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**SUSQUEHANNA STEAM ELECTRIC STATION  
APPLICATION FOR RENEWED OPERATING LICENSES  
NUMBERS NPF-14 AND NPF-22 REQUESTS FOR ADDITIONAL  
INFORMATION - LICENSE RENEWAL APPLICATION (LRA)  
SECTION 2.3.3.13  
PLA-6241**

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**Docket Nos. 50-387  
and 50-388**

- References:*
- 1) *PLA-6110, Mr. B. T. McKinney (PPL) to Document Control Desk (USNRC), "Application for Renewed Operating License Numbers NPF-14 and NPF-22," dated September 13, 2006.*
  - 2) *Letter from Ms. Y. K. Diaz-Sanabria (USNRC) to Mr. B. T. McKinney (PPL), "Requests for Additional Information for the Review of the Susquehanna Steam Electric Station, Units 1 and 2 License Renewal Application," dated June 22, 2007.*

In accordance with the requirements of 10 CFR 50, 51, and 54, PPL requested the renewal of the operating licenses for the Susquehanna Steam Electric Station (SSES) Units 1 and 2 in Reference 1.

Reference 2 is a request for additional information related to LRA Section 2.3.3.13.

The enclosure to this letter provides the additional information requested by NRC reviewers. These responses are numbered consistently with the RAI questions in Reference 2.

The attachment to this letter provides a revision to the boundary drawing LR-M-122 Sheet 4 as discussed in PPL's response to RAI 2.3.3.13-2. All other revisions to LRA sections required in response to these RAI's are included within the text of the enclosure.

There are no new regulatory commitments contained herein as a result of the additional information provided in these responses.

A120  
NRR

If you have any questions, please contact Mr. Duane L Filchner at (610) 774-7819.

I declare, under penalty of perjury, that the foregoing is true and correct.

Executed on: 7-24-07



B. T. McKinney

Enclosure: PPL Responses to NRC's Request for Additional Information (RAI)

Attachment: Boundary Drawing LR-M-122 Sheet 4 (Revised)

Copy: NRC Region I

Ms. E. H. Gettys, NRC Project Manager, License Renewal, Safety

Mr. A. L. Stuyvenberg, NRC Project Manager, License Renewal, Environmental

Mr. A. J. Blamey, NRC Sr. Resident Inspector

Mr. R. V. Guzman, NRC Sr. Project Manager

Mr. R. Janati, DEP/BRP

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**Enclosure to PLA-6241  
PPL Follow-up Responses to NRC's  
Request for Additional Information (RAI)**

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**NRC RAI 2.3.3.13-1:**

LRA drawing LR-M-122, Sheet No. 1, "Fire Pumphouse, North & South Gatehouse & Security Control Center Buildings," shows the jockey pump and associated components as out of scope (i.e., not colored in green). Section 9.5.1.1 of the Susquehanna Steam Electric Station (SSES), Units 1 and 2 Safety Evaluation Report (SER) (NUREG-0776), dated April 1981, states that a separate jockey pump automatically maintains the yard fire main pressure. The jockey pump and its associated components appear to have fire protection intended functions required for compliance with 10 CFR 50.48 as stated in 10 CFR 54.4. The staff requests that the applicant verify whether jockey pump and its associated components are in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to an Aging Management Review (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.

**PPL Response:**

The jockey fire pump and associated components, shown on LRA drawing LR-M-122, sheet 1, are not in the scope of license renewal and, therefore, are not subject to aging management review. The jockey pump does not have fire protection intended functions required for compliance with 10 CFR 50.48.

As described in Section 9.5.1.1 of the SSES safety evaluation report (NUREG-0776), dated April 1981, and Section 4.1 of the Fire Protection Review Report (FPRR), Revision 15, a jockey pump maintains a system pressure from 105 to 125 psig to prevent frequent operation of the main fire pumps. Section 4.1 of the FPRR further indicates that the motor driven pump and diesel driven pump start sequentially to maintain system pressure at greater than or equal to 85 psig, should the fire main pressure fall, and that the largest single demand can be satisfied by one fire pump. Section 9.5.1.1 of NUREG-0776 confirms that the water supply system for fire protection consists of two fire pumps, which start automatically on low header pressure, and was determined to be acceptable and capable of delivering the required water demand with one pump out of service. Compliance of the SSES two pump fire water supply system with position E.2 of Appendix A to branch technical position 9.5-1, Revision 0 is described in Table 5.0-1 of the FPRR. As such, the jockey pump is not required to function to suppress a fire or supply required fire protection water.

The casings of the diesel engine driven and motor driven fire pumps (0P511 and 0P512) and valve bodies, including the jockey pump isolation valves, have a pressure boundary intended function and are included in the scope of license renewal in accordance with 10 CFR 54.4(a) and subject to aging management review in accordance with 10 CFR 54.21(a)(1). These components are listed as subject to aging management review in LRA Table 2.3.3-13.

**NRC RAI 2.3.3.13-2:**

The following LRA drawings show fire protection system components as out of scope (i.e., not colored in green):

LR-M-122 Sheet 1, "Fire Pumphouse, North & South Gatehouse & Security Control Center Buildings," shows Diesel Oil Day Tank (OT508) vent line and the fill cap-assembly line, piping, fittings, and drains as out of scope (i.e., not colored in green).

LR-M-122 Sheet 2, "Turbine Bldg., Control Structure and Radwaste Building," shows several fire suppression systems and components in Turbine Building Units 1 and 2 as out of scope (i.e., not colored in green).

LR-M-122 Sheet 3, "Reactor Bldg., Standby D G, River Intake Structure., Service and Admin. Bldg. & Circ. Water Pumphouse," shows several fire suppression systems and components in Turbine Building Units 1 and 2, Circ. Water Pumphouse, and River Intake Structure as out of scope (i.e., not colored in green).

