



Portland General Electric Company

Trojan ISFSI
71760 Columbia River Hwy
Rainier, Oregon 97048

June 10, 2019

VPN-009-2019

Trojan ISFSI
Docket No. 72-17
CAC No. 001028
EPID No. L-2017-RNW-0011

ATTN: Document Control Desk
Director, Division of Spent Fuel Management
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Submittal of Response to NRC's Request for Additional Information
Related to the Trojan ISFSI License Change Application (LCA 72-07) for
License Renewal (CAC No. 001028)

By letter dated March 23, 2017, Portland General Electric Company (PGE) submitted to the Nuclear Regulatory Commission (NRC) an application for renewal of License No. SNM-2509 for the Trojan Independent Spent Fuel Storage Installation (ISFSI). PGE was informed that the application was accepted for technical review on May 31, 2017. In a letter dated February 4, 2019 from Christopher T. Markley to Bradley Y. Jenkins, the NRC requested additional information from PGE to support technical review of the license renewal application related to 10 CFR 72.22(e). PGE letter VPN-004-2019, dated February 21, 2019, provided PGE's response to this request for additional information (RAI).

As a result of two teleconferences (March 6 and 12, 2019) with the NRC, PGE agreed to submit additional financial information covering the entire 40-year license renewal period that will end in 2059 to supplement the information in the February 21, 2019 RAI response.

Enclosure 1 to this letter contains changes to License Renewal Application (LRA) Section 1.3.6, a new Subsection 1.3.6.1 with a new Figure 1.3.6, and five new tables. This additional financial information supplements the financial information in the February 21, 2019 RAI response and is shown in green text with sidebars. The information includes estimated operating and maintenance costs for the Trojan ISFSI, as well as sources of funds, over the planned life of the ISFSI (ending in 2059), and provides the assumptions and rationale for these cost projections.

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This information is provided to show compliance with 10 CFR 72.22(e).

This application is executed in original form and signed under oath or affirmation as required by 10 CFR 72.16(b) and (c). Please contact Mr. Mark Tursa of my staff at 503-556-7030 if you have questions regarding this correspondence.

Sincerely,

A handwritten signature in dark ink, appearing to read "Bill Nicholson". The signature is fluid and cursive, with a prominent "B" and "N".

Bill Nicholson
Vice President,
Utility Technical Services

Enclosures

c: C. T. Markley, NRC, NMSS, SFPO
Director, DNMS, NRC Region IV
T. R. Cornett, ODOE
Chairman, Columbia County Commissioners

State of Oregon,)
)
)
County of Multnomah)

I, Bill Nicholson, being duly sworn, subscribe to and say that I am the Vice President, Utility Technical Services for Portland General Electric Company, the applicant herein; that I have full authority to execute this oath; that I have reviewed the foregoing; and that to the best of my knowledge, information, and belief the statements made in it are true.

Date June 10, 2019



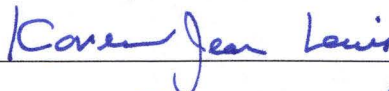
Bill Nicholson
Vice President, Utility Technical Services

On this day appeared before me Bill Nicholson, to me known to be the individual who executed the foregoing instrument and acknowledged that he signed the same as his free act.

GIVEN under my hand and seal this 10th day of June 2019.



Notary Public in and for the
State of Oregon



Residing at Portland Or 97215
My commission expires August 26, 2022

Enclosure 1 to VPN-009-2019

License Renewal Application

Cover Page – Revision Status List of LRA Changes	Pages 1 through 18	Revision 2
Table of Contents	Pages i through vii	Revision 2
LRA Chapter 1	Pages 1-1 through 1-22	Revision 2

**LICENSE APPLICATION SECTION REVISION STATUS,
LIST OF AFFECTED SECTIONS, REVISION SUMMARY, AND LIST OF LRA CHANGES**

TITLE Trojan ISFSI License Renewal Application (LRA)

This LRA is submitted to the NRC in support of the application to renew the Trojan ISFSI Part 72 Site-Specific License No. SNM-2509.

If any change in the content is made to LRA Chapter 1, 2, or 3 or Appendix A, B, C, or D, then the change is indicated by a "bar" in the right page margin and the revision number of the entire Chapter or Appendix is changed.

If any change in the content is made to the Appendix E, F, G, or H attached documents, then the change is indicated by a "bar" in the right page margin and the page footer revision number is updated along with the attached document's "List of Effective Pages".

To support NRC's review, the attached "List of LRA Changes" contains a comprehensive listing of changes in sequential order throughout the LRA including the Appendices. Minor editorial changes to this LRA may not be included in the List of LRA Changes. The List of LRA Changes contains the following:

- Sequential Item number,
- Section number,
- Page number,
- Reason Type (E = editorial, C = clarification or correction, and RAI = RAI response),
- Description of change

**License Application Section Revision Status, List of Affected Sections,
Revision Summary, and List of LRA Changes**

Affected Section or Table No.	Current Revision No.	Summary Description of Change
Pages 1 through 18	2	June 2019 (RAI Supplement) List of LRA Changes is attached

LRA Table of Contents/Glossary/Acronym List

Affected Section or Table No.	Current Revision No.	Summary Description of Change
Pages i through vii	2	June 2019 (RAI Supplement)

Chapter 1 – General Information

Affected Section or Table No.	Current Revision No.	Summary Description of Change
Pages 1-1 through 1-22	2	June 2019 (RAI Supplement)

LICENSE APPLICATION SECTION REVISION STATUS, LIST OF AFFECTED SECTIONS, REVISION SUMMARY, AND LIST OF LRA CHANGES		
Chapter 2 – Renewal Scoping		
Affected Section or Table No.	Current Revision No.	Summary Description of Change
Pages 2-1 through 2-16	1	January 2019
Chapter 3 – Aging Management Reviews		
Affected Section or Table No.	Current Revision No.	Summary Description of Change
Pages 3-1 through 3-42	1	January 2019
Appendix A – Aging Management Programs		
Affected AMP	Current Revision No.	Summary Description of Change
Pages A-1 through A-20	1	January 2019
Appendix B - Time-Limited Aging Analyses (TLAAs)		
Affected Section or Table No.	Current Revision No.	Summary Description of Change
Pages B-1 through B-3	1	January 2019
Appendix C – Tollgate Assessments		
Affected Section or Table No.	Current Revision No.	Summary Description of Change
Page C-1 (C-2 through C-4 deleted)	1	January 2019
Appendix D – Pre-Application/Baseline Inspections		
Affected Section or Table No.	Current Revision No.	Summary Description of Change
Pages D-1 through D-3	1	January 2019
Appendix E – PGE-1070, Trojan Environmental Report, Supplement 1		
Affected Section or Table No.	Current Revision No.	Summary Description of Change
Page E-1 with Attachment	0	Initial Issue
Appendix F – Proposed Changes to Trojan ISFSI License and Technical Specifications		
Affected Section or Table No.	Current Amendment No.	Summary Description of Change
Page F-1 ISFSI License Technical Specifications	1 Proposed Amendment 7 Proposed Amendment 6	January 2019 Submittal

06/12/2019

**LICENSE APPLICATION SECTION REVISION STATUS,
LIST OF AFFECTED SECTIONS, REVISION SUMMARY, AND LIST OF LRA CHANGES**

Appendix G – Proposed Changes to Trojan ISFSI SAR

Affected Section or Table No.	Current Revision No.	Summary Description of Change
Page G-1 with Attachment	1 Proposed Revision 15a	January 2019 Submittal
Appendix H – PGE-1082, Trojan ISFSI Preliminary Radiological Decommissioning Plan, Proposed Revision 1		
Affected Section or Table No.	Current Revision No.	Summary Description of Change
Pages H-1 and H-2 with Attachment	1 Proposed 1a	January 2019 Submittal

