

**Edward H. Hubley**  
Director, Site Maintenance

724-682-4862

May 19, 2008  
L-08-169

10 CFR 54

ATTN: Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT:**

Beaver Valley Power Station, Unit Nos. 1 and 2

BV-1 Docket No. 50-334, License No. DPR-66

BV-2 Docket No. 50-412, License No. NPF-73

Reply to Request for Additional Information for the Review of the Beaver Valley Power Station, Units 1 and 2, License Renewal Application (TAC Nos. MD6593 and MD6594)

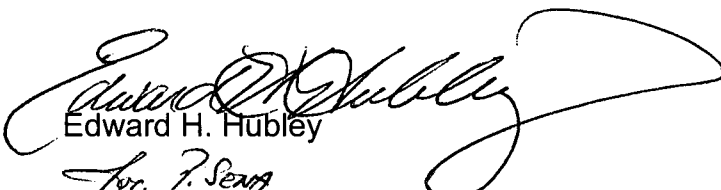
Reference 1 provided the FirstEnergy Nuclear Operating Company (FENOC) License Renewal Application for the Beaver Valley Power Station (BVPS). Reference 2 requested additional information from FENOC regarding BVPS license renewal scoping in Section 2.3.3.18 of the BVPS License Renewal Application.

The Attachment provides the FENOC reply to the U.S. Nuclear Regulatory Commission request for additional information.

There are no regulatory commitments contained in this letter. If there are any questions or if additional information is required, please contact Mr. Clifford I. Custer, Fleet License Renewal Project Manager, at 724-682-7139.

I declare under penalty of perjury that the foregoing is true and correct. Executed on May 19, 2008.

Sincerely,

  
Edward H. Hubley  
*J. P. Serra*

A108  
WRR

References:

1. FENOC Letter L-07-113, "License Renewal Application," August 27, 2007.
2. NRC Letter, "Request for Additional Information for the Review of the Beaver Valley Power Station, Units 1 and 2, License Renewal Application (TAC Nos. MD6593 and MD6594)," April 17, 2008.

Attachment:

Reply to Request for Additional Information Regarding Beaver Valley Power Station, Units 1 and 2, License Renewal Application, Section 2.3.3.18

cc: Mr. K. L. Howard, NRC DLR Project Manager  
Mr. S. J. Collins, NRC Region I Administrator

cc: w/o Attachment  
Dr. S. S. Lee, NRC DLR Acting Director  
Mr. D. L. Werkheiser, NRC Senior Resident Inspector  
Ms. N. S. Morgan, NRC DORL Project Manager  
Mr. D. J. Allard, PA BRP/DEP Director  
Mr. L. E. Ryan, PA BRP/DEP

ATTACHMENT

L-08-169

Reply to Request for Additional Information Regarding  
Beaver Valley Power Station, Units 1 and 2,  
License Renewal Application, Section 2.3.3.18  
Page 1 of 19

**Section 2.3.3.18**

The staff reviewed the Beaver Valley Power Station, Units 1 and 2 (BVPS) license renewal application (LRA), updated final safety analysis report (UFSAR), Section 9.5.1, "Fire Protection System," and following fire protection current licensing basis documents listed in the BVPS Units 1 and 2 Operating License Condition 2.C.5 and 2.F respectively:

Nuclear Regulatory Commission (NRC) Fire Protection Safety Evaluation Reports – BVPS Unit 1: Amendment No. 18 to the Beaver Valley Power Station Unit No. 1, Operating License DPR 66. Updated Fire Protection Appendix R Review Report for BVPS Unit 1.

NRC Fire Protection Safety Evaluation Reports- BVPS Unit 2:  
NUREG- 1057, October 1985 and Supplements 1 through 6.

The staff has identified that fire protection systems and components discussed in the following sections have been excluded from the scope of license renewal and an aging management review (AMR). These systems and components were not included in the license renewal boundaries and appear to have fire protection intended functions required for compliance with Title 10 of the Code of Federal Regulations (CFR) 50.48, "Fire protection," as stated in 10 CFR 54.4. Therefore, in order to complete our review, the staff requires responses to the following request for additional information.

**Question RAI 2.3.3.18-1**

[NOTE: FirstEnergy Nuclear Operating Company (FENOC) added letters (a) through (e) to the following sub-questions for clarity in matching the questions to the responses.]

The following LRA drawings show fire protection system components as out of scope:

(a) LRA drawing 1-33-1 Rev. 4 shows the following fire protection system's components out of scope (i.e., not colored in red):

- Fuel transfer pump and associated components
- 475 gallon hydro pneumatic tank FP-TK-1

- (b) LRA drawing 1-33-3 Rev. 4 shows the following fire protection system's components out of scope (i.e., not colored in red):
- Carbon dioxide (CO<sub>2</sub>) refrigeration system
  - CO<sub>2</sub> purge system
- (c) LRA drawing 1-33-4 Rev. 4 shows the following fire protection system's components out of scope (i.e., not colored in red):
- Electrical equipment room and diesel generator room CO<sub>2</sub> fire suppression system
  - Halon 1301 fire suppression system
- (d) LRA drawing 1-33-7 Rev. 4 shows the following fire protection system's components out of scope (i.e., not colored in red):
- North east and south west turbine building fire suppression system
  - Relay building fire suppression system
- (e) LRA drawing 2-33-1F Rev. 5 shows the following fire protection system's components out of scope (i.e., not colored in red):
- Deluge system for Transformers TR-2, TR-2A, TR-2B, TR-2C, and TR-2D
  - Turbine building fire suppression systems
  - Decontamination building fire suppression systems

The staff requests that the applicant verify whether the above systems and components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If these systems and components are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.