LR-M-122 Sheet 4, "Carbon Dioxide System," shows several components as out of scope (i.e., not colored in green).

The staff requests that the applicant verify whether the above fire suppression 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 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.

**PPL Response:**

LR-M-122 Sheet 1:

The Diesel Oil Day Tank (OT508) vent line and the fill cap-assembly line, piping, fittings, and drains have no license renewal function, are not in license renewal scope and are not subject to AMR. These vent and fill lines, as well as the return (drain) line from the diesel engine to the tank, are above the tank's normal oil level and the tank is vented to atmosphere. As described in the FPRR, the tank contains enough diesel fuel oil for 8 hours of operation in accordance with NFPA 20. Failure of these components will not create a leakage path that would drain the tank and will not prevent the diesel fire pump from accomplishing its Appendix R function.

The components that do have a license renewal intended function in support of the diesel engine driven fire pump, the day tank, tubing and flexible connections, as well as the drain line and valve for the day tank, 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), as

listed in LRA Table 2.3.3-13 and shown (highlighted in green) on LRA drawing LR-M-122 Sheet 1.

LR-M-122 Sheet 2:

As stated in LRA Section 2.1.1.2.2, no components in the turbine building either perform a safety function or would prevent a safety related function from occurring. With few exceptions, there are no fire suppression systems or components in the turbine building that are credited with protection of safety-related or safe shutdown equipment.

LRA Section 2.1.1.3.1 discusses scoping of the fire protection system to achieve and maintain safe shutdown; that is features required for fire protection of safety-related equipment and any system function that was included in, or provides necessary support for, one or more of the three (3) safe shutdown paths credited for compliance with Appendix R. SSCs that perform an intended function for fire protection are included in the scope of license renewal. This includes certain hose stations (1/2HR-101 and 1/2HR-156) and sprinkler systems (e.g., DS-015, PA-091, PA-092, and PA-1/261), which are shown as in the turbine building on LRA drawing LR-M-122 Sheet 2, and are credited with protection of control structure and transformer yard components. Section 3.7.3.5 and 3.7.3.2 of the Technical Requirements Manual (TRM) identify the fire hose stations, and the spray and sprinkler systems, respectively, that are credited for safety-related and safe shutdown protection.

Except for the header piping and components and those suppression systems and components discussed above, the remaining suppression systems and components in the turbine building are not credited for safety-related or safe shutdown fire protection. Therefore, except as indicated above and on LRA drawing LR-M-122 Sheet 2, the fire suppression systems and components located in the turbine building are not in license renewal scope and are not subject to AMR.

LR-M-122 Sheet 3:

As described above in response to the question on LR-M-122, sheet 2, the suppression systems and components that are credited for safety-related and safe shutdown protection are in the scope of license renewal. This includes fire hydrant FH-104, which is credited with protection of diesel generator building components, and suppression station DS-014, which is credited for protection of a transformer adjacent to the Circ Water Pumphouse. Except as noted, neither the Turbine Building, Circ Water Pumphouse nor River Intake Structure facilities contain safety-related equipment or equipment depended upon by the safe shutdown analysis. Therefore, except as noted above, the fire suppression systems and components in these structures do not satisfy the requirements of 10 CFR 54.4, are not in license renewal scope and are not subject to AMR.

LR-M-122 Sheet 4:

While it is briefly mentioned in NUREG-0776 Section 9.5.1.3, the generator purge portion of the carbon dioxide system is not credited with safety-related or safe shutdown protection. As such, there are 2 pipe sections in the lower, left hand corner of drawing LR-M-122, Sheet 4 that are not in the scope of license renewal. The “fill line” and the “equalizing line” for generator purge are isolated from the carbon dioxide storage tank by normally closed valves and do not have a license renewal function. Therefore, neither portion of the piping and associated components is in license renewal scope (is not highlighted in green).

Valves PSV02269, PSV02270, PSV02271 and the piping between those valves and valve 022978 have conservatively been highlighted green as in-scope and subject to AMR. The piping is carbon steel and the valves are bronze. In addition the piping from valve 022979 through OCB650 is in-scope and subject to AMR, but was inadvertently not highlighted. Both portions of pipe have been highlighted green on the revised boundary drawing in the attachment to this letter. No changes to the LRA are required as the material/environment combinations of this additional highlighting are already covered in Table 3.3.2-13.

**NRC RAI 2.3.3.13-3:**

Section 9.5.1.2 of the SSES SER (NUREG-0776), dated April 1981, listed sprinkler and standpipe systems provided in the plant areas for fire suppression activities. The sprinkler and standpipe systems are installed in various areas:

- Reactor Core Isolation Cooling Pump Room
- High Pressure Coolant Injection Pump Room
- Heating, Ventilation, and Air-conditioning Filter Rooms
- Railroad Airlock
- Control Building Auxiliary Rooms
- Condenser Area
- Reactor Feed Pump Turbine
- Turbine Central Area
- Turbine Condenser Gallery
- Turbine Hydro Control Power room
- North Railroad Bay
- Turbine Condenser Mezzanine
- Diesel Engine Fire Pump Room
- Lower Cable Spreading Room (CSR)
- Upper CSR
- PFP Turbine Room

- Diesel Generator Building
- Charcoal Filters
- Standby Gas Treatment Filters
- Emergency Outside Air Filters
- Centrifuge & Conditioner
- Turbine Pump Area
- Turbine Hydro Seal Oil Unit
- Turbine Lube Oil Area
- Turbine Motor Generator Area
- Turbine Filter room
- Turbine Moisture Separation Area
- Radwaste Tank Vent Filter Room
- Radwaste Auxiliary Rooms
- Radwaste Controlled Zone Shop

The staff requests that the applicant verify whether the sprinkler and standpipe systems installed in the above 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.