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
1	LRA Revision Status	1 through 3	E	For the January 2019 submittal, added "LRA" acronym and replaced word "report" with "LRA". Added description of PGE's "List of LRA Changes" that has been added to the LRA Revision Status Section. In each section, updated the number of pages and Revision numbers, and changed "Initial Issue" to say "January 2019 Version" and "Initial Submittal" to say "January 2019 Submittal". Also, added a new footer "Revision 1 January 2019" to applicable LRA pages. For June 2019 Supplement, revised Page 1 of 18 to reflect that Pages 1 through 18 are now Revision 2 and added "June 2019 (RAI Supplement)" in the Summary of Description of Change column. Also, revised footer on Pages 1 through 3 to say "Revision 2 June 2019".
4	List of LRA Changes	4 through 18	E	For the January 2019 submittal, this new List of LRA Changes contains a comprehensive listing of changes in sequential order throughout the LRA including the Appendices. For the June 2019 RAI Supplement, revised footer on Pages 4 through 18 to say "Revision 2 June 2019".
ii	TOC	ii, iii i through vii	RAI 2-1 E	For the January 2019 submittal, added new Section 3.7 for Aging Management Review Results - ISFSI Pad and re-numbered following Sections to be 3.8 - 3.10. For the June 2019 RAI Supplement, revised footer on Pages i through vii to say "Revision 2 June 2019".
iii	TOC	iii, iv i through vii	RAI 2-1 RAI A-13 E	For the January 2019 submittal, added references to new ISFSI SAR 9.7 Table numbers and added new Table 2-7 for Intended Safety Functions of ISFSI Pad Subcomponents. For the June 2019 RAI Supplement, revised footer on Pages i through vii to say "Revision 2 June 2019".
v	Glossary	v, vi i through vii	C E	For the January 2019 submittal, added a new Term for the Fuel Debris Process Can Capsule and supporting words to two other related Terms. Also, added a new Term for Intended Functions. For the June 2019 RAI Supplement, revised footer on Pages i through vii to say "Revision 2 June 2019".
1-1	1.2	1-2	E	Clarified wording describing damaged fuel.
1-2	1.3.6 1.3.6.1 and Figure 1.3.6	1-6 through 1-9	RAI	In Section 1.3.6, added December 31, 2018 updated links for co-owner annual reports. Added new Subsection 1.3.6.1 containing additional Trojan co-owners' financial information covering the 40-year license renewal period ending in 2059. This supplements the information previously provided in PGE letter VPN-004-2019, dated February 21, 2019. This change adds a new Figure 1.3.6 containing the Trojan ISFSI Estimated Project Timeline with a projected March 31, 2059 license termination date.
1-3	1.3.7 1.3.7.1 1.3.7.2	1-10 and 1-11	C	For clarification, added the word "Proposed" to Revision 1 for PGE-1082.
1-4	1.3.7 1.3.7.3 1.3.7.4	1-10, 1-12	C/RAI	Describes PGE-1082, Section 2.6 revision of the 40-year Concrete Cask activation analysis to cover 60 years and the Section 4.1 revision for "conclusions" added in response to NRC's RAI letter, dated April 3, 2018. (Reference PGE response letter dated May 15, 2018.)
1-5	1.3.1	1-13	C	Added new Reference 1.3.1 for Holtec Shielding Evaluation, Revision 6 that contains the Concrete Cask activation analysis.
1-6	Tables 1-0-1 1-0-2 1-0-2-1 1-0-2-2 1-0-2-3	1-14 through 1-18	RAI	To support the new LRA Subsection 1.3.6.1, this change adds five new financial tables with numbers 1-0-1, 1-0-2, 1-0-2-1, 1-0-2-2, and 1-0-2-3.
1-7	Table 1-1	1-19 through 1-22	C	Added new row for Section 3.7 - Aging Management Review Results - ISFSI Pad and re-numbered following Sections to be 3.8 - 3.10. For clarification, added the word "Proposed" to Revision 1 for PGE-1082.
2-1	2.1	2-2	C/RAI A-13	Added reference to new ISFSI SAR table numbers throughout chapter. LRA Tables 2-1 through 2-7 will be added to the SAR as Tables 9.7-1 through 9.7-7.
2-2	2.2	2-2	E	Clarified the content of the MPC to include the Damaged Fuel Container, Failed Fuel Can, and Fuel Debris Process Can Capsule.
2-3	2.2.1.1	2-2	E	Clarified wording describing damaged fuel.
2-4	2.2.1.3	2-3	E	Moved and clarified wording regarding intended functions of the Concrete Cask.
2-5	2.2.1.5	2-3, 2-4	RAI 2-1	Clarified description of ISFSI Pad. Clarified location of ISFSI SAR reference to ISFSI Pad. Changed conclusion of scoping evaluation for Storage and Service Pads, such that the pads scope in. Although the pads are classified as Not Important to Safety and therefore have no ITS functions, gross failure of the pads could affect the ITS function of Retrieval by hampering the movement of Concrete Casks from their storage position to the Transfer Station.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
2-6	2.2.1.6	2-4	E	Clarified wording for ISFSI security equipment.
2-7	2.2.1.7	2-4	E	Changed "Transfer Station mat" to "Transfer Station pad" for clarity. A leveling mat was placed directly on bedrock as part of the Transfer Station Pad design. However, this LRA section refers to the reinforced concrete pad above the mat. Also changed "test MPC" to "dummy MPC" since that terminology was used in various Trojan documents at the time the Transfer Station was originally tested.
2-8	2.2.1.8	2-4	E	Clarified wording.
2-9	2.2.2	2-4, 2-5	RAI 2-1	Clarified the content of the MPC to include the Damaged Fuel Container, Failed Fuel Can, and Fuel Debris Process Can Capsule. Noted that the ISFSI Pad now scopes in. Added reference to new ISFSI SAR tables.
2-10	2.2.3	2-5	C	Added reference to new ISFSI SAR table and deleted words for ISFSI Pads.
2-11	2.2.2	2-5	C	Updated Reference 2.2.2 to NUREG 1927, Revision 1, Section 2.4.2 for the definition of ITS functions.
2-12	Table 2-1	2-6	RAI 2-1	Added reference to new ISFSI SAR table. Clarified the content of the MPC to include the Damaged Fuel Container, Failed Fuel Can, and Fuel Debris Process Can Capsule. Noted that the ISFSI Pad now scopes in per Criterion 2.
2-13	Table 2-2	2-7, 2-8	C/RAI 2-2	Added reference to new ISFSI SAR table. For Item 1 (Shell), made correction to delete drawing part number 32 and add part number 17. For Item 6 (Basket Cell Spacer Block), changed Intended Function from Structural Integrity to N/A. For Item 9 (Short Cell Spacer Plates), changed Intended Function from N/A to Criticality Control and Structural Integrity. For Item 17 (Plugs for Drilled Holes), changed Intended Function from Shielding to N/A. For Items 28 (Vent and Drain Tube) and 29 (Vent and Drain Cap), added reference to new Table Note 2 indicating that these items were used during loading operations and have no Intended Functions during storage. For Item 21 (Vent and Drain Cap Screw), corrected subcomponent title. For Item 32 (Port Cover Plate Set Screw), changed Intended Function from Confinement to N/A. Added Item 39 (Fuel Debris Process Can Capsule) for completeness. Corrected Reference number (2.2.2) in Note 1. Added Note 2 for items that were used during loading operations but have no Intended Function during storage.
2-14	Table 2-3	2-9	RAI A-6	Added reference to new ISFSI SAR table. For Items 10 (Inlet Air Assembly) and 11 (Outlet Air Assembly), added reference to new Note 4. Corrected Reference number (2.2.2) in Note 1. Added Note 4 to clarify that the heat transfer function of the Concrete Cask air assemblies is to maintain an open air flow path.
2-15	Table 2-4	2-10, 2-11	C/RAI 2-2	Added reference to new ISFSI SAR table. For Item 3 (Lead Fill Plug), corrected description to match drawing. Deleted Item 17 (Lid Bolt) since this is no longer used. The row was left in place to maintain the existing Item number references. For Item 18 (Lifting Trunnion Block) and 21 (Top Lid Lifting Block), added Intended Function of Shielding. For Item 22 (Top Lid Stud / Top Lid Bolt) and 23 (Top Lid Nut / Top Lid Washer), changed Intended Function from N/A to Structural Integrity. For Item 27 (Water Jacket Port Cover Plate, Gasket, and Screws) changed Intended Function from Structural Integrity to N/A. For Items 28 (Door Lip) and 30 (Door Beam), changed Intended Function from N/A to Structural Integrity. For Items 33 (Door Top Plate Clevis), 34 (Door Stop Plate), and 35 (Door Hex Bolt), added reference to new Note 2. Corrected Reference number (2.2.2) in Note 1. Added Note 2 for items that were used during loading operations but have no Intended Function during storage.
2-16	Table 2-5	2-12	C	Added reference to new ISFSI SAR table. Corrected Reference number (2.2.2) in Note 1.
2-17	Table 2-6	2-13 through 2-15	RAI 2-2	Extensively revised table to include part level description of the Transfer Station, Transfer Pad, and Impact Limiter for completeness. Revised header descriptions for consistency with other LRA tables.
2-18	Table 2-7	2-16	RAI 2-1	Added new table listing Intended Functions of ISFSI Pad subcomponents. The pad scopes in since, although it is not ITS, gross failure could affect the Intended Function of Retrievalability.
3-1	3.1	3-1	E	Clarified that the management review process involves identification of aging effects requiring management as well as the associated aging mechanism.
3-2	3.1.1	3-1	C	Added references to new ISFSI SAR tables.
3-3	3.1.2	3-1, 3-2	C	Corrected references to LRA table numbers and added reference to new ISFSI SAR tables.
3-4	3.1.2.1	3-2	C	Added reference to inert gas environment inside Transfer Cask Water Jacket for completeness.
3-5	3.1.2.2	3-2	E	Changed description of air temperature "limits" to air temperature "range" since controls are not placed on ambient air flowing through Concrete Cask annulus and inlet/outlet assemblies.
3-6	3.1.2.4	3-2	C	Added reference to new ISFSI SAR tables.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
3-7	3.1.4	3-3	E	Updated LRA table reference for consistency.
3-8	3.1.6.1	3-4	C	Clarified that external Concrete Cask inspections have been performed on all casks, and internal Concrete Cask inspections have been performed on one specific cask. Added reference to 2018 internal Concrete Cask inspection that examined accessible external MPC surfaces, and included information on the equipment used. Updated reference numbers for related inspection reports. Removed reference to "Trojan" personnel since contract personnel also participated in past inspections.
3-9	3.1.6.2	3-5	E	Updated LRA section reference.
3-10	3.2	3-5	C	Added reference to new ISFSI SAR table. Add reference to aging mechanism for consistency with LRA Section 3.1.4 and Tables 3-1 through 3-5.
3-11	3.2.1.4	3-7	C	Added description of Fuel Debris Process Can Capsule for completeness and consistency with LRA Section 2, Section 2.2, and Table 2-1.
3-12	3.2.2	3-7	C	Added reference to new ISFSI SAR table.
3-13	3.2.4	3-8	E	Updated LRA section reference.
3-14	3.2.5	3-8	C	Clarified aging mechanisms for MPC materials of construction. Removed reference to radiation effects on the neutron absorber and steel components since these are excluded by referenced analyses (TLAA for the neutron absorber, and similar analysis for steel components).
3-15	3.2.6	3-8	C	Added reference to new ISFSI SAR table. Updated LRA section references.
3-16	3.3	3-8	C	Added reference to new ISFSI SAR table. Add reference to aging mechanism for consistency with LRA Section 3.1.4 and Tables 3-1 through 3-5.
3-17	3.3.1	3-9	E	Clarified that the Transfer Cask trunnions "were" designated as special lifting devices (past tense) since the Transfer Cask is no longer used as a special lifting device.
3-18	3.3.2	3-10	E	Removed extraneous comma.
3-19	3.3.2	3-10	C	Added reference to new SAR table.
3-20	3.3.3	3-10	RAI 3-5	Clarified that the Transfer Cask water jacket cavity was exposed to potable (non-borated) water during fuel loading operations. Described this exposure as intermittent during fuel loading. Described extended storage conditions (prior to use for future fuel transfers) as inert gas, and intermittent periods filled with water and air during future MPC transfers.
3-21	3.3.4	3-10	E	Updated reference to LRA section for consistency.
3-22	3.3.5	3-11	RAI A-5	Expanded the description of the aging effect requiring management to "corrosion pitting and crevice corrosion" for consistency with Table 3-2.
3-23	3.3.6	3-11	C	Added reference to new SAR table. Updated reference to LRA section for consistency.
3-24	3.4	3-11	C	Added reference to new SAR table. Added reference to aging mechanism for consistency with LRA Section 3.1.4 and Tables 3-1 through 3-5.
3-25	3.4.1	3-12	C	Removed the word "reinforced" from the description of the Concrete Cask chamfered corners since that does not represent the actual design.
3-26	3.4.2	3-12, 3-13	C	Replaced "pouring concrete" with "placing concrete" when referring to construction of Concrete Casks based on common usage of the terms. Eliminated redundant description of metal coating in the first paragraph. Added wording to similar sentence in third paragraph to capture all information in one place. Added references to new SAR tables.
3-27	3.4.3	3-13	C	Added reference to new SAR table.
3-28	3.4.4	3-13	E	Updated reference to LRA section for consistency.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
3-29	3.4.5	3-14	RAI A-6	Removed reference to loss of fracture toughness for metal components (from radiation exposure) based on analysis results. Expanded description of concrete aging effects to include loss of strength, spalling, cracking, and scaling caused by corrosion of embedded reinforcing steel.
3-30	3.4.6	3-14	C	Added reference to new SAR table. Updated reference to LRA section for consistency.
3-31	3.5	3-14	C	Added reference to new SAR table. Added reference to aging mechanism for consistency with LRA Section 3.1.4 and Tables 3-1 through 3-5.
3-32	3.5.1	3-14	C	Updated reference to LRA table for consistency.
3-33	3.5.2	3-15	C	Added reference to new SAR table.
3-34	3.5.3	3-15	C	Added reference to new SAR table.
3-35	3.5.4	3-15	C	Updated reference to LRA section for consistency.
3-36	3.5.6	3-15	C	Added reference to new SAR table.
3-37	3.6	3-16	C	Added reference to new SAR table. Added reference to aging mechanism for consistency with LRA Section 3.1.4 and Tables 3-1 through 3-5.
3-38	3.6.1	3-17	RAI 2-2	Expanded description of Impact Limiter components to include top plate. Added reference to new SAR table.
3-39	3.6.3	3-17	C	Added reference to new SAR table.
3-40	3.6.4	3-17	C	Noted that no TLAA's are associated with the Transfer Station.
3-41	3.6.5	3-17	RAI 2-2 RAI 3-4 RAI A-9	Added aging effects of Transfer Pad concrete. Added aging effects for Impact Limiter top plate and epoxy foam.
3-42	3.6.6	3-18	RAI 2-2 RAI 3-4	Added reference to new SAR table. Updated references to LRA sections for consistency. Added Transfer Station Pad and Impact Limiter top plate and epoxy foam as Transfer Station components with aging management activities.
3-43	3.7	3-18	RAI 2-1	New section based on ISFSI Pad scoping in.
3-44	3.7.1	3-18	RAI 2-1	New section based on ISFSI Pad scoping in.
3-45	3.7.2	3-19	RAI 2-1	New section based on ISFSI Pad scoping in.
3-46	3.7.3	3-19	RAI 2-1	New section based on ISFSI Pad scoping in.
3-47	3.7.4	3-19	RAI 2-1	New section based on ISFSI Pad scoping in.
3-48	3.7.5	3-19	RAI 2-1	New section based on ISFSI Pad scoping in.
3-49	3.7.6	3-19	RAI 2-1	New section based on ISFSI Pad scoping in.
3-50	3.8	3-19	E	Renumbered for consistency.
3-51	3.8.1	3-19	E	Renumbered for consistency.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
3-52	3.8.2	3-20	E	Renumbered for consistency. Updated LRA section reference for consistency.
3-53	3.8.3	3-20	E	Renumbered for consistency. Updated LRA section reference for consistency.
3-54	3.8.3.1	3-20	E	Renumbered for consistency. Updated LRA section reference for consistency. Corrected typographical error.
3-55	3.8.3.2	3-20, 3-21	E	Renumbered for consistency. Updated LRA section reference for consistency.
3-56	3.9	3-21	E	Renumbered for consistency.
3-57	3.10	3-21	E	Renumbered for consistency.
3-58	3.10.1	3-21	E	Renumbered for consistency. Updated LRA section reference for consistency.
3-59	3.10.2	3-21,3-22	E	Renumbered for consistency. Updated LRA section references for consistency.
3-60	3.10.3	3-22	E	Renumbered for consistency. Updated LRA section reference for consistency.
3-61	3.10.4	3-22	E	Renumbered for consistency.
3-62	3.11	3-23	C	Renumbered for consistency. Added Reference 3.1.5 (Trojan 2018 inspection report on Concrete Cask internal inspection). Renumbered References 3.8.1, 3.8.2, 3.8.3, and 3.10.1 for consistency. Updated Reference 3.8.3 (Holtec Shielding Calculation) revision number from 4 to 6.
3-63	Table 3-1	3-24 through 3-27	C	Added reference to new SAR table.
3-64	Table 3-1	3-24 through 3-27	E	Corrected column entries for aging effect and aging mechanism that were reversed for the Shell, Baseplate, Lid, Closure Ring, and Plugs for Drilled Holes.
3-65	Table 3-1	3-24 through 3-27	RAI 2-2	Deleted Intended Function and remaining information for Plugs for Drilled Holes based on evaluation of these items in Table 2-2.
3-66	Table 3-1	3-24 through 3-27	C	Corrected descriptions of Vent and Drain Cap Screw, Port Cover Plate Set Screw subcomponents.
3-67	Table 3-1	3-24 through 3-27	C	Added reference to Note 4 for Vent and Drain Tube, Vent and Drain Cap subcomponents. Added Note 4 for items used during operations and not relied on for Intended Functions during extended storage.
