the portions of the waste gas system within the scope of license renewal include the piping and valves for containment isolation located between containment penetration #52 to CV-1104.

However, the staff is unable to find this section of piping on the license renewal drawings provided for the waste gas system. Identify where this section of piping is located on the license renewal drawings provided for the waste gas system.

**Section 2.3.3.16 - Domestic Water System**

**RAI 2.3.3.16-3**

License renewal Drawing LR-220, Sheet 2, shows a T-36 permanganate filter at Location G-3, within the scope of license renewal in accordance with 10 CFR 54.4(a). However, LRA Table 2.3.3-16 of the domestic water system does not list filters as component types subject to an AMR. LRA Section 2.1.3.2 states that oil, grease and filters (both system and component filters) have been treated as consumables because either a program for periodic replacement exists, or a monitoring program exists that replaces these consumables, based on established performance criteria, when their condition begins to degrade but before there is a loss of intended function. If this filter is excluded from being subject to an AMR because it is subject to replacement as defined in 10 CFR 54.21(a)(1)(ii), describe the schedule for periodic replacement or the monitoring program and the criteria for replacement if they are replaced on condition. If not, justify the exclusion of this filter from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

### **Section 2.3.3.17 - Chemical Addition System**

#### **RAI 2.3.3.17-1**

License renewal Drawing LR-220, Sheet 2, shows chemical addition tanks (T-19B/C) within the scope of license renewal. However neither the associated level gauges, tank drains, nor piping to the suction of the chemical addition pumps (P-15E/F/G) are included within the scope of license renewal, at Locations A-3 and B-4, respectively. Similarly, neither the level gauge or drain on the hydrazine addition tank (T-16) are shown within the scope of license renewal on the same drawing at Location C-8. In contrast, level gauges on the morpholine and boric acid tanks (T-15 and T-19A) as well as the lines to the suction of associated pumps (P-15A/B/C/D) are shown within the scope of license renewal. It appears that level gauges, tank drains, or piping to the suction of the chemical addition pumps are located in an area where their failure could cause failure of safety-related components. Therefore, they should be within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(2). Clarify the basis for this difference.

#### **RAI 2.3.3.17-2**

License renewal Drawing LR-655, Sheet 2, shows pumps P-101, P-100A and P-100B at Locations E-4, D-4 and C-4, respectively, within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). However, the suction of these pumps is shown outside the scope of license renewal. Justify the exclusion of the suction of these pumps from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

#### **RAI 2.3.3.17-6**

License renewal Drawing LR-653, Sheet 1, shows pumps P-47A and P-47B as within the scope of license renewal in accordance with 10 CFR 54.4(a)(2). However, the piping and valves from these pumps, including basket strainers BS-5393 and BS-5394 up to Tank T-44, are shown outside the scope of license renewal. Justify the exclusion of this section of piping from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

### **Section 2.3.4.1 - Condensate and Condenser System**

#### **RAI 2.3.4.1-2**

LRA Table 2.3.4-1 lists "CST Heater Shell," "CST Heater Tubes," "FW Heater Shell and Channel Head" and "Heat Exchangers" separately as component groups subject to an AMR. LRA Section 2.1.2.2 on Page 2-29 states that "heat exchangers were divided into subcomponents as necessary to identify all applicable material/environment/intended function combinations."

- (a) Clarify whether the component group "Heat Exchangers" in LRA Table 2.3.4-1 includes all subcomponents of the heat exchangers (shell, tubes, tubesheets, channel heads, etc.) as being subject to an AMR.
- (b) Identify specifically which heat exchangers (other than the CST heat exchanger and feedwater heaters) are included in the group "Heat Exchangers" in LRA Table 2.3.4-1.
- (c) LRA Section 2.3.4.1, on Page 2-165, specifies feedwater heaters E-2A/B through E-5A/B as portions of the condensate and condenser system within the scope of license renewal. Clarify why feedwater heaters



- E-1A/B, which are shown on license renewal Drawing LR-207, Sheet 1C, are not specified in this LRA section. Explain how feedwater heaters E-1A/B differ from the other heaters.
- (d) Clarify whether the subcomponents, except those listed above, of the CST heaters and FW heaters are excluded from the scope of license renewal. If so, provide justification for their exclusion from the scope of license renewal and from being subject to an AMR in accordance with the requirements of 10 CFR 54.4(a) and 10 CFR 54.21(a)(1).