**PPL Response:**

The fire sprinkler and standpipe systems installed in the locations noted by this RAI are listed in two groups below. The first group includes those systems which are in the scope of license renewal and subject to AMR. The second group includes those systems that are not within the scope of license renewal and are not subject to AMR, for which justification is provided.

The sprinkler and standpipe systems for the following areas are in the license renewal scope, and are subject to AMR. The fire protection components associated with these systems are addressed in the LRA in sections 2.3.3.13, 3.3.2.1.13, and Tables 2.3.3-13 and 3.3.2-13. In addition, the table below lists the boundary drawing, with coordinates, on which the related sprinkler and/or standpipe is shown as in-scope (highlighted in green).

<u>Location</u>	<u>LRA Drawing (Coordinates)</u>
• Reactor Core Isolation Cooling Pump Room	LR-M-122, Sheet 3 (B4, B5)
• High Pressure Coolant Injection Pump Room	LR-M-122, Sheet 3 (C4, B5)



<u>Location</u>	<u>LRA Drawing (Coordinates)</u>
• Heating, Ventilation, and Air-Conditioning Filter Rooms	LR-M-122, Sheets 3 (A4, B4, A5, B5)
• Railroad Airlock	LR-M-122, Sheet 3 (D5)
• Control Building Auxiliary Rooms	LR-M-122, Sheet 2 (F4, F5)
• Lower Cable Spreading Room (CSR)	LR-M-122, Sheet 2 (F3, F5)
• Upper CSR	LR-M-122, Sheet 2 (F3, F6)
• Diesel Generator Building	LR-M-122, Sheet 3 (C8, D8, E7)
• Charcoal Filters	LR-M-122, Sheet 3 (A4, B4, A5, B5)
• Standby Gas Treatment Filters	LR-M-122, Sheet 2 (G6), LR-VC-175, Sheet 3
• Emergency Outside Air Filters	LR-M-122, Sheet 2 (G6), LR-VC-178, Sheet 1

The sprinkler and standpipe systems for the following areas are not in the license renewal scope and are not subject to AMR. Except for the diesel engine fire pump room, these sprinkler and standpipe systems are located in the turbine building and the radwaste building. Consistent with the guidelines of Appendix A to branch technical position ASB 9.5-1, the diesel engine driven and motor driven fire pumps are located in rooms separated by a three hour fire wall. In particular, the diesel engine driven fire pump is located in a room enclosed by three-hour fire rated walls, doors, and duct penetrations; whereas the motor driven fire pump is located in the main pump room with the service water pumps and circulating water pumps. This area (fire area A-1) has a low combustible loading. The sprinkler and standpipe systems in these areas do not protect safety-related equipment and are not credited in the Appendix R safe shutdown analysis.

- Condenser Area
- Reactor Feed Pump Turbine
- Turbine Central Area
- Turbine Condenser Gallery
- Turbine Hydro Control Power Room
- North Railroad Bay
- Turbine Condenser Mezzanine
- Diesel Engine Fire Pump Room
- PFP Turbine Room\*
- Centrifuge & Conditioner
- Turbine Pump Area
- Turbine Hydro Seal Oil Unit
- Turbine Lube Oil Area
- Turbine Motor Generator Area
- Turbine Filter Room
- Turbine Moisture Separation Area

- Radwaste Tank Vent Filter Room
- Radwaste Auxiliary Rooms
- Radwaste Controlled Zone Shop

\* Evaluated as the “Reactor Feed Pump (RFP) Turbine Room”

**NRC RAI 2.3.3.13-4:**

Section 9.5.1.3 of the Susquehanna Steam Electric Station SER (NUREG-0776), dated April 1981, discusses the low pressure carbon dioxide (CO<sub>2</sub>) fire suppression systems for electrical equipment rooms, generator purging, concealed floor and ceiling spaces. This section also discusses self-contained Halon 1301 fire extinguishing systems for power generation complex modules.

The total flooding CO<sub>2</sub> fire suppression systems for electrical equipment rooms, generator purging, concealed floor and ceiling spaces and self-contained Halon 1301 fire extinguishing systems for power generation complex modules do not appear in LRA Section 2.3.3.13 as being in the scope of the license renewal and subject to an AMR. The staff requests that the applicant verify whether the CO<sub>2</sub> fire suppression systems for electrical equipment rooms, generator purging, concealed floor and ceiling spaces and Halon 1301 fire extinguishing systems for power generation complex modules 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.

**PPL Response:**

The carbon dioxide and halon fire suppression systems 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). “Spray nozzles, carbon dioxide and halon” and “Tank, low pressure carbon dioxide storage tank (0T102)” are explicitly listed in LRA Table 2.3.3-13 and are subject to AMR. These suppression systems also include piping, tubing, valve bodies, and bolting, which are also listed in LRA Table 2.3.3-13 as subject to AMR.

As shown on LRA drawing LR-M-122, sheet 4, “Fire Protection Carbon Dioxide Systems,” normally closed valves isolate the generator purging portion of the carbon dioxide suppression system from the storage tank. The storage tank, attached piping, and these valves are within the scope of license renewal and subject to aging management review, as described above. The remainder of the generator purging portion of the carbon dioxide suppression system is not in the scope of license renewal. The carbon dioxide suppression systems for safety-related and safe shutdown system protection include those in the electrical equipment rooms and floor and ceiling spaces (concealed) of the control room. In addition, Power Generation Control Complex (PGCC) modules are provided

with self-contained Halon 1301 fire extinguishing systems as described in Section 4.9 of the FPRR, Revision 15, and in Section 9.5.1.3 of NUREG-0776, dated April 1981. These systems are self-contained in the individual modules and, as such, are not shown on an LRA drawing.