3-68	Table 3-1	3-24 through 3-27	C	Added reference to Note 3 in Fuel Basket category in left column table. Added reference to Note 3 in Aging Mechanism column for Damaged Fuel Container, Failed Fuel Cans, and Fuel Debris Process Can Capsule subcomponents. Added Note 3 referencing Holtec RRTI 2536-004R0 which concluded that certain MPC subcomponents do not require fatigue evaluation.
3-69	Table 3-1	3-24 through 3-27	C	Added Fuel Debris Process Can Capsule for completeness and consistency with Table 2-2. Added Basket Cell Spacer Block and Basket Center Column subcomponents, and filled in table columns for these subcomponents, for completeness and consistency with Table 2-2.
3-70	Table 3-1	3-24 through 3-27	C	For Short Cell Spacer Plates filled in table columns for consistency with Table 2-2.
3-71	Table 3-2	3-28 through 3-31	C	Added reference to new SAR table.
3-72	Table 3-2	3-28 through 3-31	C	Replaced "Transfer Cask AMP" with "N/A" for the aging management activities of the Radial Lead Shield since this subcomponent is in an Embedded environment. Also changed "None" to say "None Identified".
3-73	Table 3-2	3-28 through 3-31	RAI A-1	Corrected the Top Lid Shielding (Holtite) environment to say Embedded, resulting in no aging effects, aging mechanisms, or aging management activities in subsequent columns.
3-74	Table 3-2	3-28 through 3-31	RAI 2-2	Corrected the description of "Plugs for Lifting Holes" to say "Lead Fill Plug" to match its description on the design drawing.
3-75	Table 3-2	3-28 through 3-31	RAI 3-5	Added new material/environment combinations for subcomponents forming the Transfer Cask Water Jacket since these subcomponents are in multiple environments. The subcomponents affected are the Outer Shell, Water Jacket End Plate, Water Jacket Shell, Water Jacket Bottom Ring, Water Jacket Top Plates, Water Jacket Trunnion Plate, and Water Jacket Cap Plate. As appropriate, the material/environment combinations added are Carbon Steel / Embedded and Carbon Steel / Inert Gas. Added Note 3 for the Embedded environment stating that the subcomponent is exposed to lead. Added Note 4 for the Inert Gas environment stating that this is for storage conditions. Note 4 further states that the cavity will be intermittently exposed to potable (non-borated) water and air during future MPC transfer activities.
3-76	Table 3-2	3-28 through 3-31	RAI 3-1	Deleted Lid Bolt subcomponent to be consistent with Table 2-4 Item 17. This subcomponent is no longer used.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
3-77	Table 3-2	3-28 through 3-31	C	Clarified that the Structural Integrity function of the Lifting Trunnions was applicable during initial fuel loading only, to be consistent with Table 2-4 Item 19. Added the words "(during lifting for loading only)" to the Intended Function column and "N/A" to the remaining columns.
3-78	Table 3-2	3-28 through 3-31	C	Added the material/environment combination of Carbon Steel / Embedded to the Top Lid Lifting Block for completeness. No aging effects requiring management or aging mechanisms were identified, and no aging management activities were called out for this inaccessible region.
3-79	Table 3-2	3-28 through 3-31	RAI 3-1	Added the Intended Function of Structural Integrity and filled in the remaining columns for the Transfer Cask Lid studs, nuts, and washers.
3-80	Table 3-2	3-28 through 3-31	C	For Water Jacket Port Cover Plate, Gasket, and Screws, changed all columns to say N/A for consistency with Table 2-4.
3-81	Table 3-2	3-28 through 3-31	RAI 2-2	Added the Intended Function of Structural Integrity and filled in the remaining columns for the Door Lip and Door Beam.
3-82	Table 3-2	3-28 through 3-31	RAI 2-2	Added reference to Note 2 for the Door Top Plate Clevis, Door Stop Plate, and Door Hex Bolt subcomponents. Added Note 2 stating that these items were used during operations and are not relied on for Intended Functions during storage.
3-83	Table 3-3	3-32 and 3-33	C	Added reference to new SAR table.
3-84	Table 3-3	3-32 and 3-33	E	Updated section number references in Aging Management Activities column.
3-85	Table 3-3	3-32 and 3-33	E	Changed "N/A" to "None Identified" for the Tile aging mechanism for consistency.
3-86	Table 3-3	3-32 and 3-33	RAI 3-2	Added "Loss of Material" as an aging effect requiring management for Reinforcement Bar. For this aging effect, added corrosion as the aging mechanism and added a reference to the Concrete Cask AMP for aging management activities.
3-87	Table 3-3	3-32 and 3-33	RAI 3-2	Added "Reinforcement Bar Corrosion" as an aging mechanism for the Concrete Shell, with the Concrete Cask AMP as the Aging Management Activity.
3-88	Table 3-3	3-32 and 3-33	RAI A-6	Changed aging effects requiring management and aging mechanism entries for Inlet Air Assembly and Outlet Air Assembly to N/A with a reference to Note 2. Added Note 2 stating that the concern for these subcomponents is to maintain an open air flow path.
3-89	Table 3-4	3-34	C	Added reference to new SAR table.
3-90	Table 3-4	3-34	E	Changed "None" to "None Identified" in aging effects requiring management column for consistency. Changed "N/A" to "None Identified" in aging mechanism column for consistency.
3-91	Table 3-5	3-35 through 3-40	C	Added reference to new SAR table.
3-92	Table 3-5	3-35 through 3-40	RAI 2-2 RAI 3-4	Revised entire table to a parts level evaluation of Transfer Station subcomponents. Included separate sections for the Transfer Station Structure, Transfer Station Pad, and Impact Limiter.
3-93	Table 3-6	3-41	RAI 2-1	Added new table for ISFSI Pad Subcomponents based on the ISFSI Pad scoping in per Criterion 2.
3-94	Table 3-7	3-42	E	Updated table number.
3-95	Table 3-8	3-43	E	Updated table number. Updated section reference in Note 1.
A-1	Appendix A MPC AMP	A-1	C	Updated section number reference. Added references to new SAR tables.
A-2	Appendix A MPC AMP Introduction	A-2	C	Changed "mechanisms of concern" to "effects requiring management" for consistency of terminology. Listed pitting, crevice corrosion, and cracking due to stress corrosion cracking as additional aging effects requiring management. Clarified extent of MPC inspections as applicable to external MPC surfaces.
A-3	Appendix A MPC AMP Introduction	A-2	RAI A-13	Deleted statement that the MPC AMP is based on a continuation of the existing Trojan Structural Inspection Program for consistency with revised proposed SAR wording which notes that the old program (reference SAR Section 9.7.7) is being replaced by the new MPC AMP.
A-4	Appendix A MPC AMP Element 4	A-2	C	Called out removal of Concrete Cask Lid, and lifting or removal of Concrete Cask Shield Ring to gain access to the top of the MPC for periodic visual inspection.
A-5	Appendix A MPC AMP Element 4	A-2	RAI A-13	Identified MPC-28 as the specific MPC inside Concrete Cask PCC-03 that will be inspected by the MPC AMP. Changed the wording "...different cask" to "...different cask or canister" for consistency with this change. Changed "This selected cask is consistent with the cask previously inspected" to "This selected cask is the cask previously inspected..." for clarity.
A-6	Appendix A MPC AMP	A-2	E	Moved Note 1 to end of table for clarity.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
A-7	Appendix A MPC AMP Element 4	A-2, A-3	C	Added new sample basis wording that was not included in the original LRA.
A-8	Appendix A MPC AMP Element 4	A-3	RAI A-7	Included the ISFSI Manager along with the inspector as personnel who will determine whether to upgrade the inspection to the VT-1 standard, and whether to utilize a volumetric examination method. Including the ISFSI Manager in these decisions is appropriate since the ISFSI Manager represents the licensee. The inspector may be contracted.
A-9	Appendix A MPC AMP Element 6	A-3, A-4	C	Moved wording about the option to remove deposits and rust stains to reveal undamaged welds to the end of AMP Element 6, under "Indications Requiring Additional Evaluation," for clarity.
A-10	Appendix A MPC AMP Element 6	A-4	C	Added the word "accessible" in reference to temporary attachment locations for clarity, since not all MPC locations are accessible.
A-11	Appendix A MPC AMP Element 6	A-4	C	Added wording for inspector to evaluate inspection results for indications to be entered into the CAP, for consistency.
A-12	Appendix A MPC AMP Element 7	A-4	C	Deleted the words "apparent and root" that are not used in Trojan's CAP for root cause evaluations.
A-13	Appendix A MPC AMP Element 9	A-5	C	Deleted the words "QA program and" because Trojan's QA Program does not include this detailed level of information for each AMP. This information will be included in the AMP implementing procedure.
A-14	Appendix A MPC AMP Element 9	A-5	C	Clarified wording for when the AMP will be updated (as necessary based on periodic tollgate assessments) and where the tollgate assessments are described (SAR Section 9.7.8.5).
A-15	Appendix A MPC AMP Element 10	A-5	C	Deleted reference to Note 2. Deleted Note 2 which contained ADAMS ML number references.
A-16	Appendix A MPC AMP Element 10	A-5	C	Added reference to MPC-28 as the MPC that was inspected in 2018 and will be inspected during periodic internal inspections of Concrete Cask PCC-03.
A-17	Appendix A TC AMP	A-6	C	Added reference to new SAR table.
A-18	Appendix A TC AMP Introduction	A-6	C	Changed "mechanisms of concern" to "effects requiring management" for consistency of terminology. Listed crevice corrosion cracking as additional aging effect requiring management.
A-19	Appendix A TC AMP Element 3	A-6	C	Deleted reference to Lifting Trunnions with regard to parameters monitored/inspected, consistent with corrections to table 3-2.
A-20	Appendix A TC AMP Element 3	A-6	C	Changed "external surfaces" to "accessible surfaces" in the description of parameters inspected, to clarify the scope. Accessible surfaces are surfaces exposed to the environment that may be observed without moving or lifting the cask. This includes the MPC cavity surface, which could be described as an internal or external surface depending on the context.
A-21	Appendix A TC AMP Element 3	A-6	RAI A-3	Added description of inspection for defects and/or irregularities.
A-22	Appendix A TC AMP Element 4	A-6	RAI A-4	Added the words "and conducted by qualified individuals" in reference to Transfer Cask visual inspections to clarify inspection requirements.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
A-23	Appendix A TC AMP Element 4	A-6	RAI A-2	Changed "painted" to "coated" for consistency. Clarified that the scope includes MPC cavity surfaces. Changed inspection scope to defects and irregularities, which are defined elsewhere.
A-24	Appendix A TC AMP Element 4	A-7	C	Deleted reference to surfaces to be inspected to be consistent with the description in the first bullet item.
A-25	Appendix A TC AMP Element 4	A-7	C	Deleted reference to Lifting Trunnions with regard to parameters monitored/inspected, consistent with corrections to table 3-2.
A-26	Appendix A TC AMP Element 4	A-7	C	Deleted the wording "using a QA validated procedure" because this terminology is not used at Trojan.
A-27	Appendix A TC AMP Element 6	A-7	RAI A-4	Added specific acceptance criteria (with reference to Note 2) and evaluation by the ISFSI Manager for entry into the CAP. Added Note 2 which references RRTI 2536-002R2 for the technical basis for the acceptance criteria. Deleted confusing wording about engineering evaluations.
A-28	Appendix A TC AMP	A-7, A-8	E	Moved Note 1 to the end of the table for formatting consistency.
A-29	Appendix A TC AMP Element 7	A-7	C	Deleted confusing wording about engineering evaluations.
A-30	Appendix A TC AMP Element 7	A-7	C	Deleted the words "apparent and root" that are not used in Trojan's CAP for root cause evaluations.
A-31	Appendix A TC AMP Element 7	A-8	RAI A-4	Added wording to clarify the engineering evaluation process.
A-32	Appendix A TC AMP Element 9	A-8	C	Deleted the words "QA program and" because Trojan's QA Program does not include this detailed level of information for each AMP. This information will be included in the AMP implementing procedure.
A-33	Appendix A TC AMP Element 9	A-8	C	Clarified wording for when the AMP will be updated (as necessary based on periodic tollgate assessments) and where the tollgate assessments are described (SAR Section 9.7.8.5).
A-34	Appendix A CC AMP	A-9	C	Added reference to new SAR table.
A-35	Appendix A CC AMP Introduction	A-9	RAI 3-2 RAI A-6	Removed reference to loss of fracture toughness for metal components (from radiation exposure) based on analysis results. Expanded description of concrete aging effects to include loss of strength, spalling, cracking, and scaling caused by corrosion of embedded reinforcing steel. Added reference to LRA Section 3.8.3.
A-36	Appendix A CC AMP Introduction	A-9	RAI A-13	Deleted statement that the MPC AMP is based on a continuation of the existing Trojan Structural Inspection Program for consistency with revised proposed SAR wording which notes that the old program (reference SAR Section 9.7.7) is being replaced by the new MPC AMP.
A-37	Appendix A CC AMP Element 1	A-9	RAI A-13	Corrected wording to refer to visual inspection of accessible interior and exterior Concrete Cask surfaces.
A-38	Appendix A CC AMP Element 3	A-9, A10	RAI A-6	Created separate subsections for Concrete Cask Interior parameters and Concrete Cask Exterior parameters. Added description of exterior inspection for defects and/or irregularities. Defined the terms "defect" and "irregularity." Added description of aging effects and aging mechanisms.
A-39	Appendix A CC AMP Element 3	A-10, A-11	RAI A-6 RAI A-8	Clarified interior inspection wording and added description of heat transfer function and air flow path.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
A-40	Appendix A CC AMP Element 4	A-12	E	Changed "External" to ""Exterior" and changed "Internal" to "Interior" for clarity and consistency with other references.
A-41	Appendix A CC AMP Element 4	A-12	RAI A-6 RAI A-13	Clarified that visual inspection is intended to detect defects an+E176d irregularities. Deleted wording describing inspections per the Structural Inspection Program described in SAR Section 9.7.6 since this will be replaced by the Concrete Cask AMP. Clarified wording describing documentation of inspection findings.
A-42	Appendix A CC AMP Element 4	A-12	C	Called out removal of Concrete Cask Lid, and lifting or removal of Concrete Cask Shield Ring to gain access to the top of the MPC for periodic visual inspection. Clarified the scope of remote visual inspection through the inlet and outlet vents.
A-43	Appendix A CC AMP Element 4	A-12	C	Changed "This selected cask is consistent with the cask previously inspected" to "This selected cask is the cask previously inspected..." for clarity.
A-44	Appendix A CC AMP Element 4	A-12	C	Moved Note 1 to the end of the table for formatting consistency.
A-45	Appendix A CC AMP Element 4	A-12	C	Added new wording describing the basis for potentially increasing sample size.
A-46	Appendix A CC AMP Element 4	A-13	C	Deleted "existing" when referring to Trojan ISFSI inspection procedures to avoid implying that the wording only applies to current procedures.
A-47	Appendix A CC AMP Element 5	A-13	RAI A-3 RAI A-6 RAI A-8	Deleted wording referencing ACI standards since this does not apply to the inspection methods in the Concrete Cask AMP. Deleted wording describing evaluation of results by a qualified individual, and the circumstances for entering any issues in the CAP. These topics are more appropriately covered in Element 6.
A-48	Appendix A CC AMP Element 6	A-13 through A-15	RAI A-8	Created separate subsections for Concrete Cask Interior acceptance criteria and Concrete Cask Exterior acceptance criteria. Deleted wording related to IPR-224 due to new acceptance criteria. Added specific acceptance criteria for the Concrete Cask Shell and Concrete Cask Lid. Added reference to Note 2 for Concrete Cask Lid, Liner, Shield Ring, and Bottom Plate acceptance criteria. Added Note 2 providing a reference to RRTI 2536-002R2 for the technical basis for the acceptance criteria. For interior inspection, added wording for VT-3 / VT-1 inspector to evaluate inspection results for indications to be entered into the CAP.
A-49	Appendix A CC AMP Element 6	A-13, A-14	RAI A-6	Added acceptance criteria for the inlet and outlet air assemblies.
A-50	Appendix A CC AMP Element 6	A-14	RAI A-8	Added evaluation of exterior inspection results by the ISFSI Manager for entry into the CAP.
A-51	Appendix A CC AMP Element 7	A-15	E	Deleted unnecessary wording regarding unacceptable effects.
A-52	Appendix A CC AMP Element 7	A-15	C	Deleted the words "apparent and root" that are not used in Trojan's CAP for root cause evaluations.
A-53	Appendix A CC AMP Element 7	A-15	C	Added wording about an engineering evaluation in the CAP to determine the extent and impact of a condition on the ability of the cask to perform its Intended Function(s).
A-54	Appendix A CC AMP Element 9	A-15	C	Deleted the words "QA program and" because Trojan's QA Program does not include this detailed level of information for each AMP. This information will be included in the AMP implementing procedure.