RESPONSE RAI 2.3.3.18-1(a)

- (a) LRA drawing 1-33-1 Rev. 4 shows the following fire protection system's components out of scope (i.e., not colored in red):
- Fuel transfer pump and associated components
  - 475 gallon hydro pneumatic tank FP-TK-1
- (a) The un-highlighted fire protection fuel transfer pump and associated components outside of the pump cubicle, which are associated with the diesel-driven fire pump, are not within the scope of license renewal. The fuel oil storage tank [FP-TK-2]

shown on drawing LR 1-33-1, Rev. 5, is sized to supply fuel oil for a period of 8 hours with pump operation at full capacity. The fuel transfer pump and associated piping are not classified as safety-related. No additional source of fuel is credited for operation of the pump for any 10 CFR 54.4(a) function. The fuel makeup pump and piping (outside the pump cubicle) are physically separated from all safety-related equipment, and their integrity is not required to avoid spatial interactions with safety-related components.

The hydro pneumatic tank, FP-TK-1, is in scope for license renewal, but highlighting was inadvertently omitted on LRA drawing LR 1-33-1, Rev. 4; drawing LR-1-33-1 was corrected (Rev. 5) and submitted as errata on 12/21/2007 [reference FENOC Letter L-07-501, ML073610255].

RESPONSE RAI 2.3.3.18-1(b)

**(b) LRA drawing 1-33-3 Rev. 4 shows the following fire protection system's components out of scope (i.e., not colored in red):**

- **Carbon dioxide (CO<sub>2</sub>) refrigeration system**
- **CO<sub>2</sub> purge system**

(b) The carbon dioxide (CO<sub>2</sub>) refrigeration components are not within the scope of license renewal. The refrigeration subsystem is not needed to maintain CO<sub>2</sub> tank operability. Operability requirements for the tank are based on CO<sub>2</sub> level and pressure. The CO<sub>2</sub> is stored in liquid form at saturation conditions. Excess heat that is not removed by the refrigeration components results in the temperature of the CO<sub>2</sub> rising. Since the CO<sub>2</sub> is at saturation conditions, the tank pressure rises slightly with temperature until the pressure equals that of the bleeder relief valves' set point. Both CO<sub>2</sub> storage tanks have bleeder relief valves and a large capacity safety valve that maintain system pressure. Under loss of refrigeration, the bleeder valve can maintain self refrigeration of the CO<sub>2</sub> unit and the CO<sub>2</sub> tank pressure will remain in the operable range. Tank levels are monitored by low level alarms and operator periodic checks. Additional CO<sub>2</sub> would be added as necessary to maintain levels within the operable range.

The CO<sub>2</sub> purge system depicted on drawing LR 1-33-3, grids F-6 through G-7, is not within the scope of license renewal. This subsystem provides for the purging of air or hydrogen from the main generator for maintenance. It is unrelated to 10 CFR 54.4(a)(3) fire protection functions or other 10 CFR 54.4(a) criteria, and is, therefore, not within the scope of license renewal. Unit 1 UFSAR, Table 9.10-2, "Areas in which Fire Detection / Suppression is Outside the Scope of 50.48 Fire Protection," identifies the Main Generator CO<sub>2</sub> Purge System (used for purging H<sub>2</sub> during shutdown and O<sub>2</sub> during startup) as outside the scope of 10 CFR 50.48 Fire Protection.

RESPONSE RAI 2.3.3.18-1(c)

**(c) LRA drawing 1-33-4 Rev. 4 shows the following fire protection system's components out of scope (i.e., not colored in red):**

- **Electrical equipment room and diesel generator room CO<sub>2</sub> fire suppression system**
- **Halon 1301 fire suppression system**

(c) The CO<sub>2</sub> and Halon subsystems depicted on drawing LR 1-33-4, grids B-6 through G-10, are not within the scope of license renewal. These CO<sub>2</sub> and Halon subsystems provide fire suppression for equipment located in the Guard House (also known as the Security Building). Fire protection in this area is provided for commercial purposes only. A fire in this area would not affect the ability to achieve safe shutdown. Unit 1 UFSAR, Table 9.10-2, identifies the Security Building as outside the scope of 10 CFR 50.48 Fire Protection.

RESPONSE RAI 2.3.3.18-1(d)

**(d) LRA drawing 1-33-7 Rev. 4 shows the following fire protection system's components out of scope (i.e., not colored in red):**

- **North east and south west turbine building fire suppression system**
- **Relay building fire suppression system**

(d) The fire protection equipment shown on LRA drawing 1-33-7 that is not highlighted is not within the scope of license renewal. This equipment supplies fire suppression water to outside transformers (Main transformer, and Station Service Transformers 1A, 1C and 1D) and to outside transformers in the switchyard. Fire protection for these areas is provided for commercial purposes only. A fire in these areas would not affect the ability to achieve safe shutdown. Unit 1 UFSAR, Table 9.10-2, identifies the Relay Building (Switchyard) as outside the scope of 10 CFR 50.48 Fire Protection.