#### **RAI 2.3.4.1-3**

License renewal Drawing, LR-207, Sheet 1B, shows a flexible connection at Location E-6, within the scope of license renewal. However, the flexible connection, at Location E-3, is shown outside the scope of license renewal. Justify the exclusion of the latter flexible connection from being within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a). Also, LRA Table 2.3.4-1 does not list flexible connections as a component group subject to an AMR. These flexible connections serve a pressure boundary intended function and are passive and long-lived. Clarify if flexible connections are already included in LRA Table 2.3.4-1 as part of any other component group. If not, justify the exclusion of the flexible connections from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

#### **Section 2.3.4.2 - Demineralized Makeup Water System**

##### **RAI 2.3.4.2-1**

LRA Section 2.3.4.2, third paragraph, Item 4, on Page 2-169, identifies a system boundary within the scope of license renewal at valves MV-PMU100 (locked open) and MV-PMU109 (normally open) downstream of the primary system makeup storage tank (T-81). Also, license renewal Drawing LR-220, Sheet 1 (Locations G-4 and G-5), shows the piping upstream of these valves, including the valves within the scope of license renewal. However, the piping downstream of these valves, including the buried pipe, is shown outside the scope of license renewal. Clarify the basis for excluding the piping downstream of valves MV-PMU100 and MV-PMU109 from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a). This LRA section states that T-81 provides condensate/feedwater supply to the condensate storage tank.

Similarly, clarify the basis for excluding the following lines associated with the primary system makeup storage tank (T-90) from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a): lines HBD-14-3", HBD-15-2" and HBD-16-3", on license renewal Drawing LR-652, Sheet 1, at Locations G-4 and G-5, and associated components from the primary system makeup storage tank (T-90) through and including the buried HCC piping downstream. FSAR Section 9.4.2.1 states that T-90 is one of the sources which supplies fuel pool makeup water.

#### **Section 2.3.4.3 - Feedwater (including Aux. Feedwater) System**

##### **RAI 2.3.4.3-2**

License renewal Drawing LR-207, Sheet 2, shows restrictive orifices RO-0783A/B at Locations F-6 and G-6, within the scope of license renewal. The function of these restrictive orifices is to

provide minimum flow recirculation at maximum pressure for the AFW pump. In addition, other restrictive orifices are shown on the license renewal drawings for the feedwater system within the scope of license renewal. LRA Table 2.3.4-3 does not list restrictive orifices as a component group subject to an AMR. However, the intended function “flow restriction” is listed in this table for the component group “pipe and fitting.” Clarify if the flow restrictive orifices are already included in LRA Table 2.3.4-3 in the component group “piping.” If so, identify the intended function that the feedwater restrictive orifices serve. If not, justify their exclusion from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

Additionally, flow nozzles and metering orifices (FE-0783A, FE-0783B, FE-0783C, FE-0737, FE-0736, FE-0727, FE-0749), used for flow measurement are shown within the scope of license renewal on license renewal drawings for the feedwater system (Locations F-6, G-6, D-6, A-5, C-5, G-4, and E-4 respectively). However, LRA Table 2.3.4-3 does not list flow nozzles or metering orifices as component groups subject to an AMR. Clarify whether these flow nozzles and metering orifices are already included in LRA Table 2.3.4-3 as part of any other component group. If so, identify their intended function that should be maintained during the period of extended operation. If not, justify the exclusion of flow nozzles and metering orifices from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

#### **RAI 2.3.4.3-4**

LRA Table 2.3.4-3 of the feedwater system lists “turbines” as a component group subject to an AMR. The auxiliary feedwater pump turbine K-8, at Location C-7, and its associated components are shown within the scope of license renewal on license renewal Drawing LR-205. However, the turbine governor and mechanical speed sensor associated with this turbine are not listed in LRA Table 2.3.4-3 as component groups subject to an AMR. Clarify whether these components are already included in LRA Table 2.3.4-3 under the component group “turbine.” If not, justify the exclusion of the turbine governor and the turbine mechanical speed sensor from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

### **Section 2.3.4.4 - Heater Extraction and Drain System**

#### **RAI 2.3.4.4-1**

A portion of heaters E-2A/B is shown inside of the condenser on license renewal Drawing LR-206, Sheet 1A, at Location C-4/5, within the scope of license renewal (as is the associated boundary of the condenser). Heaters E-1A/B appear to be similarly situated (same drawing, Location B-4/5), yet the portion inside the condenser is not shown within the scope of license renewal. Explain the rationale for the distinction and clarify the physical meaning of the condenser boundary that transects the heaters’ symbol.