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Item	Section	Page (Note 1)	Reason (Note 2)	Description
A-55	Appendix A CC AMP Element 9	A-15	C	Clarified wording for when the AMP will be updated (as necessary based on periodic tollgate assessments) and where the tollgate assessments are described (SAR Section 9.7.8.5).
A-56	Appendix A CC AMP Element 10	A-16	C	Replaced "experienced" with "noted" to clarify the intent of the statement regarding cracking.
A-57	Appendix A TS AMP	A-17	C	Added reference to new SAR table.
A-58	Appendix A TS AMP Introduction	A-17	C	Changed "aging mechanisms" to "aging effects" for consistency with other AMPs. Added the following sentence for consistency with other AMPs: "The following AMP identifies the main elements of the program needed to manage the effects of these aging mechanisms during the extended storage period."
A-59	Appendix A TS AMP Introduction	A-17	RAI 3-4	Added the aging mechanism for Impact Limiter foam.
A-60	Appendix A TS AMP Introduction	A-17	RAI A-9	Added description of the aging effect (loss of material due to corrosion) for Transfer Station steel. Added description of the aging effect requiring management (concrete aging) for the Transfer Station Pad.
A-61	Appendix A TS AMP Element 2	A-17	E	Clarified wording regarding Transfer Station preventive actions.
A-62	Appendix A TS AMP Element 3	A-17	C	Created separate subsections for Transfer Station, Transfer Station Pad, and Impact Limiter.
A-63	Appendix A TS AMP Element 3	A-17	RAI A-12	Added description of defects and irregularities that are monitored / inspected for the Transfer Station.
A-64	Appendix A TS AMP Element 3	A-17	RAI A-10	Added description of defects and irregularities that are monitored / inspected for the Transfer Station Pad.
A-65	Appendix A TS AMP Element 3	A-18	RAI 3-4	Added description of parameters monitored and trended for the Impact Limiter.
A-66	Appendix A TS AMP Element 4	A-18	RAI A-12	Added wording for "qualified individuals" and clarified wording for inspection of metal surfaces.
A-67	Appendix A TS AMP Element 4	A-18	C	Deleted the wording "using a QA validated procedure" because this terminology is not used at Trojan.
A-68	Appendix A TS AMP Element 4	A18, A-19	RAI A-10	Clarified wording for the Transfer Pad inspection and added a list of aging effects.
A-69	Appendix A TS AMP	A-18, A-23	E	Moved Note 1 to end of table for clarity.
A-70	Appendix A TS AMP Element 4	A-19	RAI 3-4	Added description of Impact Limiter foam testing, scheduled testing dates, and storage of foam samples.
A-71	Appendix A TS AMP Element 4	A-19	RAI 3-4	Added description of Impact Limiter top plate inspection.