RESPONSE RAI 2.3.3.18-1(e)

**(e) LRA drawing 2-33-1F Rev. 5 shows the following fire protection system's components out of scope (i.e., not colored in red):**

- **Deluge system for Transformers TR-2, TR-2A, TR-2B, TR-2C, and TR-2D**
- **Turbine building fire suppression systems**
- **Decontamination building fire suppression systems**

(e) The fire protection equipment shown on LRA drawing 2-33-1F that is not highlighted is not within the scope of license renewal. This equipment supplies fire suppression water to outside transformers (Main transformer, and Station Service Transformers 2A, 2B, 2C, and 2D). Fire protection for these areas is provided for commercial purposes only. Unit 2 UFSAR, Section 9.5A.1.3.53.1, specifies that, "The isolation of the transformers from any safety-related equipment or areas precludes any possible effect on the ability to attain safe shutdown due to a transformer fire." A fire in these areas would not affect the ability to achieve or maintain safe shutdown and would not affect the ability to minimize and control a release of radioactivity. Unit 2 UFSAR, Table 9.5-12, "Areas in which Fire Detection / Suppression is Outside the Scope of 50.48 Fire Protection," includes the outside transformers in the list of areas containing fire protection equipment that is outside the scope of 10 CFR 50.48 Fire Protection. The Turbine Building and Decontamination Building fire suppression systems are not supplied by this piping. The references to Turbine and Decontamination Building at the left side of LR Drawing 2-33-1F identify the locations of the fire water supplies for the transformer suppression, not the area being protected.

#### **Question RAI 2.3.3.18-2**

**Section 9.10.2 of the BVPS Unit 1 USFAR, Rev. 22 Interim Issue 3, discusses various types of fire water suppression systems provided in the plant areas for fire suppression activities. The fire suppression systems in various areas are:**

- **Turbine room under floors**
- **Turbine building auxiliary bay**
- **Turbine oil room**
- **Chemistry laboratory**
- **Auxiliary feedwater pump area**
- **Residual heat removal pump area**
- **Redundant cable penetrations area**
- **Reactor plant component cooling water pump area**

**The staff requests that the applicant verify whether the above fire water suppression systems installed in various areas of the plant are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.**

### RESPONSE RAI 2.3.3.18-2

The fire water suppression subsystems for each of the bulleted areas are within the scope of license renewal and are subject to AMR. The following list identifies the LRA drawings and locations on the drawings that depict those subsystems and flowpaths (highlighted in red):

- Turbine room under floors – the flowpaths to the sprinkler systems for the turbine room under floors in the Turbine room basement and mezzanine are shown on LRA drawing LR 1-33-1, within the Turbine Building area defined by grids D-4 to G-9, at grids D-5 and E-5, and on drawing 1-33-7, the flow path continues to the Turbine room basement and mezzanine through alarm check (AC) valves AC-1FP-1 and AC-1FP-2, respectively, in grids A-9 through C-10.
- Turbine Building auxiliary bay – there are two (2) sources of fire suppression for the auxiliary bay; hoses and sprinklers, shown on LRA drawing LR 1-33-1 at grids F-3 for the hoses, and G-4 for the sprinkler supply to valve AC-FP-4, shown on drawing 1-33-7 at grid E-5. Valve AC-FP-4 supplies the sprinklers to the auxiliary bay and cold chemistry laboratory, which are adjacent to one another and share the sprinkler source.
- Turbine oil room – sprinkler supply to the turbine oil room is shown on LRA drawing 1-33-1 at grid D-8, and drawing 1-33-7 at grid D-5, through valve AC-FP-3 to the sprinklers.
- Chemistry laboratory – the sprinkler supply to the chemistry laboratory is shown on LRA drawing 1-33-2 at grid B-3, to drawing 1-33-8, through valve AC-FP-7 to the sprinklers shown at grid B-1.
- Auxiliary feedwater pump area – the flowpath for fire protection water supply to the auxiliary feedwater pump area is shown on LRA drawing 1-33-2 at grid C-3, then to drawing 1-33-7 through deluge valve (DV) DV-FP-12 at grid A-3.
- Residual heat removal pump area – the flowpath for residual heat removal area fire protection water is shown on LRA drawing 1-33-2 at grid C-3 as the supply to valve DV-FP-13, then to drawing 1-33-7 to valve DV-FP-13 at grid C-3.
- Redundant cable penetrations area – there are three (3) deluge valves that supply fire protection water to the redundant cable penetration area. LRA drawing 1-33-2 at grid C-2 shows the supply to valve DV-FP-14 (main supply valve in series with the other two deluge valves), with the flowpath continuing to grid D-5 for the supply to valves DV-FP-20 and DV-FP-19. Deluge valve DV-FP-14 is shown on drawing 1-33-7 at grid D-3, and drawing 1-33-8 shows the other two deluge valves at grids E-9 through G-10, with valve DV-FP-19 supplying the east cable penetration sprinkler risers and valve DV-FP-20 supplying the west cable penetration sprinkler risers.



- Reactor plant component cooling water pump area – the flowpath for the fire protection water deluge supply to the component cooling water pump area is shown on LRA drawing 1-33-2 at grid D-9 and then on drawing 1-33-8 at grid C-9 for valve DV-FP-17.