**NRC RAI 2.3.3.13-5:**

LRA Table 2.3.3-13 excludes several types of fire protection components that appear in the Susquehanna Steam Electric Station SER (NUREG-0776), dated April 1981 and/or Fire Protection Review Report. These components are listed below:

- Hose stations
- Spray nozzles (water, CO<sub>2</sub>/Halon)
- Dikes for oil spill confinement
- Floor drains and curbs for fire-fighting water
- Filter housing
- Strainer housing
- Heater housing
- Chamber housing
- Actuator housing
- Pipe supports
- Halon storage bottles
- Water storage tanks
- Buried outside diesel fuel storage tanks
- Heat exchanger (bonnet)
- Turbocharger
- Lubricating oil collecting systems components (reactor coolant pump)
- Engine intake and exhaust silencers/muffler (diesel driven fire pump)
- Manual smoke removal systems and their associated components (control structure including CSRs)

The staff requests that the applicant verify whether the components listed above should be included in LRA Table 2.3.3.13. 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.

**PPL Response:**

Fire protection system components that provide safety-related and safe shutdown system protection (i.e., that are required for compliance with 10 CFR 50.48) are in the scope of license renewal and subject to aging management review (AMR) unless justification is provided otherwise.

With certain exceptions, the components listed above do not need to be included in LRA Table 2.3.3-13 in that they are already included in the table (as clarified below), are included in a separate LRA table, or are not included in the scope of license renewal or subject to aging management review. Each type of component listed above is addressed in the following table. The corresponding LRA location is identified for components subject to AMR and justification is provided, as applicable.

Identified Component Type	Add to LRA Table 2.3.3-13 (Yes/No)	LRA Table Listing Component	Justification <sup>1</sup>
Hose stations	No	2.4-10 (structural portions)	<p>Fire hose stations that provide safety-related and safe shutdown system protection are in the scope of license renewal and are shown highlighted in green on the applicable sheets of LRA drawing LR-M-122.</p> <p>The structural portions of these fire hose stations (e.g., cabinets, reels, etc.) are in the scope of license renewal and subject to AMR. They are included in the <u>Equipment Component Supports</u> bulk commodity. <u>Anchorage</u>s for equipment component supports are also evaluated as a bulk commodity.</p> <p>Consistent with Section VII.G of NUREG-1801, the hoses (including nozzles) have a qualified life that is addressed by ongoing hose station inspections (Technical Requirement Surveillances 3.7.3.5.1- 3.7.3.5.3 of the Technical Requirements Manual, Revision 0). Hoses were, therefore, excluded from AMR and are not listed in LRA Table 2.3.3-13. The hose station inspections are included in the Fire Water System Program per LRA Sections A.1.2.19 and B.2.17.</p>
Spray nozzles (water, CO <sub>2</sub> /Halon)	No	2.3.3-13	<p>Spray nozzles for the carbon dioxide and halon suppression systems are in the scope of license renewal and subject to AMR as described in response to RAI 2.3.3.13-4 above.</p> <p>Spray nozzles for fire hoses are considered to be integral to the hose and are in the scope of license renewal, if the hose station is in scope, and are addressed as described for hose stations above.</p> <p>Item F.3 in Table 5.0-1 of the Fire Protection Review Report (FPRR), Revision 15, addresses the use of closed head directional spray nozzles to protect the cable spreading room. The pre-action sprinkler systems in the cable spreading rooms are evaluated as having <u>Sprinkler heads</u>, which are considered equivalent to spray nozzles for license renewal considerations.</p> <p>Furthermore, cable spreading room pre-action sprinkler systems (PA-142, PA-161, and PA-</p>

Identified Component Type	Add to LRA Table 2.3.3-13 (Yes/No)	LRA Table Listing Component	Justification <sup>1</sup>
			242) are shown as in scope (highlighted green) on LRA drawings LR-M-122 sheet 2, "Turbine Bldg., Control Structure and Radwaste Building," and sheet 10, "Typical # 3" or 4" Pre-Action Sprinkler System Detail."
Dikes for oil spill confinement	No	N/A	Item F.18 in Table 5.0-1 of the FPRR addresses the branch technical position guideline for dikes capable of holding the entire contents of auxiliary boiler fuel oil tanks in miscellaneous areas of the plant. SSES complies with the branch technical position guideline in that auxiliary boilers for SSES are electric and do not require fuel oil tanks.  Therefore, there are no oil spill confinement dikes at SSES and no such components in the scope of license renewal.
Floor drains and curbs for fire-fighting water	No	2.3.3-1 (drain lines), 2.3.3-18 (drain lines), 2.4-10 (curbs)	<u>Piping</u> that provides drainage of plant areas, including areas with fixed or hose station fire suppression, is in the Building Drains Nonradioactive System or Liquid Radwaste System, rather than the Fire Protection System. These systems are in the scope of license renewal and the piping and components are subject to AMR.  <u>Flood curbs</u> are structural components evaluated as a bulk commodity, rather than as part of the Fire Protection System. These curbs are in the scope of license renewal and subject to AMR.
Filter housing	No	2.3.2-7 and 2.3.3-5	As indicated in Section 6.2.20.4 of the FPRR, the charcoal filter beds for the Standby Gas Treatment System and the Emergency Outside Air Filters have deluge systems. The housings for these charcoal filters are in the Standby Gas Treatment System and Control Structure HVAC Systems, respectively, and are not in the Fire Protection System.
Strainer housing	No	2.3.3-13	LRA Table 2.3.3-13 lists "Strainers". These strainers are in the scope of license renewal, as shown (highlighted in green) on the pertinent LR-M-122 LRA drawings, and subject to AMR.