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Item	Section	Page (Note 1)	Reason (Note 2)	Description
A-72	Appendix A TS AMP Element 5	A-19, A-20	C	Created separate subsections for Transfer Station, Transfer Station Pad, and Impact Limiter.
A-73	Appendix A TS AMP Element 5	A-19	RAI A-10	Added wording for trending and evaluating Transfer Station Pad defects and irregularities
A-74	Appendix A TS AMP Element 5	A-20	RAI 3-4	Added wording for monitoring and evaluating test results of representative samples of Impact Limiter foam. Added wording for trending visual inspection results of Impact Limiter top plate.
A-75	Appendix A TS AMP Element 6	A-21, A-22	RAI A-12	Added specific acceptance criteria for metal (with reference to Note 2) and evaluation by the ISFSI Manager for entry into the CAP. Added Note 2 which references RRTI 2536-002R2 for the technical basis for the acceptance criteria. Deleted confusing wording about engineering evaluations.
A-76	Appendix A TS AMP Element 6	A-21	RAI A-10	Added specific acceptance criteria for the Transfer Station Pad.
A-77	Appendix A TS AMP Element 6	A-21	RAI A-12	Added evaluation of Transfer Station Pad inspection results by the ISFSI Manager for entry into the CAP.
A-78	Appendix A TS AMP Element 6	A-21	RAI A-10	Deleted wording referencing ACI standards since this does not apply to the inspection methods in the Transfer Station AMP.
A-79	Appendix A TS AMP Element 6	A-22	RAI 3-4	Added acceptance criteria for testing of Impact Limiter representative foam samples. Added acceptance criteria for Impact Limiter top plate. Added wording for ISFSI Manager to evaluate inspection results for entering into the CAP.
A-80	Appendix A TS AMP Element 7	A-22	RAI A-12	Deleted confusing wording about engineering evaluations. Added wording that an engineering evaluation may be performed as part of the CAP process.
A-81	Appendix A TS AMP Element 7	A-22	C	Deleted the words "apparent and root" that are not used in Trojan's CAP for root cause evaluations.
A-82	Appendix A TS AMP Element 9	A-23	C	Deleted the words "QA program and" because Trojan's QA Program does not include this detailed level of information for each AMP. This information will be included in the AMP implementing procedure.
A-83	Appendix A TS AMP Element 9	A-23	C	Clarified wording for when the AMP will be updated (as necessary based on periodic tollgate assessments) and where the tollgate assessments are described (SAR Section 9.7.8.5).
A-84	Appendix A TS AMP Element 10	A-23	C	Clarified wording for past Transfer Station testing, including the use of "dummy MPC" to be consistent with Trojan terminology. Added description of previous Transfer Station Pad inspections as part of the Trojan Structural Inspection Program. Added description of Impact Limiter representative foam sample testing referenced in Element 4 of the Transfer Station AMP.
B-1	B-3	B-1	C	Updated LRA section reference and clarified wording in Section B.3 for Transfer Cask Fatigue Evaluation.
C-1	Appendix C Title page	C-1	RAI A-13	Changed Appendix Title to "Tollgate Assessments".
C-2	Appendix C Paragraph 2	C-1	RAI A-13	Conforming changes made to second paragraph due to moving Tollgate Assessments from SAR Section 9.7.10 into Section 9.7.8.5. Deleted the words referring to the "specific license" because Technical Specification 5.5.5 was changed to delete the words referring to SAR 9.7.10 tollgates. Also, corrected last sentence in this paragraph to say "should be performed" to be consistent with NEI 14-12 Section 3.2. The remaining changes on this page change the references for LRA Tables C-1 and C-2 to refer to the corresponding ISFSI SAR Tables 9.7-18 and 9.7-19.
C-3	Appendix C Table C-1 Table C-2	C-1 through C-4	RAI A-13	Deleted Tables C-1 and C-2 because they were already in the SAR as Tables 9.7-1 and 9.7-2 and these SAR Table numbers are changed to 9.7-18 and 9.7-19 to accommodate the new future SAR Tables 9.7-1 through 9.7-17.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
D-1	Appendix D Paragraph 3	D-1	RAI A-13	Added information related to the completed 2018 Concrete Cask Interior Inspection including the inspection results and the capability of the improved inspection equipment. Also added explanation for the need to remove the Concrete Cask Lid to provide access and perform the required Concrete Cask Interior AMP and MPC Exterior AMP inspections of the top end subcomponents.
D-2	Appendix D Baseline Inspection	D-2 - D-3	C RAI A-13	Corrected previous Baseline Inspection wording and added information to say that the first canister loaded was placed in service on January 17, 2003 so the 20 years in service date is January 17, 2023. Added Trojan's plans to implement the new ISFSI SAR Section 9.7.8 Aging Management Program on January 1, 2022 and to schedule the timing of the first inspections for all four AMPs (baseline inspections) to be completed in the first two years (2022 – 2023). Added information for the Baseline Inspection of the four AMPs. The MPC AMP Baseline Inspection includes removing the Concrete Cask Lid to inspect the MPC exterior and Concrete Cask interior top end subcomponents that are not accessible through the Concrete Cask outlet vents. The Baseline Inspection for the Transfer Cask will be a partial inspection because it is in long-term storage.
E-1	Appendix E PGE-1070	PGE-1070		No changes.
F-1	Appendix F Paragraph 1	F-1	RAI A-13	Reworded to say "requirement for an Aging Management Program" and deleted words for "tollgate assessments" due to moving Tollgate Assessments from ISFSI SAR Section 9.7.10 into SAR Section 9.7.8.5 and deleting the no longer needed Technical Specification 5.5.5 sentence.
F-2	Appendix F Tech Spec 5.5.5	5.5-3	RAI A-13	Corrected TS 5.5.5 wording to delete the specific reference to ISFSI SAR "Section 9.7.8". Also, due to moving Tollgate Assessments from SAR Section 9.7.10 into SAR Section 9.7.8.5, deleted the no longer needed Technical Specification 5.5.5 sentence.
G-1	Appendix G Paragraph 1	G-1	RAI A-13	Added wording to describe the new additions to SAR Section 9.7.8 and to introduce the use of "place holders" for new SAR 9.7 Tables that will be incorporated into the SAR subsequent to NRC approval of the Trojan ISFSI license renewal. Also corrected the use of the words "Chapter" and "Section" to use "Chapter" for the LRA and "Sections" for the SAR.
G-2	Appendix G Paragraph 2	G-1	RAI A-13	Added wording to describe the "track changes text" colors (Black, Red, Blue and Blue cross-out) used to differentiate current SAR Revision 14 wording; March 2017 wording changes; and the new 2019 proposed SAR changes.
G-3	Appendix G Paragraph 3	G-1	RAI A-13	Added these words: PGE will continue to revise and update this Trojan LRA throughout the license renewal review process. For efficiency and in order to avoid repetition, selected tables in LRA Chapters 2, 3 and the Appendix A four AMPs, proposed for future inclusion in the Trojan ISFSI SAR Section 9.7, will be maintained current in this LRA. Upon issuance of the renewed Trojan ISFSI license, PGE will provide an update to the Trojan ISFSI SAR which incorporates the final approved LRA Chapters 2, 3, and LRA Appendix A tables for the four AMPs containing the NRC approved content in accordance with the provisions of 10 CFR 72.70(c).
G-4	Appendix G SAR markup	SAR Pages with 2019 changes	E	Changed the footer on all ISFSI SAR Table of Content's pages and all pages containing 2019 changes to say: Proposed Revision 15a.
G-5	Appendix G SAR TOC	xiii and xiv	RAI A-13	Revised SAR Table of Contents to list the revised Sections and Subsections for SAR Section 9.7.8.
G-6	Appendix G List of Tables	xix	RAI A-13	Added listing of future SAR tables and Tollgate Assessment new Table numbers 9.7-18 and 9.7-19 and new name for Table 9.7-19.
G-7	Appendix G List of Eff. Pages	xxiv through xxix	E	Updated list of effective pages to show new "15a" revision numbers.
G-8	Appendix G SAR 9.7	9-13	E	Added current Revision 14 SAR page (without changes) that contains Section 9.7 Programs to show the requirements that apply to all of the Section 9.7 Programs, including the new Section 9.7.8 for the Aging Management Program
G-9	Appendix G SAR 9.7.6 SAR 9.7.7	9-14	RAI A-13	Corrected SAR Section 9.7.6 and 9.7.7 words in last paragraphs to clearly say that "Concurrent with implementation of the new Aging Management Program" these two Programs are replaced by the new AMPs.
G-10	Appendix G SAR 9.7.8	9-14	RAI A-13	Added Technical Specification 5.5.5 wording that establishes the SAR 9.7.8 Aging Management Program.
G-11	Appendix G SAR 9.7.8	9-14	RAI A-13	Added description of the content of the overall Aging Management Program including Scoping Evaluation Results, Aging Management Review Results, and Time-Limited Aging Analysis Results.
G-12	Appendix G SAR 9.7.8	9-14	RAI A-13	Added descriptions of the Aging Management Programs for inspection and monitoring of the selected MPC and associated Concrete Cask, Transfer Cask, Concrete Casks, and Transfer Station and the Tollgate Assessments of the overall Aging Management Program.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
G-13	Appendix G SAR 9.7.8.1	9-15	RAI A-13	Added summary of Scoping Evaluation Results and reference to the new SAR Tables to be extracted from final LRA Chapter 2, Scoping Results Tables 2-1 through 2-7 (new SAR Tables 9.7-1 through 9.7-7).
G-14	Appendix G 9.7.8.2	9-15	RAI A-13	Added summary of AMR results and reference to the new SAR Tables to be extracted from LRA Chapter 3, AMR Results Tables 3-1 through 3-6 (new SAR Tables 9.7-8 through 9.7-13).
G-15	Appendix G SAR 9.7.8.3	9-15 and 9-16	RAI A-13	Moved the previously proposed SAR Section 9.7.9 TLAA words to this subsection (without changes, except for adding "Results" to the title) and deleted unused SAR Section 9.7.9.
G-16	Appendix G SAR 9.7.8.4	9-16 through 9-18	RAI A-13	Added description of the Aging Management Programs for inspection and monitoring of the selected MPC and associated Concrete Cask, the Transfer Cask, Concrete Casks, and Transfer Station. Also added wording for new SAR Tables to be extracted from LRA Appendix A, AMPs (new SAR Tables 9.7-14 through 9.7-17).
G-17	Appendix G SAR 9.7.8.4	9-17	RAI A-13	Added timing (2022 – 2023) for first inspection (Baseline Inspection) for the four AMPs to be performed after the new Aging Management Program is implemented in January 2022.
G-18	Appendix G SAR 9.7.8.4.1	9-17	RAI A-13	Moved the previously proposed SAR 9.7.8.1 words to this subsection.
G-19	Appendix G SAR Appendix G SAR 9.7.8.4.1	9-17	RAI A-13	Made correction by deleting the first sentence that indicated the old SAR 9.7.7 Concrete Cask Interior Inspection Program would be used through the extended storage period.
G-20	Appendix G SAR 9.7.8.4.1	9-17	RAI A-13	Corrected words to say "MPC-28" versus "canister PCC-03".
G-21	Appendix G SAR 9.7.8.4.1	9-17	RAI A-13	Added sentence for final MPC 10 Element AMP to be added as new SAR Table extracted from LRA Appendix A MPC AMP (new SAR Table 9.7-14).
G-22	Appendix G SAR 9.7.8.4.1	9-17	RAI A-13	Deleted "monitored condition" phrase and bulleted list because MPC AMP will be in new SAR Table 9.7-14.
G-23	Appendix G SAR 9.7.8.4.2	9-17	RAI A-13	Moved the previously proposed SAR 9.7.8.2 words to this subsection.
G-24	Appendix G SAR 9.7.8.4.2	9-17	RAI A-13	Added sentence for final Transfer Cask 10 Element AMP to be added as new SAR Table extracted from LRA Appendix A Transfer Cask AMP (new SAR Table 9.7-15).
G-25	Appendix G SAR 9.7.8.4.2	9-17	RAI A-13	Deleted "visual inspection" phrase and bulleted list because Transfer Cask AMP will be in new SAR Table 9.7-15.
G-26	Appendix G SAR 9.7.8.4.3	9-17 and 9-18	RAI A-13	Moved the previously proposed SAR 9.7.8.3 words to this subsection.
G-27	Appendix G SAR 9.7.8.4.3	9-18	RAI A-13	Made correction by deleting two sentences that indicated the old SAR 9.7.6 and 9.7.7 programs would continue into the period of extended storage. These are being replaced by the new AMPs.
G-28	Appendix G SAR 9.7.8.4.3	9-18	RAI A-13	Added sentence for final Concrete Cask 10 Element AMP to be added as new SAR Table extracted from LRA Appendix A Concrete Cask AMP (new SAR Table 9.7-16).
G-29	Appendix G SAR 9.7.8.4.4	9-18	RAI A-13	Moved the previously proposed SAR 9.7.8.4 words to this subsection.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
G-30	Appendix G SAR 9.7.8.4.4	9-18	RAI A-13	Added sentence for final Transfer Station 10 Element AMP to be added as new SAR Table extracted from LRA Appendix A Transfer Station AMP (new SAR Table 9.7-17).
G-31	Appendix G SAR 9.7.8.4.4	9-18	RAI A-13	Deleted "visual inspection" phrase and bulleted list because Transfer Station AMP will be in new SAR Table 9.7-17.
G-32	Appendix G SAR 9.7.9	9-18 and 9-19	RAI A-13	Deleted this Section 9.7.9 due to moving TLAA's to subsection 9.7.8.3.
G-33	Appendix G SAR 9.7.10	9-19	RAI A-13	Changed this SAR Section number from 9.7.10 to 9.7.8.5 that effectively moved Tollgate Assessments into SAR Section 9.7.8 to clearly show that Tollgate Assessments are a part of the overall SAR Section 9.7.8 Aging Management Program.
G-34	Appendix G SAR 9.7.8.5	9-19	RAI A-13	Changed the title of this subsection from "Tollgates" to "Tollgate Assessments".
G-35	Appendix G SAR 9.7.8.5	9-19	RAI A-13	Deleted the reference to the ISFSI license. (As a result of moving Tollgate Assessments into SAR Section 9.7.8, a conforming change to Technical Specification 5.5.5 first paragraph has been made to delete the last sentence that is no longer needed).
G-36	Appendix G SAR 9.7.8.5	9-19	RAI A-13	Updated the referenced Section number to say: 9.7.8.4 for the AMPs and 9.7.8.3 for the TLAA's
G-37	Appendix G SAR 9.7.8.5	9-20	RAI A-13	Changed the reference numbers for the Tollgate Tables that have changed from 9.7-1 and 9.7-2 to 9.7-18 and 9.7-19.
G-38	Appendix G SAR 9.7.8.5	9-20	RAI A-13	Added wording "and performance criteria for tollgate assessments are shown in Table 9.7-19".
G-39	Appendix G SAR Section 9.10	9-23	RAI A-13	Added Reference 9, Trojan's LCA 72-07 and Reference 10, NUREG-1927, Revision 1.
G-40	Appendix G SAR Section 9.7 Tables	Tables 9.7-1 through 9.7-17	RAI A-13	Revised this Table section to add place holders for the new Aging Management Program Tables 9.7-1 through 9.7-17 that will be extracted from LRA Chapter 2, Chapter 3, and LRA Appendix A and added to the SAR subsequent to NRC approval of Trojan's renewed license.
G-41	Appendix G SAR Section 9.7 Tables	N/A	RAI A-13	Revised the Tollgate Table numbers 9.7-1 and 9.7-2 to use SAR Table numbers 9.7-18 and 9.7-19, respectively.
G-42	Appendix G SAR Section 9.7 Tables	N/A	RAI A-13	In Table 9.7-18, Element 1, corrected reference to Tollgate Table 9.7-2 to say: 9.7-19. In Table 9.7-19, changed the title to say: "Tollgate Assessment Performance Criteria by Element".
G-43	Appendix G SAR Section 9.7 Tables	N/A	C	Corrected Tollgate Table 9.7-19, Element 1 to refer to the location of the new Sample Bases wording located in LRA Appendix A, Element 4 of the MPC AMP and Concrete Cask AMP.
G-44	Appendix G SAR Section 9.7 Tables	N/A	C	Corrected Tollgate Table 9.7-19, Element 4, wording "sample size is expanded" to say: "sample size expansion is considered".
G-45	Appendix G SAR Section 9.7 Tables	N/A	E	Changed Tollgate Table 9.7-19, Element 7, generic wording "Condition reports" to use Trojan's words "Corrective Action Requests".
H-1	Appendix H Title page Throughout	H-1 and H-2	E	For clarification of PGE-1082 revision status, changed "Revision 1" wording to say: "Proposed Revision 1".
H-2	Appendix H Throughout	H-1 and H-2	C	Added wording to describe new 2018 changes to PGE-1082 Sections 2.6, 4.1 and 9.0. Section 2.6, describes the results of the new 60-year Concrete Cask "activation" analysis; Section 4.1 was changed in response to a NRC RAI letter to provide PGE's conclusions following review of the four specified events; and Section 9.0 adds a new Reference 11 for the calculation containing the 60 year activation analysis.