#### **Question RAI 2.3.3.18-3**

**Section 9.10.2 of the BVPS Unit 1 USFAR, Rev. 22 Interim Issue 3, discuss CO<sub>2</sub> systems provided in the plant areas for fire suppression activities. The CO<sub>2</sub> systems in various areas are:**

- Cable vault areas
- Cable tray mezzanine area
- Diesel generator rooms

**The staff requests that the applicant verify whether the above CO<sub>2</sub> systems installed in various areas of the plant are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and are not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.**

#### **RESPONSE RAI 2.3.3.18-3**

The Unit 1 CO<sub>2</sub> suppression systems for each of the bulleted areas are within the scope of license renewal and are subject to AMR. The following list identifies the LRA drawings that depict those subsystems in scope (highlighted in red):

- Cable vault areas – LRA drawing 1-33-3, grid G-3, depicts storage unit FP-C-2, supplying the east and west cable vault areas in grids C-1 through D-5.
- Cable tray mezzanine area – LRA drawing 1-33-3, grid G-3, depicts storage unit FP-C-2, supplying the cable tray mezzanine in grids A-1 through B-5.
- Diesel generator rooms – LRA drawing 1-33-3, grid G-3, depicts storage unit FP-C-2, supplying the diesel generator rooms in grids E-5 through G-5.

#### **Question RAI 2.3.3.18-4**

**Section 9.10.2 of the BVPS Unit 1 USFAR, Rev. 22 Interim Issue 3, discusses Halon fire suppression systems for the primary process rack area and cable tunnel. The Halon 1301 systems do not appear in LRA Section 2.3.3.18 as being**

**within the scope of the license renewal and subject to an AMR. The staff requests that the applicant verify whether the above Halon 1301 systems are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and are not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.**

RESPONSE RAI 2.3.3.18-4

The Halon fire suppression systems for the Unit 1 primary process rack area and cable tunnel are within the scope of license renewal and are subject to AMR. The process rack area Halon systems are shown in scope (highlighted in red) on LRA drawing 1-33-4, grids E-1 through G-4, and the cable tunnel Halon system is shown on the same drawing, grids A-1 through B-4. These subsystems are described in LRA Section 2.3.3.18 (LRA page 2.3-87), "Halon fire extinguishing subsystems are utilized for suppression in areas where electronic computer parts or equipment is used. The systems may be actuated either automatically or manually." The Halon subsystems are responsible for the LRA Section 2.3.3.18 System Intended Function under 10 CFR 54.4(a)(3) (LRA page 2.3-88), "Provides automatic or manual Halon fire suppression system capability."

Question RAI 2.3.3.18-5

**Section 9.5.1.5 of the NUREG-1057, Safety Evaluation Report Related to the Operation Related to the Operation of Beaver Valley Power Station Unit 2, dated October, 1985, discusses the jockey pump that maintains the fire water system pressure. The jockey pump and associated components do not appear in LRA section 2.3.3.18 as being within the scope of the license renewal and subject to an AMR. The staff requests that the applicant verify whether the jockey pump and components are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If the jockey pump and components are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.**

RESPONSE RAI 2.3.3.18-5

The fire protection jockey pump FP-P-3 and associated piping and hydro pneumatic tank are in scope for license renewal and subject to AMR. The jockey pump, hydro pneumatic tank, and associated components are presented in LRA Table 2.3.3-18 as

"Pump casing," "Piping," "Valve body" and "Tank" components types, and are shown in scope (highlighted in red) on LRA drawing 1-33-1, grids A-1 through B-2.

FENOC currently uses the filtered water system instead of the jockey pump and hydro pneumatic tank as the normal pressure maintenance source for the fire protection system, but the filtered water system is not credited with any intended function for license renewal, and the portion of the system that supplies makeup to the fire protection system is not within the scope of license renewal. Failure of the filtered water system to maintain pressure in the fire protection system would not affect the ability of the fire protection water suppression system to perform any intended function. A rupture or leak in the filtered water system can be isolated from the fire protection system at the in-scope system interface valve FP-1052, shown on LR Drawing 1-33-1, grid E-9. The fire pumps are capable of running on recirculation to maintain system pressure, and are continuously available to provide suppression flow. Restoration of filtered water supply to the fire protection system for normal pressure maintenance would be an item of maintenance convenience, not one of fire protection operability.

#### **Question RAI 2.3.3.18-6**

**Section 9.5.1.5 of the BVPS Unit 2 SER (NUREG-1057) dated October 1985, and Section 9.5.1.7.3 of the UFSAR Rev. 2 Interim Issue 2 discuss various types of fire water suppression systems provided in the plant areas for fire suppression activities. The fire suppression systems in various areas are:**

- **water spray system for condensate polishing building charcoal filter**
- **water spray system for fuel and decontamination building charcoal filter**
- **water spray system for auxiliary building general area**
- **deluge water spray systems for reactor containment areas (charcoal filter banks, residual heat removal pumps, and orange purple cable penetrations area)**
- **automatic water deluge spray system for south safeguards area auxiliary feedwater pump room**
- **wet pipe sprinkler system for turbine building (under operating and mezzanine floors)**
- **automatic water spray deluge water curtain at the entrance to the condensate polishing pipe tunnel**
- **deluge system for turbine oil reservoir and coolers**
- **automatic water spray deluge system for hydrogen seal oil unit**
- **sprinkler system for auxiliary boiler area**

- **dry pipe sprinkler system for SOSB railway bay**

**The staff requests that the applicant verify whether the above fire water suppression systems installed in various areas of the plant are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.**

RESPONSE RAI 2.3.3.18-6

The fire water suppression systems for each of the bulleted areas, with the exception of the auxiliary boiler area and SOSB railway bay, are within the scope of license renewal and are subject to AMR.