Identified Component Type	Add to LRA Table 2.3.3-13 (Yes/No)	LRA Table Listing Component	Justification <sup>1</sup>
Heater housing	Yes		<p>A thermostatic controlled electric engine coolant pre-heater (TZ 02268) is identified on LRA drawing LR-M-122 sheet 1, "Fire Pumphouse North &amp; South Gatehouse &amp; Security Control Center Building." This heater is attached to the heat exchanger shell and the housing is the same material and exposed to the same environment. The <u>heat exchanger (shell, end covers)</u> is listed in LRA Table 2.3.3-13.</p> <p>For completeness, <u>heater housing</u> will also be added to LRA Table 2.3.3-13 and subsequent LRA sections as described below.</p>
Chamber housing	No		<p>A retarding chamber, associated with the wet pipe sprinkler system in the scope of license renewal (WPS-023), is also in the scope of license renewal, as shown (highlighted green) on LR-M-122 Sheet No. 9. It is evaluated as piping in LRA Table 2.3.3-13 and is subject to aging management review.</p>
Actuator housing	No	N/A	<p>Air is supplied to some pre-action and dry pipe sprinkler systems that are in the scope of license renewal, as shown on LR-M-122 Sheet No. 10 and LR-M-122 Sheet No. 15 (highlighted green). However, loss of the control air to these sprinkler systems places them in a safe position; loss of air pressure permits the water pressure to open the dry pipe valve and the fusible link closed sprinkler heads maintains the water inventory for fire suppression. Therefore, the air supply, and associated actuator, for these sprinkler systems are not in the scope of license renewal and are not subject to aging management review.</p>
Pipe Supports	No	2.4-10	<p>Pipe supports are discussed in Item E.3(d) of FPRR Table 5.0-1 in that sizing and spacing for water sprinklers and hose standpipe systems should follow NFPA 14.</p> <p><u>Pipe supports</u>, including the Fire Protection System supports, are a structural component evaluated as a bulk commodity rather than as part of individual systems in the scope of license renewal. The "Pipe supports" commodity is subject to AMR.</p>
Halon storage bottles	No	N/A	<p>As described in LRA Section 2.3.3.13 and in response to RAI 2.3.3.13-4 above, the halon suppression system is in the scope of license renewal. Halon cylinders (storage bottles) are also in the scope of license renewal.</p>

Identified Component Type	Add to LRA Table 2.3.3-13 (Yes/No)	LRA Table Listing Component	Justification <sup>1</sup>
			However, the halon cylinders are stamped "DOT" and are considered to be consumables that are replaced periodically (e.g., on condition) and, therefore, not subject to AMR (consistent with NUREG-1801 Section VIII.G). One of the principal design criteria for these cylinders is Department of Transportation (DOT) Standard, Title 49, Section 178.36, Specification 3A and 3AX, Seamless Steel Cylinders.
Water storage tanks	No	2.3.3-20	As described in LRA Section 2.3.3.13, the primary source of water supply is the clarified water storage tank which is included in the Raw Water Treatment System, with a cross-reference to LRA Section 2.3.3.21 provided. <u>Tank, clarified water storage (0T523)</u> is in the scope of license renewal and subject to AMR.  LRA drawing LR-M-122 sheet 1 includes a continuation arrow (highlighted in green) from LRA drawing LR-M-117 sheet 2, "Raw Water Treatment," which shows the clarified water storage tank and associated components as in the scope of license renewal (highlighted in green).
Buried outside diesel fuel storage tanks	No	2.3.3-7	The diesel fuel storage tanks discussed in Table 5.0-1, Item F.10, of the FPRR are buried outside adjacent to the diesel generator building and are included in the Diesel Fuel Oil System, rather than Fire Protection, as they support that systems intended function. <u>Tanks (0T527A-E, 0T528A-E)</u> , shown on LRA drawings LR-M-120, sheets 1 & 2, "Diesel Oil Storage & Transfer," are in the scope of license renewal and subject to AMR.  Section 4.1 of the FPRR indicates that the diesel engine driven pump is provided with a day tank containing enough diesel fuel oil for 8 hours of operation in accordance with NFPA 20. There are no buried fuel storage tanks for the diesel engine driven fire pump at SSES.
Heat exchanger (bonnet)	No	2.3.3-13	The <u>Heat exchanger (shell, end covers)</u> component is currently listed in the LRA as is in the scope of license renewal and subject to AMR. Heat exchanger end covers and heat exchanger bonnets (or channels) are considered equivalent for license renewal considerations.