List of LRA Changes

Item	Section	Page (Note 1)	Reason (Note 2)	Description
H-3	Appendix H PGE 1082 List of Eff. Pages	v	E	Updated list of effective pages to show new revision number "1a" for pages containing changes.
H-4	Appendix H Section 2.6 Table 2-1 Table 2-3	2-4 and 2-5	C	Revised Section 2.6 and Tables 2-1 and 2-3 to incorporate the new 60-year Concrete Cask "activation analysis" results from Holtec Report No. HI-2012749, Section O.1, Revisions 5 and 6. These 60-year results confirm that no changes are required to the PGE-1082 radiological decommissioning cost estimate.
H-5	Appendix H PGE 1082 Section 4.1	4-1	C	Pursuant to NRC's RAI Letter, dated April 3, 2018 and PGE's RAI response Letter (VPN-004-2018, dated May 15, 2018), added wording related to the 2018 changes to Appendix H, PGE-1082, Section 4.1 that was revised for each of the four specified events to add the words "No Changes" for the effects on the 2015 detailed cost estimate.
H-6	Section 9.0	9-1	C	Deleted reference to Table 2.4.1 in Reference 8 and added Reference 11 for Holtec Report HI-2012749 Revisions 5 and 6.

Note 1 Page numbers refer to those from Enclosure 2 (LRA Markup) which show blue text cross-out formatting for deleted text.

Note 2 C = Correction / Clarification
 E = Editorial
 RAI = RAI question / response

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GLOSSARY OF TERMS

AMP is an acronym for Aging Management Program, which is a program implemented by Trojan to address aging effects that may include prevention, mitigation, condition monitoring, and performance monitoring.

Concrete Cask is the cask that receives and contains the sealed multi-purpose canisters (MPC) containing spent nuclear fuel for long-term storage. It provides gamma and neutron shielding, ventilation passages, missile protection, and protection against natural phenomena and accidents for the loaded MPC.

Confinement Boundary is the outline formed by the all-welded cylindrical enclosure of the MPC shell, MPC baseplate, MPC lid, MPC port cover plates, and the MPC closure ring which provides redundant sealing. [The Fuel Debris Process Can Capsule also provides a confinement boundary.](#)

Damaged Fuel Container or **DFC** means a specially designed enclosure for damaged fuel or fuel debris which permits flow of gaseous and liquid media while minimizing dispersal of gross particulates.

Design Life is the minimum duration for which the component is engineered to perform its Intended Function set forth in the Trojan ISFSI SAR, if operated and maintained in accordance with the SAR.

Dry Storage System or **DSS** is spent fuel storage technology comprised of a canister inside a ventilated or unventilated vertical cask (overpack) or horizontal storage module used at an ISFSI (see also "Concrete Cask").

ECO is an acronym for Engineering Change Order, which is a documented process of making changes to Holtec licensing documents.

Failed Fuel Can is designed for storage of a fuel rod storage container, fuel debris Process Can Capsules, fuel assembly metal fragments (e.g., portions of fuel rods, grid assemblies, bottom nozzles, etc.), and fuel debris Process Cans that contain fuel debris and fuel assembly metal fragments.

[Fuel Debris Process Can Capsule is designed to provide a confinement boundary for storage of up to five fuel debris Process Cans containing fuel debris processed during the Trojan Fuel Debris Processing Project.](#)

High Burnup Fuel refers to fuel with a burnup greater than 45,000 MWd/MTU.

Important to Safety (ITS) means a function or condition required to store spent nuclear fuel safely; to prevent damage to spent nuclear fuel during handling and storage, and to provide reasonable assurance that spent nuclear fuel can be received, handled, packaged, stored, and retrieved without undue risk to the health and safety of the public.

Independent Spent Fuel Storage Installation (ISFSI) means a facility designed, constructed, and licensed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage in accordance with 10 CFR 72.

Intended Functions are criticality control, heat transfer, radiation shielding, confinement, structural integrity, and retrievability as described in Reference 1.1.1.

License Life means the duration for which the system is authorized by virtue of its certification by the NRC.

Multi-Purpose Canister or MPC means the sealed canister consisting of a honeycombed fuel basket for spent nuclear fuel storage, contained in a cylindrical canister shell (the MPC Enclosure Vessel). The MPC is the confinement boundary for storage conditions. [The Fuel Debris Process Can Capsule also provides a confinement boundary.](#)

SAR is an acronym for Safety Analysis Report.

Service Life means the duration for which the component is reasonably expected to perform its Intended Function, if operated and maintained in accordance with the provisions of the SAR. Service Life may be much longer than Design Life because of the conservatism inherent in the codes, standards, and procedures used to design, fabricate, operate, and maintain the component.

SMDR is an acronym for Supplier Manufacturing Deviation Report which is used by Holtec to evaluate and disposition deviations during manufacturing.

SSC is an acronym for Structures, Systems, and Components.

Time-Limited Aging Analysis or TLAA is a specific license calculation or analysis that has all of the following attributes:

- Involves SSCs within the scope of license renewal
- Considers the effects of aging
- Involves time-limited assumptions defined by the current operating term
- Was determined to be relevant by the licensee in making a safety determination
- Involves conclusions or provides the basis for conclusions related to the capability of the SSCs to perform their Intended Functions
- Is contained or incorporated by reference in the licensing basis

Tollgate Assessment is a written evaluation performed by licensees at a specified time ("tollgate"), of the aggregate impact of aging-related dry cask storage operational experience, research, monitoring, and inspections on the Intended Functions of in scope dry cask storage SSCs. Tollgate assessments may include non-nuclear and international operating information on a best-effort basis. Corrective or mitigative actions arising from tollgate assessments are managed through the Corrective Action Program of the specific or general licensee and/or the holder.

Transfer Cask is the metal cask used to provide temporary shielding and structural protection for the spent fuel canister during fuel loading in a spent fuel pool and during transfer of the loaded canister to or from the Concrete Cask or Transportation Cask.

LIST OF ACRONYMS

Acronym	Definition
AMID	Aging Management INPO Database
AMP	Aging Management Program
BNFL	British Nuclear Fuels Limited
CAP	Corrective Action Program
CoC	Certificate of Compliance
DFC	Damaged Fuel Container
DSS	Dry Storage System
ECO	Engineering Change Order
ER	Environmental Report
INEEL	Idaho National Engineering and Environmental Laboratory
INPO	Institute of Nuclear Power Operations
ISG	Interim Staff Guidance
ITS	Important to Safety
ISFSI	Independent Spent Fuel Storage Installation
LWR	Light Water Reactor
MPC	Multi-Purpose Canister
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
OR	Oregon
PGE	Portland General Electric
PNL	Pacific Northwest Laboratory
PWR	Pressurized Water Reactor
RCCA	Rod Cluster Control Assemblies
SAR	Safety Analysis Report
SER	Safety Evaluation Report
SMDR	Supplier Manufacturing Deviation Report
SNM	Special Nuclear Material
SSC	Structures, Systems, and Components
TLAA	Time-Limited Aging Analysis
TNP	Trojan Nuclear Plant

CHAPTER 1: GENERAL INFORMATION

1.0 GENERAL INFORMATION

Portland General Electric Company (PGE) has prepared this application for renewal of the license for the site-specific Trojan ISFSI. This application supports ISFSI license renewal for an additional 40-year period beyond the end of the current license term of Materials License Number SNM-2509 (Docket Number 72-17). The original 20-year ISFSI license will expire on March 31, 2019. This application is submitted in accordance with 10 CFR 72.42(b) and includes Time Limited Aging Analyses, Aging Management Programs, and the applicable general, technical, decommissioning funding plan information required by 10 CFR 72.30(c) and environmental supporting information required by 10 CFR 72, Subpart B.

1.1 APPLICATION FORMAT AND CONTENT

The format and content of the application are based on 10 CFR 72, NRC NUREG-1927 (Ref. 1.1.1), and generally following NEI 14-03 (Ref. 1.1.2). Based on this guidance, the application includes:

1. General Information – Section 1 has been expanded beyond the general administrative requirements of 10 CFR 72.22 to include information on the format and content of the application and a facility description.
2. Scoping Evaluation – Section 2 provides the scoping evaluation for the site-specific ISFSI systems, structures, and components (SSCs).
3. Aging Management Reviews – Section 3 includes the methodology and results of the aging management reviews performed for site-specific ISFSI SSCs that are in the scope of license renewal.
4. Appendices related to AMPs, TLAAAs, Tollgates, proposed changes to SAR, License and Technical Specifications, pre-application/baseline inspections, PGE-1082 with 10 CFR 72.30 decommissioning funding plan information, and a PGE-1070 Environmental Report Supplement.

1.2 FACILITY DESCRIPTION

The Trojan ISFSI safely stores the spent nuclear fuel that resulted from the approximately 17 years of operation of the Trojan Nuclear Plant.

The Trojan ISFSI is located in Columbia County, Oregon, along the west bank of the Columbia River, approximately 42 miles north of Portland, Oregon, and 50 miles east of the Pacific Ocean. The Trojan ISFSI uses BNFL Fuel Solutions TranStor™ Concrete Casks, which are a vertical ventilated type cask, loaded with seal-welded, stainless steel Holtec International Multipurpose Canisters (type MPC-24E or MPC-24EF). The MPC-24E is designed to accommodate up to 24 PWR fuel assemblies. Up to four of the fuel assemblies in any one MPC-24E may be classified as damaged fuel and the balance must be intact

fuel. The MPC-24EF is also designed for 24 PWR fuel assemblies, with up to four assemblies classified as damaged fuel or fuel debris. The 34 MPCs stored in the Trojan ISFSI ranged in heat load at time of loading from 4.1 kW to 14.3 kW, and were moved to the ISFSI Pad between January and September of 2003.

The ISFSI consists of a reinforced concrete Storage Pad supporting 34 Trojan Storage Systems, each made up of the Concrete Cask and stored MPC. In addition to these primary components, the ISFSI also requires a Transfer Cask, Transfer Station, and ISFSI-related security equipment.

A complete description of the ISFSI is provided in the Trojan ISFSI SAR (Ref. 1.2.1).

1.3 INFORMATION REQUIRED BY 10 CFR 72.22

1.3.1 Full Name of Applicant

Portland General Electric Company

1.3.2 Address of Applicant

121 SW Salmon St.
Portland, Oregon 97204

1.3.3 Address of Trojan ISFSI

71760 Columbia River Highway
Rainier, OR 97048

1.3.4 Description of Business or Occupation of Applicant

PGE is the majority owner of the Trojan ISFSI and has responsibility for operating and maintaining the ISFSI. PGE is an investor-owned utility engaged in the generation, purchase, transmission and distribution of electricity to industrial, commercial and residential customers. PGE has approximately 2,650 employees and provides electricity to more than 848,000 retail electricity customers. PGE's service area covers approximately 4,000 square miles. PGE has a diverse mix of low cost generating resources including hydroelectric power, wind, coal, and gas combustion. The Trojan ISFSI is jointly owned by PGE, the City of Eugene through the Eugene Water and Electric Board (EWEB), and PacifiCorp.

1.3.5 Organization and Management of Applicant

State of Incorporation and Principal Location of Business

PGE is incorporated in the State of Oregon and its general office and principal place of business is located in Portland, Oregon.