Fire protection for the auxiliary boiler area and SOSB railway bay is not within the scope of license renewal. A fire in these areas would not affect the ability of the BVPS Unit 2 to achieve safe shutdown. Unit 2 UFSAR, Table 9.5-12, includes the Auxiliary Boiler Room and SOSB in the list of areas containing fire protection equipment that is outside the scope of 10 CFR 50.48 Fire Protection.

The following list identifies the LRA drawings that depict the subsystems in scope (highlighted in red):

- water spray system for condensate polishing building charcoal filter – LRA drawing 2-33-1F, grid E-8.
- water spray system for fuel and decontamination building charcoal filter – LRA drawing 2-33-1B, grid E-9 (the “fuel and decontamination building charcoal filter” refers to a single filter, associated with the fuel and decontamination building).
- water spray system for auxiliary building general area – LRA drawing 2-33-1A, left side, and drawing 2-33-1C, grids D-6 through F-7.
- deluge water spray systems for reactor containment areas (charcoal filter banks, residual heat removal pumps, and orange purple cable penetrations area) – LRA drawing 2-33-1D (all).
- automatic water deluge spray system for south safeguards area auxiliary feedwater pump room – LRA drawing 2-33-1B, grids C-1 through G-3.
- wet pipe sprinkler system for turbine building (under operating and mezzanine floors) – LRA drawing 2-33-1E, grids D-1 through G-4.
- automatic water spray deluge water curtain at the entrance to the condensate polishing pipe tunnel – LRA drawing 2-33-1F, grids F-8 through E-10.

- deluge system for turbine oil reservoir and coolers – LRA drawing 2-33-1E, grids E-8 through E-10.
- automatic water spray deluge systems for hydrogen seal oil unit – LRA drawing 2-33-1E, grids D-5 through D-7.
- sprinkler system for auxiliary boiler area – none; auxiliary boiler area fire protection is not in scope for license renewal.
- dry pipe sprinkler system for SOSB railway bay – none; SOSB railway bay fire protection is not in scope for license renewal.

#### **Question RAI 2.3.3.18-7**

**Section 9.5.1.5 of the BVPS Unit 2 SER (NUREG-1057) dated October 1985, and Section 9.5.1.7.4 of the UFSAR Rev. 2 Interim Issue 2 discuss the total flooding Halon 1301 suppression systems for the computer and west communications room. The total flooding Halon 1301 suppression systems do not appear in LRA Section 2.3.3.18 as being within the scope of the license renewal and subject to an AMR. The staff requests that the applicant verify whether the total flooding Halon 1301 suppression systems and components are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If the total flooding Halon 1301 suppression systems and components are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.**

#### **RESPONSE RAI 2.3.3.18-7**

The Halon suppression systems for the Unit 2 computer and west communications room are within the scope of license renewal and are subject to AMR. LRA drawing-2-33-3 (entire drawing) shows these systems in scope (highlighted in red). LRA drawing 2-33-3, however, does not include the term “west” in the title of the “communications room.” These subsystems are described in LRA Section 2.3.3.18 (LRA page 2.3-87), “Halon fire extinguishing subsystems are utilized for suppression in areas where electronic computer parts or equipment is used. The systems may be actuated either automatically or manually.” The Halon subsystems are responsible for the LRA Section 2.3.3.18 System Intended Function under 10 CFR 54.4(a)(3) (LRA page 2.3-88), “Provides automatic or manual Halon fire suppression system capability.”

**Question RAI 2.3.3.18-8**

**Section 9.5.1.5 of the BVPS Unit 2 SER (NUREG-1057) dated October 1985, and Section 9.5.1.7.5 of the UFSAR Rev. 2 Interim Issue 2 discuss the total flooding CO<sub>2</sub> systems provided in the plant areas for fire suppression activities. The CO<sub>2</sub> systems in various areas are:**

- **Control building instrument and relay room**
- **Cable spreading room**
- **Cable tunnel**
- **Cable vault/rod control building (EI 735'-6" and EI 755'-6")**
- **Orange diesel generator room, purple diesel generator room**
- **Cable vault relay room**
- **Service building cable tray area**
- **Turbine generator**

**The staff requests that the applicant verify whether the above CO<sub>2</sub> systems installed in various areas of the plant are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If they are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.**

**RESPONSE RAI 2.3.3.18-8**

The Unit 2 CO<sub>2</sub> suppression systems for each of the bulleted areas are within the scope of license renewal and are subject to AMR. The following list identifies the LRA drawings that depict those subsystems in scope (highlighted in red):

- Control building instrument and relay room – LRA drawing 2-33-2A, grids C-10 and D-10.
- Cable spreading room – LRA drawing 2-33-2A, grid B-10.
- Cable tunnel – LRA drawing 2-33-2A, grid B-8.
- Cable vault/rod control building (EI. 735'-6" and EI. 755'-6") – LRA drawing 2-33-2A, grids C-5 to E-9.
- Orange diesel generator room, purple diesel generator room – LRA drawing 2-33-2A, grids G-4 and G-5.
- Cable vault relay room – LRA drawing 2-33-2A, grids F-9 to G-10.