#### **RAI 2.3.4.4-2**

License renewal September 14, 2005, Drawing LR-207, Sheet 1C, shows flexible connections at Locations E-3 and G-3, within the scope of license renewal. However, LRA Table 2.3.4-1 does not list flexible connections as a component group subject to an AMR. These flexible connections serve a pressure boundary intended function and are passive and long-lived. Clarify if flexible connections are already included in LRA Table 2.3.4-4 as part of any other component group. If so, identify their intended function. If not, justify the exclusion of flexible connections from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

### **Section 2.3.4.5 - Main Air Ejection and Gland Seal System**

#### **RAI 2.3.4.5-1**

License renewal Drawing LR-206, Sheet 1C, shows the following components within the scope of license renewal. However, LRA Table 2.3.4-5 does not list these components as being subject to an AMR. These components serve a pressure boundary intended function and are passive and long-lived. Clarify if these components are already included in LRA Table 2.3.4-5 as part of any other component group. If not, justify the exclusion of these components from being subject to an AMR in accordance with the requirements of 10 CFR 54.21(a)(1).

- (a) Ejectors at several locations.
- (b) Drain traps at several locations. Clarify if drain traps are part of the component group "steam traps" in LRA Table 2.3.4-5.
- (c) Flexible connections at Locations C-6 and D-6.
- (d) Vacuum pump (P-213) at Location E-5.

### **Section 2.3.4.6 - Main Steam (including SG Blowdown) System**

#### **RAI 2.3.4.6-1**

One function of the ATWS mitigation system is to provide a diverse means of initiating a main turbine trip following an ATWS event. The first stage (impulse chamber) pressure on the high-pressure turbine provides an actuating signal to this mitigation system. The in-line pressure transmitters which sense this pressure, along with their associated piping and components, are therefore within the scope of license renewal in accordance with 10 CFR 54.4(a)(3). However, license renewal Drawing LR-205, Sheet 1, shows these pressure transmitters, at Location D-3, outside the scope of license renewal. In addition, the component group "indicators/recorders" listed in LRA Table 2.3.4-6 is limited to "level glasses" only. This implicitly excludes the above pressure transmitters from being subject to an AMR.

Justify the exclusion of the above mentioned pressure transmitters and associated piping and components from the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

#### **RAI 2.3.4.6-4**

License renewal Drawing LR-205, Sheet 1, shows main steam piping runs that serve as main turbine control valves stem leakoff piping to the gland seal condenser, at Locations C-5 through C-7 and E-5 through E-7. However, the only portion shown within the scope of license renewal is at Location C-4/5, which continues to license renewal Drawing LR-206, Sheet 1C, the gland seal condenser. The remainder of the piping is shown outside the scope of license renewal with no clear indication where the license renewal boundary is.

Explain why the identified piping is not within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a).

### **Section 2.3.4.7 - Turbine Generator System**

#### **RAI 2.3.4.7-3**

LRA Section 2.3.4.7, for the turbine generator system states in the “System Function Listing TGS-AT,” on Page 2-198, that the system contains structures and/or components required by the current licensing basis for anticipated transients without scram (ATWS). It further explains that the turbine trip signal is an input to ATWS. The signal circuitry is in the turbine generator system. The turbine stop valves are in the main steam system.

FSAR Section 7.5.2.6, on Page 7.5-11, identifies the ATWS trip as an input to the “emergency trip 20 ET solenoid” and the emergency trip 20 ET solenoid directly releases EHC fluid to the drain. However, based on the information provided in the FSAR and in the LRA, it is not clear which mechanical components (e.g., EHC components) of the turbine generator system are within the scope of license renewal in accordance with the requirements of 10 CFR 54.4(a)(3) criterion for ATWS.

Provide information so that the staff can identify the mechanical components of the turbine generator system that are within the scope of license renewal in accordance with the requirements of the ATWS regulating event of 10 CFR 54.4(a)(3).