Identified Component Type	Add to LRA Table 2.3.3-13 (Yes/No)	LRA Table Listing Component	Justification <sup>1</sup>
Turbocharger	Yes		Although not shown on LRA drawing LR-M-122 sheet 1, the diesel engine for the diesel engine driven fire pump (0P511) is turbocharged. For completeness, <u>turbocharger casing</u> will also be added to LRA Table 2.3.3-13 and subsequent LRA sections as described below.
Lubricating oil collection system components (reactor coolant pump)	No	N/A	As described in Section 3.2.4 and Table 5.0-2 of the FPRR (as well as LRA Section 3.3.2.2.7.1), the containment for Susquehanna Steam Electric Station Units 1 and 2 is inerted and, therefore, Appendix R Section III.O does not apply.  Implementation of a reactor coolant pump oil collection system was identified as a commitment in Section 9.5.8 of the plant SER (NUREG-0776), dated April 1981. NRC Inspection Report Nos. 50-387/85-06 and 50-388/85-06, dated April 29, 1985, confirmed that the containments in these plant are inerted during normal operation, and the requirement (of 10 CFR 50 Appendix R Section III.O) does not apply. NRC IR 85-06 further clarifies that the above commitment to provide an engineered oil collection system was based on the fact that Susquehanna containments were not to be inerted originally.
Engine intake and exhaust silencers / mufflers (diesel driven fire pump)	Yes		The engine for the diesel engine driven fire pump (0P511) does not have intake silencers. <u>Flexible connections (exhaust)</u> and <u>Piping (exhaust)</u> as shown (highlighted in green) on LRA drawing LR-M-122 sheet 1, and are subject to AMR, as listed in LRA Table 2.3.3-13.  For completeness, <u>Muffler (exhaust)</u> , shown on LR-M-122 sheet 1, will also be added to LRA Table 2.3.3-13 and subsequent LRA sections as described below.
Manual smoke removal systems and their associated components	No	N/A	As described in LRA Section 2.3.3.5, the smoke removal system is included in the subsystems and components that comprise the Control Structure HVAC Systems, rather than in the Fire Protection System. However, the manual smoke removal system does not have a function for protection or support of safety-related components or of components in one of the three safe shutdown paths credited for compliance with 10 CFR 50 Appendix R. As such, the manual smoke removal system for the control structure and cable spreading rooms is not in the scope

Identified Component Type	Add to LRA Table 2.3.3-13 (Yes/No)	LRA Table Listing Component	Justification <sup>1</sup>
(control structure including CSRs)			<p>of license renewal.</p> <p>An exception is the <u>Ductwork</u> and <u>Damper housings</u> up to the inlets of the smoke removal fans that are attached to (and provide support for) safety-related HVAC components, as shown (in pink/magenta) on LRA drawing LR-M-178 sheet 1, Revision 1, and sheet 2, Revision 0, "Control Structure Air Flow Diagram." These associated components are in the scope of license renewal and subject to AMR, as addressed in response to D-RAI 2.1-3(c).</p> <p>The smoke removal system is addressed in Section 9.4.1 of the Final Safety Analysis Report (FSAR), Revision 61, and is mentioned (only as being included in the control room and control structure heating, ventilation, and air-conditioning systems) in Section 9.4.1 of the plant SER (NUREG-0776).</p> <p>Table 5.0-1 of the FPRR indicates, for compliance with general guidelines in Section D.3 and D.4 of the BTP ASB 9.5-1, that the supply and return air ducts (which are in the scope of license renewal and subject to AMR) will close automatically and isolate the room. It further indicates that, <i>after the fire has been extinguished</i>, the smoke removal fan can be started manually and the dampers necessary for smoke removal from the affected room opened by remote manual operation. Because smoke removal is not required for suppression of a fire in the control structure or cable spreading rooms, the smoke removal system does not have an intended function that satisfies the criteria of 10 CFR 54.4(a)(3).</p>
<sup>1</sup> Corresponding component types/commodity names are listed as they are identified in the LRA and are <u>underlined</u> for clarity.			

As indicated in the above Table, certain components of the Fire Protection System were incorrectly omitted from Section 2.3.3.13 and subsequent portions of the LRA. These components are attached to and support the function of the diesel engine driven fire pump (0P511), shown on LRA drawing LR-M-122, sheet 1. For the most part, these supporting components are not shown on the boundary drawing. An evaluation was performed to determine the extent of this condition. Based on this evaluation, the following components are identified as being subject to aging management review, with the results of the aging management review shown in the license renewal application supplement that follows:

#### 2.3.3.13 Fire Protection System

- The following line items are added to Table 2.3.3-13 (on LRA pages 2.3-73 & 2.3-74):

Filter Bodies	Pressure Boundary
Heater Housing	Pressure Boundary
Muffler	Pressure Boundary
Heat Exchanger (oil cooler) Shell and End Covers	Pressure Boundary
Heat Exchanger (oil cooler) Tubes	Heat Transfer Pressure Boundary
Pump Casing (diesel fuel oil)	Pressure Boundary
Pump Casing (diesel lubricating oil)	Pressure Boundary
Pump Casing (diesel cooling water)	Pressure Boundary
Tank (oil pan)	Pressure Boundary
Turbocharger Casing	Pressure Boundary

- The following environment and aging management programs are added to the bulleted lists of Section 3.3.2.1-13, on LRA pages 3.3-18 & 3.3-19 (no new materials or aging effects were identified by this evaluation):

#### Environments

The Fire Protection System components/commodities are exposed to the following additional environment:

- Lubricating Oil

### **Aging Management Programs**

The following aging management programs manage the aging effects for the Fire Protection System components/commodities:

- Lubricating Oil Analysis Program
- Lubricating Oil Inspection

➤ The following items are added to LRA Table 3.3.2-13 (on LRA pages 3.3-228 - 3.3-245):

<b>Table 3.3.2-13 Aging Management Review Results – Fire Protection System</b>								
<b>Component / Commodity</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NURE-1801 Volume 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
Filter Body	Pressure Boundary	Carbon Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis Program Lubricating Oil Inspection	VII.H2-20	3.3.1-14	A, 0321
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	A
Flexible Connections (Hoses)	Pressure Boundary	Elastomers (Synthetic Rubber)	Lubricating Oil (Internal)	None Identified	None Required	N/A	N/A	G
			Indoor Air (External)	None Identified	None Required	VII.F4-6	3.3.1-11	I, 0318
Filter Body	Pressure Boundary	Carbon Steel	Fuel Oil (Internal)	Loss of Material	Fuel Oil Chemistry Program	VII.G-21	3.3.1-64	B, 0321
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	A
Filter Body	Pressure Boundary	Carbon Steel	Raw Water	Loss of Material	Fire Water System Program	VII.G-24	3.3.1-68	A, 0320
			Indoor Air	Loss of Material	System Walkdown Program	VII.I-11	3.3.1-58	A, 0315