- Service building cable tray area – LRA drawing 2-33-2A, grid F-8 and G-8.
- Turbine generator – LRA drawing 2-33-2B (all).

**Question RAI 2.3.3.18-9**

**Section 9.5.1.5 of the BVPS Unit 2 SER (NUREG-1057) dated October 1985, and Section 9.5.1.8.5 of the UFSAR Rev. 2 Interim Issue 2 discuss standpipe hose stations for emergency switchgear rooms. The standpipe hose stations for switchgear rooms do not appear in LRA Section 2.3.3.18 as being within the scope of the license renewal and subject to an AMR. The staff requests that the applicant verify whether the standpipe hose stations for switchgear rooms are within the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1). If the standpipe hose stations are excluded from the scope of license renewal and not subject to an AMR, the staff requests that the applicant provide justification for the exclusion.**

**RESPONSE RAI 2.3.3.18-9**

The water suppression for the emergency switchgear rooms is provided by manual fire standpipe hose stations (hose racks) located in the stairwells adjacent to the switchgear rooms. These hose racks are within the scope of license renewal and are subject to AMR, and are listed as component type "hose rack" in LRA Table 2.3.3-18. They are shown in scope (highlighted in red) on LRA drawing 2-33-1B, grids C-4 and C-5 (Service Building hose racks). Specifically, hose stations 219 and 220 are located outside of the emergency switchgear rooms.

**Question RAI 2.3.3.18-10**

**LRA Tables 2.3.3-18 and 3.3.2-18 exclude several types of fire protection components that appear on the LRA drawings as within the scope of license renewal (i.e., highlighted in red). These components are listed below:**

- hose connections
- interior fire hose stations
- pipe supports
- couplings
- threaded connections
- restricting orifices

- **interface flanges**
- **chamber housings**
- **heat-actuated devices**
- **tank heaters**
- **thermowells**
- **water motor alarms**
- **filter housing**
- **gear box housing**
- **heater housing**
- **turbocharger housing**
- **latch door pull box**
- **pneumatic actuators**
- **actuator housing**
- **dikes for oil spill confinement**
- **buried underground fuel oil tanks for emergency diesel generators**
- **fire water main loop valves**
- **post indicator valves**
- **jacket cooling water keepwarm pump and heater**
- **lubricating oil cooler**
- **auxiliary lubricating oil makeup tank**
- **rocker lubricating oil pump**
- **floor drains and curbs for fire-fighting water**
- **backflow prevention devices**
- **flame retardant coating for cables**
- **fire retardant coating for structural steel supporting walls and ceilings**

**For each, determine whether the component should be included in Tables 2.3.3-18 and 3.3.2-18 as component types subject to an AMR; and if not, justify the exclusion.**



#### RESPONSE RAI 2.3.3.18-10

Components within the scope of License Renewal and within the fire protection system are grouped within the component type names listed in LRA Table 2.3.3-18. LRA Section 3.0.1.2 provides brief descriptions of the component type names used. Some components in the bulleted list for this question perform functions associated with fire protection or safe shutdown, but are contained within a system other than the fire protection system. For example, some of the bulleted component types questioned are associated with emergency diesel generators. While emergency diesel generators perform functions credited for fire protection, they are not evaluated within the fire protection system, but within the diesel generator systems (LRA Sections 2.3.3.11 through 2.3.3.17, and 2.3.3.29). Some components such as dikes, curbs and fire retardant coatings for structural steel are evaluated within the LRA as bulk structural commodities in LRA Section 2.4.36.

Specifics for each bulleted component type are provided, including identification of those component types that are not in scope or not subject to AMR:

- hose connections – outdoor fire protection hose connections exist on fire hydrants. Hydrants were evaluated as valves; they appear in Table 2.3.3-18 as “Valve body,” and are listed in Table 3.3.2-18 as “Valve body (hydrant).” Interior hose connections are located at hose racks, and are labeled “Hose rack” in Table 2.3.3-18, and “Hose rack (CO<sub>2</sub>),” or “Hose rack (water)” in LRA Table 3.3.2-18.
- interior fire hose stations – labeled “Hose racks” in Table 2.3.3-18, and “Hose rack (CO<sub>2</sub>),” or “Hose rack (water)” in LRA Table 3.3.2-18.
- pipe supports – “Pipe supports” were evaluated as structural commodities in LRA Tables 2.4-36 and 3.5.2-36.
- couplings – fire protection couplings were evaluated as piping components, and appear in LRA Table 2.3.3-18 as “Piping,” and in LRA Table 3.3.2-18 as “Piping,” “Piping (buried),” “Piping (CO<sub>2</sub> fittings),” “Piping (CO<sub>2</sub>),” “Piping (drained / vented),” “Piping (halon fittings),” “Piping (halon),” and “Piping (RCP oil collection).”
- threaded connections – fire protection threaded connections were evaluated as piping components, and appear in LRA Table 2.3.3-18 as “Piping,” and in LRA Table 3.3.2-18 as “Piping,” “Piping (buried),” “Piping (CO<sub>2</sub> fittings),” “Piping (CO<sub>2</sub>),” “Piping (drained / vented),” “Piping (halon fittings),” “Piping (halon),” and “Piping (RCP oil collection).”
- restricting orifices – orifices are listed in LRA Tables 2.3.3-18 and 3.3.2-18 as “Orifice.”
- interface flanges – fire protection flanges were evaluated as piping components, and appear in Table 2.3.3-18 as “Piping,” and in LRA Table 3.3.2-18 as “Piping,” “Piping (buried),” “Piping (CO<sub>2</sub> fittings),” “Piping (CO<sub>2</sub>),” “Piping (drained /

vented),” “Piping (halon fittings),” “Piping (halon),” and “Piping (RCP oil collection).”