Executive Officers and Senior Leadership of PGE

The PGE business address, names, current titles and citizenship of current executive officers and the senior nuclear leadership for the Trojan ISFSI are as follows:

Portland General Electric
121 SW Salmon Street
Portland, Oregon 97204

Portland General Electric Corporate Officers

<u>Name</u>	<u>Position</u>	<u>Citizenship</u>
James J. Piro	President and Chief Executive Officer	U.S.
James F. Lobdell	Sr. Vice President, Finance, Chief Financial Officer and Treasurer	U.S.
William O. Nicholson	Sr. Vice President, Customer Service, Transmission and Distribution	U.S.
Maria M. Pope	Sr. Vice President, Power Supply, Operations and Resource Strategy	U.S.
Larry N. Bekkedahl	Vice President, Transmission and Distribution Services	U.S.
Carol A. Dillin	Vice President, Customer Strategies and Business Development	U.S.
J. Jeffrey Dudley	Vice President, General Counsel, Corporate Compliance Officer and Assistant Secretary	U.S.
Campbell A. Henderson	Vice President, Information Technology and Chief Information Officer	U.S.
Bradley Y. Jenkins	Vice President, Power Supply Generation	U.S.
Anne F. Mersereau	Vice President, Human Resources, Diversity and Inclusion	U.S.
W. David Robertson	Vice President, Public Policy and Corporate Resiliency	U.S.
Kristin A. Stathis	Vice President, Customer Service Operations	U.S.

Portland General Electric Board of Directors

<u>Name</u>	<u>Position</u>	<u>Citizenship</u>
John W. Ballantine	Director	U.S.
Rodney L. Brown, Jr.	Director	U.S.
Jack E. Davis	Chairman	U.S.
David A. Dietzler	Director	U.S.
Kirby A. Dyess	Director	U.S.
Mark B. Ganz	Director	U.S.
Kathryn J. Jackson	Director	U.S.
Neil J. Nelson	Director	U.S.
M. Lee Pelton	Director	U.S.
James J. Piro	Director	U.S.
Charles W. Shivery	Director	U.S.

The Eugene Water & Electric Board (EWEB or the Board) is a publicly owned electric and water utility in Oregon. EWEB is an administrative unit of the City of Eugene, Oregon. EWEB operates as a primary government, and is not considered a component unit of the City. The Board supplies electric and water service within the city limits of Eugene and to certain areas outside the city limits. EWEB's address is 500 East Fourth Avenue; Eugene, OR 97401.

EWEB Commissioners and General Managers

<u>Name</u>	<u>Position</u>	<u>Citizenship</u>
Dick Helgeson	President	U.S.
John Brown	Vice President	U.S.
John Simpson	Commissioner	U.S.
Steve Mital	Commissioner	U.S.
Sonya Carlson	Commissioner	U.S.
Frank Lawson	Secretary/General Manager	U.S.
Anne Kah	Assistant Secretary	U.S.
Susan Fahey	Treasurer	U.S.
Susan Eicher	Assistant Treasurer	U.S.

PacifiCorp, an indirect wholly owned subsidiary of Berkshire Hathaway Energy, is a United States regulated electric utility company headquartered in Oregon that serves 1.8 million retail electric customers in portions of Utah, Oregon, Wyoming, Washington, Idaho and California. PacifiCorp is principally engaged in the business of generating, transmitting, distributing and selling electricity. PacifiCorp's principal executive offices are located at 825 NE Multnomah Street, Portland, Oregon 97232.

PacifiCorp Corporate Officers

<u>Name</u>	<u>Title</u>	<u>Address</u>	<u>Citizenship</u>
Gregory E. Abel	Chairman & Chief Executive Officer	825 NE Multnomah, Suite 2000, Portland, OR 97232	Canada
Stefan A. Bird	President & Chief Executive Officer, Pacific Power	825 NE Multnomah, Suite 2000, Portland, OR 97232	U.S.
Cindy A. Crane	President & Chief Executive Officer, Rocky Mountain Power	1407 West North Temple, Suite 310, Salt Lake City, UT 84116	U.S.
Jeffery B. Erb	Corporate Secretary	825 NE Multnomah, Suite 2000, Portland, OR 97232	U.S.
Gary W. Hoogeveen	Senior Vice President & CCO, Rocky Mountain Power	1407 West North Temple, Suite 310, Salt Lake City, UT 84116	U.S.
Michael G. Jenkins	Assistant Secretary	1407 West North Temple, Suite 320, Salt Lake City, UT 84116	U.S.
Nikki L. Kobliha	Vice President, CFO & Treasurer	825 NE Multnomah, Suite 1900, Portland, OR 97232	U.S.

PacifiCorp Board of Directors

<u>Name</u>	<u>Citizenship</u>
Gregory E. Abel	Canada
Stefan A. Bird	U.S.
Cindy A. Crane	U.S.
Patrick J. Goodman	U.S.
Natalie L. Hocken	U.S.
Nikki L. Kobliha	U.S.

1.3.6 Financial Qualifications of Applicant

PGE and the Trojan ISFSI co-owners will remain financially qualified to carry out the operation and decommissioning of the ISFSI during the period of the renewed material license as required by 10 CFR 72.22(e). Information supporting this statement is submitted in annual financial reports, as required by regulation. Links to the December 31, 2018 annual financial reports for PGE, PacifiCorp, and EWEB are provided below.

PGE

<https://investors.portlandgeneral.com/static-files/8e3e5262-aedf-4fe2-a52f-77719e111396>

PacifiCorp

https://www.berkshirehathawayenergyco.com/assets/upload/financial-filing/BHE%2012.31.18%20Form%2010-K_vFINAL.pdf

EWEB

<http://www.eweb.org/about-us/publications-and-reports>
(scroll down to Financial Reports and click on year 2018)

1.3.6.1 Trojan Co-Owners' Supplemental Financial Information Covering the 40-Year License Renewal Period Ending in 2059

To support NRC's review of the Trojan ISFSI's co-owners' compliance with 10 CFR 72.22(e) for the entire period of the Trojan ISFSI extended license ending in 2059, PGE is providing this additional financial information that supplements the financial information previously provided to the NRC in PGE letter VPN-004-2019, dated February 21, 2019. Pursuant to 10 CFR 72.22(e), VPN-004-2019 and this supplemental information show that the Trojan co-owners have or have reasonable assurance of obtaining the necessary funds to cover ISFSI operations and maintenance (O&M) for the entire period of the Trojan ISFSI license ending in 2059, including costs for radiological decommissioning.

This supplement adds a new Figure 1.3.6, titled "Trojan ISFSI Estimated Project Timeline with Projected March 31, 2059 License Termination Date." This figure provides the general projected timeline for Trojan ISFSI activities that occur during the extended license period.

In addition, this supplement adds five new financial information tables. Generally, these new tables extend estimated costs out to year 2059 to cover the entire period of the proposed Trojan ISFSI extended license:

1. Table 1-0-1, Decommissioning Cost Estimate for Trojan Nuclear Plant (TNP) and Trojan ISFSI Itemized Operations and Decommissioning Expenditure Schedule Projected to End in Year 2059 (2015 Dollars x 1000)
2. Table 1-0-2, Trojan Co-Owners Total Trojan ISFSI Estimated Annual Costs Projected to End in Year 2059 (Nominal Dollars x 1000)

3. Table 1-0-2-1, Portland General Electric Trojan ISFSI Funding Cash Flow (Nominal Dollars x 1000)
4. Table 1-0-2-2, EWEB/BPA Trojan ISFSI Funding Annual Cash Obligations (Nominal Dollars x 1000)
5. Table 1-0-2-3, PacifiCorp Trojan ISFSI Funding Cash Flow (Nominal Dollars x 1000)

The financial information provided in the above tables is based on the following assumptions:

1. Assume the Trojan ISFSI license renewal application is approved and the renewed license issued in early 2020 with an expiration date of March 31, 2059. For consistency with the tables previously submitted in PGE letter VPN-004-2019, use the above dates to move the period of spent fuel transfer to US Department of Energy (USDOE or DOE) out to start in 2049 and complete in early 2058 followed by ISFSI facility radiological decommissioning (also completing in 2058) and license termination on March 31, 2059 (refer to Figure 1.3.6).
2. For consistency with the tables previously submitted in PGE letter VPN-004-2019:
 - Continue to use (2015 Dollars x 1000) for the new Table 1-0-1 estimates.
 - Continue to use year 2017 as the first row for Tables 1-0-2, 1-0-2-1, 1-0-2-2, and 1-0-2-3.
 - Continue to use an average annual escalation factor of 2.38%.
 - Continue to use an annual 2% growth factor for net earnings in PGE Table 1-0-2-1 and PacifiCorp Table 1-0-2-3.
3. Assume DOE settlement reimbursements will continue until Trojan starts transferring fuel to DOE (projected to start in 2049) and will resume in 2055 for radiological decommissioning costs and continue into 2059.
4. Assume for Table 1-0-2 that DOE settlement amounts will continue to be approximately 90% of the previous year co-owners' expenditures and include each co-owners' share of these funds in Tables 1-0-2-1, 1-0-2-2, and 1-0-2-3.
5. Per 2018 PGE Rate Case Order 18-464, PGE's (rate recovery) Trust Fund contributions are reduced to \$1,900 (x 1000) per year in Table 1-0-2-1.
6. Assume the current conservative annual estimates of \$5.8 million (2015 dollars) used in Table 1-0-1 for spent fuel management costs (shown in years 2020–2047 and included in estimates through 2058) will adequately cover the new Aging Management Program (AMP) annual costs during the extended license period.

PGE is submitting this financial information to support NRC's review of the Trojan ISFSI's co-owners' compliance with 10 CFR 72.22(e) for the entire period of the Trojan ISFSI extended license that will end in 2059. This regulation requires, in part, that the ISFSI licensee(s) have demonstrated that there is reasonable assurance that they have or will obtain adequate funding for ISFSI operations and maintenance (O&M) for the duration of the ISFSI license and for its radiological decommissioning.

The ISFSI O&M activities that need to be performed during an ISFSI's lifetime include normal storage operations, packaging the spent fuel for transportation, transferring spent fuel ownership to the USDOE

for shipping, performing radiological decommissioning, performing the final status survey, and obtaining NRC's approval of ISFSI license termination.

To support the new cost projections and cost estimates in this Trojan ISFSI financial information supplement, PGE is making the following USDOE related assumptions** in order to cover the above O&M activities during the 40-year extended license period that ends in 2059:

1. Assume a new projected start date of 2045 for USDOE acceptance and transfer of commercial spent fuel to a federal facility (not necessarily a final repository)
2. Continue to assume USDOE uses the spent fuel allocation/receipt schedules that are based upon the oldest fuel first, as contained in the "Acceptance Priority Ranking & Annual Capacity Report," DOE/RW-0567, July 2004
3. Continue to assume Trojan's first MPCs are transferred to USDOE in USDOE's fifth year of accepting spent fuel, resulting in a new projected start date of 2049
4. Continue to assume that Trojan's allocations for transferring spent fuel to USDOE cover an approximate 10- year period (as described in PGE-1082, Section 3.1), resulting in a new projected date of early 2058 for completing the transfer of the last MPC to USDOE