Table 3.3.2-13 Aging Management Review Results – Fire Protection System								
Component / Commodity	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NURE-1801 Volume 2 Item	Table 1 Item	Notes
Heater Housing	Pressure Boundary	Cast Iron	Raw Water (Internal)	Loss of Material	Fire Water System Program	VII.G-24	3.3.1-68	C, 0320
				Loss of Material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
			Indoor Air (External)	Loss of Material	Selective Leaching Inspection	VII.I-11	3.3.1-58	H
				Loss of Material	System Walkdown Program	VII.I-11	3.3.1-58	A, 0314
Heat Exchanger (oil cooler) Shell	Pressure Boundary	Carbon Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis Program Lubricating Oil Inspection	VII.H2-20	3.3.1-14	D, 0321
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	A
Heat Exchanger (oil cooler) End Covers	Pressure Boundary	Copper Alloy (Brass or Bronze)	Raw Water (Internal)	Loss of Material	Fire Water System Program	VII.G-12	3.3.1-70	C, 0320

<b>Table 3.3.2-13 Aging Management Review Results – Fire Protection System</b>								
<b>Component / Commodity</b>	<b>Intended Function</b>	<b>Material</b>	<b>Environment</b>	<b>Aging Effect Requiring Management</b>	<b>Aging Management Program</b>	<b>NURE-1801 Volume 2 Item</b>	<b>Table 1 Item</b>	<b>Notes</b>
				Loss of Material	Selective Leaching Inspection	VII.G-13	3.3.1-84	C
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.F1-16	3.3.1-25	E
				Loss of Material	Selective Leaching Inspection	VII.F1-16	3.3.1-25	H
Heat Exchanger (oil cooler) Tubes	Pressure Boundary, Heat Transfer	Copper Alloy (Copper-Nickel)	Raw Water (Internal)	Loss of Material	Piping Corrosion Program	VII.H2-11	3.3.1-80	D, 0326
				Reduction in Heat Transfer	Piping Corrosion Program	VII.C1-6	3.3.1-83	B
			Lubricating Oil (External)	Reduction in Heat Transfer	Piping Corrosion Program	N/A	N/A	H
Muffler (Exhaust)	Pressure Boundary	Carbon Steel	Ventilation (Internal)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	C, 0302
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	A

Table 3.3.2-13 Aging Management Review Results – Fire Protection System								
Component / Commodity	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NURE-1801 Volume 2 Item	Table 1 Item	Notes
Pump Casing (diesel fuel oil)	Pressure Boundary	Cast Iron	Fuel Oil (Internal)	Loss of Material	Fuel Oil Chemistry Program Chemistry Program Effectiveness Inspection	VII.H1-10	3.3.1-20	C, 0321
					Selective Leaching Inspection	N/A	N/A	H
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	A
Pump Casing (diesel lubricating oil)	Pressure Boundary	Cast Iron	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis Program Lubricating Oil Inspection	VII.H2-20	3.3.1-14	C, 0321
					Selective Leaching Inspection	N/A	N/A	H
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	A
Pump Casing (diesel cooling water)	Pressure Boundary	Cast Iron	Raw Water (Internal)	Loss of Material	Fire Water System Program	VII.G-24	3.3.1-68	C, 0320



Table 3.3.2-13 Aging Management Review Results – Fire Protection System								
Component / Commodity	Intended Function	Material	Environment	Aging Effect Requiring Management	Aging Management Program	NURE-1801 Volume 2 Item	Table 1 Item	Notes
				Loss of Material	Selective Leaching Inspection	VII.G-14	3.3.1-85	A
			Indoor Air (External)	Loss of Material	Selective Leaching Inspection	VII.I-11	3.3.1-58	H
				Loss of Material	System Walkdown Program	VII.I-11	3.3.1-58	A, 0314
Tank (oil pan)	Pressure Boundary	Carbon Steel	Lubricating Oil (Internal)	Loss of Material	Lubricating Oil Analysis Program Lubricating Oil Inspection	VII.H2-20	3.3.1-14	D, 0321
			Indoor Air (External)	Loss of Material	System Walkdown Program	VII.I-8	3.3.1-58	A

- The following statement replaces the corresponding statement in the second paragraph of Section A.1.28 (LRA page A-14), added text is italicized:

Prior to the period of extended operation, the Lubricating Oil Analysis Program will be enhanced to include sampling of the lubricating oil from the Control Structure Chiller *and Diesel Engine Driven Fire Pump* when the oil is changed. The oil will be tested for water and for particle count.

- The following statement replaces the corresponding statement for item 48 of Table A-1 (LRA page A-53), added text is italicized:

Prior to the period of extended operation, the Lubricating Oil Analysis Program will be enhanced to include sampling of the lubricating oil from the Control Structure Chiller *and Diesel Engine Driven Fire Pump* when the oil is changed. The oil will be tested for water and for particle count.

- The following statement replaces the corresponding statement for the Scope of Program discussion in Section B.2.25 (LRA page B-78), added text is italicized:

The scope of the Lubricating Oil Inspection includes the internal surfaces of aluminum, copper alloy, carbon steel, cast iron, and stainless steel components in the following license renewal systems that contain lubricating oil:

- Diesel Generator, *Fire Protection*, Control Structure Chilled Water, Residual Heat Removal, Reactor Core Isolation Cooling, and High Pressure Coolant Injection systems

- The following statement replaces the corresponding statement for the Required Enhancements discussion in Section B.2.33 (LRA page B-104), added text is italicized::

- Scope –

The scope of the Lubricating Oil Analysis Program must be enhanced to sample the lubricating oil from the Control Structure Chiller *and Diesel Engine Driven Fire Pump* when the oil is changed. A particle count and a check for water must be performed on the drained oil.