- chamber housings – retarding chambers used in water suppression alarm circuits appear in LRA Table 2.3.3-18 as “Tank,” and are listed in LRA Table 3.3.2-18 as “Tank (retarding chamber).”
- heat-actuated devices – heat actuated devices are electrical fire detection devices that correspond to Nuclear Energy Institute NEI 95-10, “Industry Guidelines for Implementing the Requirements of 10 CFR Part 54 – The License Renewal Rule,” Appendix B, “Typical Structure, Component and Commodity Groupings and Active / Passive Determinations for the Integrated Plant Assessment,” item 73, “Alarm Unit.” These devices are active electrical components and are not subject to AMR per 10 CFR 54.21(a)(1)(i).
- tank heaters – there are no tank heaters within the boundaries of the fire protection system. Heaters in other systems are labeled either “Heat exchanger,” “Heater body,” “Heater housing,” or “Heating coil,” in multiple LRA Tables, depending upon the specific application. For example, “Heating coil” in the Building Services Hot Water Heating System is listed in LRA Tables 2.3.4-3 and 3.4.2-3.
- thermowells – thermowells are integral piping or tank components, and appear in the LRA Tables as “Piping,” or as “Tank” component type.
- water motor alarms – water motor alarms, labeled “water gongs,” provide local audible indication of fire protection deluge or alarm check valve actuation. Water gongs are independent of control room alarms, are not credited with performance of any function under 10 CFR 54.4(a), and are not in the scope of license renewal.
- filter housing – there are no filter housings that are within the boundaries of the fire protection system and subject to AMR. Numerous fire protection strainer bodies are in scope, and are listed as “Strainer body” in LRA Tables 2.3.3-18 and 3.3.2-18.
- gear box housing – all portions of gear boxes in the fire protection system are active components not subject to AMR. The diesel engine driven fire pump includes a gear box which is an integral subcomponent of the diesel driven fire pump drive train, corresponding to NEI 95-10, Appendix B, item 55, “Fire Pump Diesel Engines.” The gear box and housing is part of the active assembly, and is not subject to AMR per 10 CFR 54.21(a)(1)(i). Some manual valve or damper operators have gear boxes corresponding to NEI 95-10, Appendix B, item 108, “Manual Valves,” 110, “Motor-Operated Valves,” or 116, “Dampers, louvers, and gravity dampers.” Only the bodies (or housings) of the actuated valves or dampers are passive and subject to AMR. The valve or damper actuators, including gear boxes, are active components not subject to AMR per 10 CFR 54.21(a)(1)(i). Gearbox housings in other systems that are associated

with a separate lube oil subsystem (with a circulating pump and heat exchanger) are subject to AMR. For example, the Chemical and Volume Control System includes gear boxes within the charging pump lube oil system that are subject to AMR in LRA Tables 2.3.3-5 and 3.3.2-5.

- heater housing – there are no heater housings in the fire protection system that are subject to AMR. The system contains components labeled “heat exchanger” that are associated with the diesel driven fire pump engine jacket cooler and lube oil cooler that appear on LR drawing 1-33-1 and in LRA Tables 2.3.3-18 and 3.3.2 18. The diesel driven fire pump has an integral jacket water heater, but the engine is a small (380 HP) unit, and the jacket water heater is an integral part of the active assembly, corresponding to NEI 95-10, Appendix B, item 55, “Fire Pump Diesel Engines,” and is not subject to AMR per 10 CFR 54.21(a)(1)(i). “Heater housings” in other systems, such as ventilation systems and diesel generator systems, are within the scope of license renewal and subject to AMR.
- turbocharger housing – turbocharger housings are identified and evaluated for diesel generators in LRA Sections 2.3.3.11, 2.3.3.17, and 2.3.3.29. While the diesel driven fire pump engine has a turbocharger, the engine is a small (380 HP) unit, and the turbocharger is considered an integral part of the active engine assembly corresponding to NEI 95-10, Appendix B, item 55, “Fire Pump Diesel Engines,” and is not subject to AMR per 10 CFR 54.21(a)(1)(i).
- latch door pull box – pull boxes are active electrical switch assemblies corresponding to NEI 95-10, Appendix B, item 102, “Switches,” that are not subject to AMR per 10 CFR 54.21(a)(1)(i).
- pneumatic actuators – pneumatic actuators in the fire protection system are active components corresponding to NEI 95-10, Appendix B, item 111, “Air-Operated Valves,” and are not subject to AMR per 10 CFR 54.21(a)(1)(i).
- actuator housing – actuator housings in the fire protection system are considered integral parts of active components corresponding to NEI 95-10, Appendix B, item 111, “Air-Operated Valves,” and are not subject to AMR per 10 CFR 54.21(a)(1)(i).
- dikes for oil spill confinement – “Flood curbs” are evaluated as structural commodities in LRA Tables 2.4-36 and 3.5.2-36.
- buried underground fuel oil tanks for emergency diesel generators – fuel tanks associated with diesel generators are not evaluated with the fire protection system, but with the associated diesel generator systems. Buried emergency diesel fuel tanks are listed as “Tank” in LRA Tables 2.3.3-14 and 2.3.3-29, and are evaluated as “Tank” in “Soil” in LRA Tables 3.3.2-14 and 3.3.2-29.
- fire water main loop valves – fire protection valves are labeled “Valve body” in LRA Table 2.3.3-18. Some valves include a parenthetical clarification of type; many main loop valves are buried, and are labeled “Valve body (buried)” in LRA

Table 3.3.2-18. Fire water main loop valves within the Intake Structure are labeled "Valve body (water system)" in LRA Table 3.3.2-18.

- post indicator valves – valves are labeled "Valve body" in LRA Table 2.3.3-18. Some valves include a parenthetical clarification of type; post indicator valves are buried, and are labeled "Valve body (buried)" in LRA Table 3.3.2-18.
- jacket cooling water keepwarm pump and heater – the diesel driven fire pump engine has an electric jacket water heater, but the engine is a small (380 HP) unit, and the heater is considered an integral part of the active engine assembly, corresponding to NEI 95-10, Appendix B, item 55, "Fire Pump Diesel Engines," and is not subject to AMR per 10 CFR 54.21(a)(1)(i). AMR evaluations for the emergency diesel generators include these components, which are labeled "Pump casing" and "Heater housing" in LRA Tables 2.3.3-16 and 3.3.2-16.
- lubricating oil cooler – LRA Table 2.3.3-18 includes evaluation of the lubricating oil cooler (labeled "Heat exchanger") for the diesel driven fire pump, which is labeled "Heat exchanger (oil cooler – housing)" and "Heat exchanger (oil cooler – tube)" in LRA Table 3.3.2-18.
- auxiliary lubricating oil makeup tank – There are no oil makeup tanks in the fire protection system that are subject to AMR. There is a bearing oil reservoir for the diesel driven fire pump gear drive that is a part of the active assembly, corresponding to NEI 95-10, Appendix B, item 55, "Fire Pump Diesel Engines," and is not subject to AMR per 10 CFR 54.21(a)(1)(i).
- rocker lubricating oil pump – lubricating pumps for the emergency diesel generators and the security diesel generator are labeled "Pump casing" in LRA Tables 2.3.3-15, 3.3.2-15, 2.3.3-29, and 3.3.2-29.
- floor drains and curbs for fire-fighting water – floor drains are evaluated as "Piping" in LRA Tables 2.3.3-4 (Building and Yard Drains) and 2.3.3-27 (Reactor Plant Vent and Drains). "Flood curbs" are evaluated as structural commodities in LRA Tables 2.4-36 and 3.5.2-36.
- backflow prevention devices – no special name is given to piping configurations such as loop seals that prevent backflow in drain systems. The piping is labeled "Piping." Check valves are labeled "Valve body" in LRA Table 2.3.3-18, and "Valve body (CO2 / halon)" or "Valve body (water system)" in LRA Table 3.3.2-18.
- flame retardant coating for cables – Electrical cables are addressed in LRA Section 2.5. Coatings applied by manufacturers are not considered a separate component, but are evaluated and managed with the cables themselves. "Fire wraps" are used for some cable / cable tray locations and are evaluated as a structural commodity in LRA Tables 2.4-36 and 3.5.2-36.

- fire retardant coating for structural steel supporting walls and ceilings – “Fireproofing” and “Fire wraps” are evaluated as structural commodities in LRA Tables 2.4-36 and 3.5.2-36.

#### **Question RAI 2.3.3.18-11**

**LRA Section 2.3.3.18 discusses requirements for the fire water supply system but does not mention trash racks and traveling screens for the fire pump suction water supply. Trash racks and traveling screens are located upstream of the fire pump suction to remove any major debris from the fresh or raw water supply. Trash racks and traveling screens are necessary to remove debris from and prevent clogging of the fire protection water supply system. Trash racks and traveling screens are typically considered to be passive, long-lived components. Both trash racks and traveling screens are located in a fresh or raw water/air environment and are typically constructed of carbon steel. Carbon steel in a fresh or raw water environment or water/air environment is subject to loss of material, pitting, crevice formation, and microbiologically influenced corrosion, and fouling. The staff requests that the applicant explain the apparent exclusion of the trash racks and traveling screens that are located upstream of the fire pump suction from the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an AMR in accordance with 10 CFR 54.21(a)(1).**

#### **RESPONSE RAI 2.3.3.18-11**

Trash racks and traveling screens are within the scope of license renewal and are subject to AMR, but are not evaluated within the fire protection system. FENOC evaluated Intake Structure trash racks and traveling screens as structural components associated with the Intake Structures. While the common Intake Structure houses the fire pumps, the Alternate Intake Structure also has trash racks and traveling water screens. These components appear in LRA Tables 2.4-1, 2.4-17, 3.5.2-1 and 3.5.2-17 as “Screen guides,” “Trash racks,” and “Traveling screen casing and associated framing.” The active components of the traveling screens are not subject to AMR per 10 CFR 54.21(a)(1)(i).