#### **NRC RAI 2.3.3.13-6:**

LRA Section 2.3.3.13 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 suctions to remove any major debris from the fresh or raw water. 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. 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).

**PPL Response:**

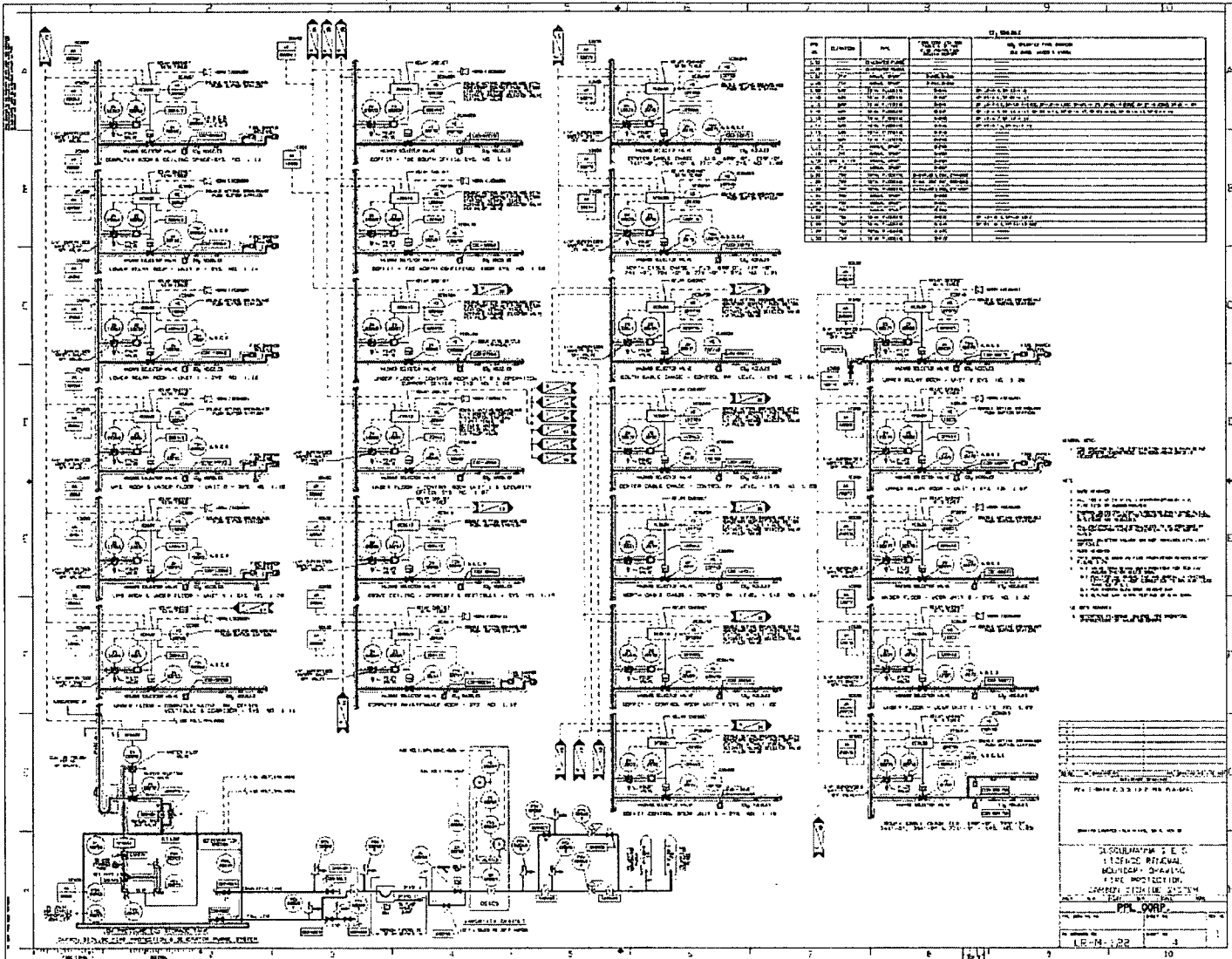
As described in LRA Section 2.3.3.13, System Description, Water Supplies, the primary source of fire protection water is the Clarified Water Storage Tank, addressed in LRA Section 2.3.3.21, and the second and third sources are the basins of hyperbolic natural draft cooling towers for Units 1 and 2, addressed in LRA Section 2.3.3.6. Accordingly, the fire pumps at SSES are horizontal, centrifugal type pumps as described in FPRR Section 4.1, rather than vertical wet pit pumps, and do not take suction from an open bay. Since the pumps do not take suction from a natural source or bay, trash racks and traveling screens are neither required nor installed at SSES.

Boundary drawings LR-M-115, sheet 1 and LR-M-2115, sheet 1, which are identified in LRA Section 2.3.3.6, show the outlet screens for the cooling tower basin as in the scope of license renewal (highlighted green). As described in LRA Section 2.4.9.6, LRA Table 2.4-9, and LRA Table 3.5.2-9, the Cooling Tower Basin Outlet Screens are in license renewal scope and are subject to AMR as structural commodities. They are constructed of stainless steel and are fixed screens.

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**Attachment to PLA-6241**  
**Boundary Drawing LR-M-122 Sheet 4**  
**(Revised)**

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**THIS PAGE IS AN  
OVERSIZED DRAWING OR  
FIGURE,  
THAT CAN BE VIEWED AT THE  
RECORD TITLED:  
DRAWING NO. LR-M-122  
“LICENSE RENEWAL  
BOUNDARY DRAWING FIRE  
PROTECTION CARBON  
DIOXIDE SYSTEM.”  
SHEET NO. 4, REV. 1**

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