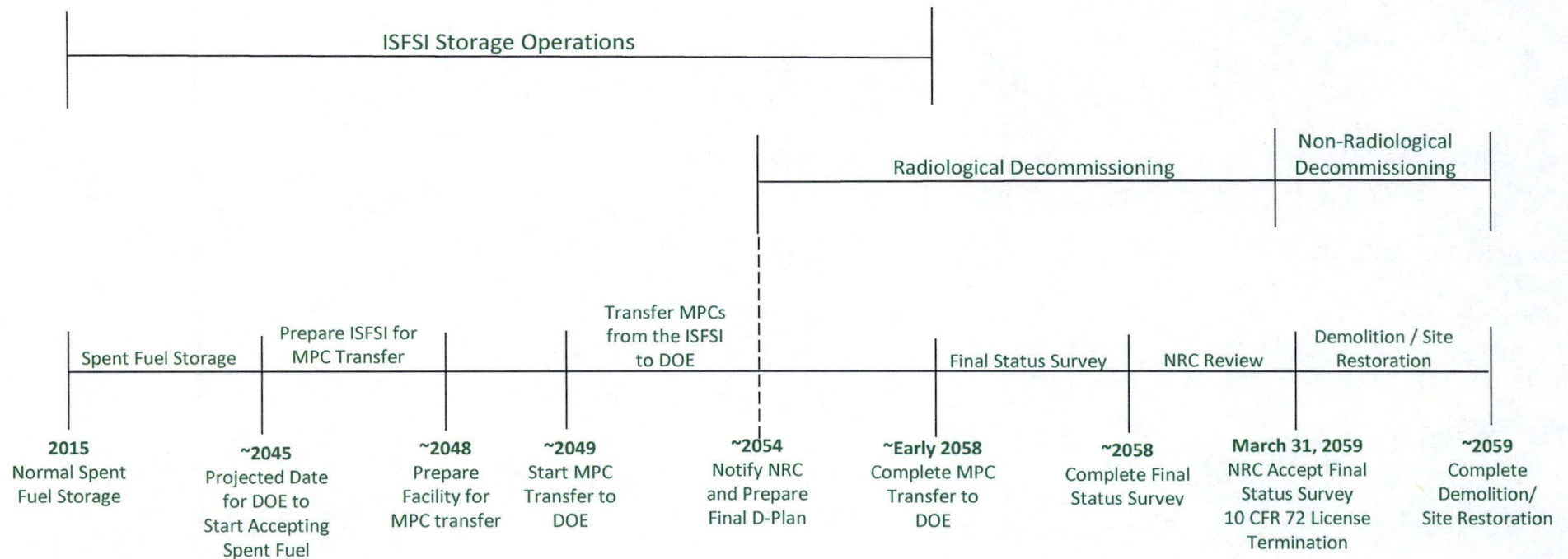
*** Footnote for USDOE related assumptions:*

The estimates and assumptions in this LRA Section 1.3.6.1 supplemental report are for projection purposes only, and do not represent any conclusion by Trojan ISFSI licensees about how the USDOE will actually perform in the future. This report should not be taken as any indication that the licensees know how the USDOE will eventually perform its obligations, or have any specific expectation concerning that performance. If USDOE's failure to perform results in specific additional costs beyond those reflected in this supplemental report, it is expected that the USDOE will compensate the licensees for those costs.

PGE's position is that the USDOE has a contractual obligation to accept the spent fuel earlier than the projections set out above consistent with its contract commitments. No assumption made in this report should be interpreted to be inconsistent with this claim. ISFSI operations at Trojan are in response to the USDOE's failure to remove spent nuclear fuel from the site in a timely manner. The costs for management of the spent fuel are costs for which the USDOE is responsible, according to the Standard Contract. It is therefore expected that, once the ISFSI is no longer needed, the cost to decommission the Trojan ISFSI would be a USDOE-reimbursable expense.

FIGURE 1.3.6

TROJAN ISFSI ESTIMATED PROJECT TIMELINE
With Projected March 31, 2059 License Termination Date



~ Denotes Estimated or Approximated
Year Line is Not to Scale

1.3.7 Financial Assurance for Radiological Decommissioning (10 CFR 72.30)

In accordance with the requirements of 10 CFR 72.30(c) "at the time of license renewal", PGE is submitting another copy of PGE-1082, [Proposed](#) Revision 1, "Trojan ISFSI Preliminary Radiological Decommissioning Plan" (see Appendix H to this Application). This document was previously submitted to the NRC for review on December 10, 2015 (ML15349A939) and is still in the NRC's review process.

During 2016, PGE performed additional radiation and contamination surveys at the Trojan ISFSI and Section 1.3.7.1 below provides this additional information related to PGE-1082, [Proposed](#) Revision 1, Section 2.5. In addition, Section 1.3.7.2 below provides December 31, 2016 Radiological Decommissioning Trust balances for PGE and PacifiCorp that are more recent than those contained in PGE-1082, [Proposed](#) Revision 1 Tables 5.3.1 and 5.3.2.

[In 2018, PGE made additional changes to PGE-1082, Proposed Revision 1 and these are described in the new Sections 1.3.7.3 and 1.3.7.4 below.](#)

With this additional information, the 2015 PGE-1082, [Proposed](#) Revision 1 contains PGE's most up-to-date projected Trojan ISFSI radiological decommissioning schedule, detailed radiological decommissioning cost estimate, and funding plans.

1.3.7.1 Pursuant to 10 CFR 72.30(b)(5), PGE-1082, [Proposed](#) Revision 1, Section 2.5, provides information on PGE's evaluation of past and current ISFSI radiological conditions related to subsurface material contamination that could contain residual radioactivity that would require remediation to meet the 10 CFR 20.1402 radiological criteria for unrestricted use and ISFSI license termination. Based on the information in this PGE-1082, [Proposed](#) Revision 1, Section 2.5, and the results of additional surveys performed in 2016, PGE has determined that currently there is no volume of ISFSI onsite subsurface material containing residual radioactivity that will require remediation to meet the 10 CFR 20.1402 radiological criteria for unrestricted use and ISFSI license termination.

1.3.7.2 PGE-1082, [Proposed](#) Revision 1, contains Table 5.3-1 for PGE's Decommissioning Trust Funds' Balances and Table 5.3-2 for PacifiCorp's Decommissioning Trust Funds' Balances. The following two tables provide the 2015 balances from these PGE-1082 Tables and the new December 31, 2016 balances.

As shown in the tables below, PGE's ISFSI Radiological Decommissioning Fund balance is substantially more than the amount of PGE's 67.5% share of funds required for ISFSI facility radiological decommissioning as specified in PGE-1082, [Proposed](#) Revision 1, Table 5.2-1 (PGE Trust Fund Expenditures, Column A, Total of \$3,994,000) and PacifiCorp's ISFSI Radiological Decommissioning Fund balance is more than the full amount of PacifiCorp's 2.5% share of funds required for ISFSI facility radiological decommissioning as specified in PGE-1082, [Proposed](#) Revision 1, Table 5.2-3 (PacifiCorp Trust Fund Expenditures, Column A, Total of \$148,000).

The Bonneville Power Administration (BPA) is obligated through Net Billing Agreements to pay costs associated with EWEB's share of Trojan, including radiological decommissioning costs. As a government agency, EWEB uses a Statement of Intent for their financial instrument as described in PGE-1082. EWEB's Statement of Intent and Certification of Financial Assurance both document BPA's obligation to pay the decommissioning funding obligations of EWEB. The funding plan described in Table 5.2-2 of PGE-1082 ensures that EWEB/BPA's 30% portion of the radiological decommissioning activity expenditures will be fully funded.

**Table 5.3-1
PGE's Decommissioning Trust Funds' Balances**

Portland General Electric (PGE)	ISFSI Radiological Decommissioning Fund Market Value	Total Market Value of All Funds in PGE's Trojan Decommissioning Trust Accounts
PGE-1082 Proposed Rev. 1 as of 10-31-2015	\$5,130,604	\$40,130,043
As of 12-31-2016	\$5,150,625	\$40,996,096
As of 12-31-2017	\$5,200,556	\$41,910,157
As of 12-31-2018	\$5,299,507	\$42,455,822

**Table 5.3-2
PacifiCorp's Decommissioning Trust Funds' Balances**

PacifiCorp	ISFSI Radiological Decommissioning Fund Market Value	Total Market Value of All Funds in PacifiCorp's Trojan Decommissioning Trust Accounts
PGE-1082 Proposed Rev. 1 as of 11-24-2015	\$148,013	\$1,547,446
As of 12-31-2016	\$148,395	\$1,838,748
As of 12-31-2017	\$149,571	\$1,876,736
As of 12-31-2018	\$152,201	\$1,927,960

1.3.7.3 In 2018, Trojan discovered that PGE-1082 Section 2.6 and Tables 2-1 and 2-3 for Concrete Cask "activation" were not revised from 40 years to cover the new 60 years proposed in the 2017 License Renewal Application. PGE-1082 Section 2.6 and Tables 2-1 and 2-3 have been revised to incorporate the results of the 2018 Concrete Cask 60-year activation analysis contained in Holtec Report No. HI-2012749, "Shielding Evaluation for the Trojan ISFSI Completion Project", Table O.1, Revisions 5 and 6 (Ref. 1.3.1), to replace the 40-year analysis numbers with the 60-year analysis numbers. In addition, Table 2-3 was revised to use the 60-year nuclide values to calculate the Percentage of Residual Activity vs Concentration for 25 mrem/year to verify that the results are less than 100%.

1.3.7.4 Pursuant to NRC's RAI letter, dated April 3, 2018, and PGE's response letter (VPN-004-2018, dated May 15, 2018), PGE revised PGE-1082, Section 4.1 to add Trojan's conclusions of "No Changes" to decommissioning costs for each of the following events listed in 10 CFR 72.30(c)(1)-(4): (1) spills of radioactive material producing additional residual radioactivity in onsite subsurface material, (2) facility modifications, (3) changes in authorized possession limits, and (4) actual remediation costs that exceed the previous cost estimate.

1.4 REFERENCES

- 1.1.1 NUREG-1927, Revision 1, "Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel"
- 1.1.2 NEI 14-03, Revision 1, "Format, Content and Implementation Guidance for Dry Cask Storage Operation Based Aging Management"
- 1.2.1 Trojan ISFSI SAR (PGE-1069), Revision 14
- 1.3.1 Holtec Report No. HI-2012749, "Shielding Evaluation for the Trojan ISFSI Completion Project", Revision 6

Table 1-0-1

Decommissioning Cost Estimate for Trojan Nuclear Plant (TNP) and Trojan ISFSI Itemized Operations and Decommissioning Expenditure Schedule Projected to End in 2059 (2015 Dollars x 1000)

Total Decommissioning Expenditures						
Year	TNP Radiological Decommissioning Expenditures	TNP Nonradiological Decommissioning Expenditures	Spent Fuel Management Expenditures*	ISFSI Radiological Decommissioning Expenditures	Financing Activity Expenditures	Combined Decommissioning Expenditures
1993	3,947	0	0	0	0	3,947
1994	7,854	100	0	0	0	7,954
1995	23,470	66	1,624	0	0	25,160
1996	13,410	358	4,641	0	0	18,409
1997	28,380	517	11,764	0	0	40,661
1998	50,659	91	14,323	0	0	65,073
1999	56,052	1,938	26,541	0	0	84,531
2000	48,984	1,148	4,953	0	0	55,085
2001	12,377	294	9,937	0	0	22,608
2002	12,297	(69)	23,045	0	0	35,273
2003	20,484	361	19,038	0	0	39,883
2004	25,132	738	3,973	0	23	29,866
2005	2,572	671	3,348	0	0	6,591
2006	0	4,977	2,992	0	0	7,969
2007	0	3,268	3,175	0	0	6,443
2008	0	5,457	3,372	0	0	8,829
2009	0	(42)	3,691	0	0	3,649
2010	0	0	4,828	0	0	4,828
2011	0	0	6,020	0	0	6,020
2012	0	0	4,059	0	0	4,059
2013	0	153	3,962	0	0	4,115
2014	0	669	3,888	0	0	4,557
2015	0	2	4,213	0	0	4,215
2016	0	0	4,689	0	0	4,689
2017	0	0	4,559	0	0	4,559
2018	0	0	5,988	0	0	5,988
2019	0	0	5,988	0	0	5,988
2020	0	0	5,800	0	0	5,800
2021	0	0	5,800	0	0	5,800
2022	0	0	5,800	0	0	5,800
2023	0	0	5,800	0	0	5,800
2024	0	0	5,800	0	0	5,800
2025	0	0	5,800	0	0	5,800
2026	0	0	5,800	0	0	5,800
2027	0	0	5,800	0	0	5,800
2028	0	0	5,800	0	0	5,800
2029	0	0	5,800	0	0	5,800
2030	0	0	5,800	0	0	5,800
2031	0	0	5,800	0	0	5,800
2032	0	0	5,800	0	0	5,800
2033	0	0	5,800	0	0	5,800
2034	0	0	5,800	0	0	5,800
2035	0	0	5,800	0	0	5,800
2036	0	0	5,800	0	0	5,800
2037	0	0	5,800	0	0	5,800
2038	0	0	5,800	0	0	5,800
2039	0	0	5,800	0	0	5,800
2040	0	0	5,800	0	0	5,800
2041	0	0	5,800	0	0	5,800
2042	0	0	5,800	0	0	5,800
2043	0	0	5,800	0	0	5,800
2044	0	0	5,800	0	0	5,800
2045	0	0	5,800	0	0	5,800
2046	0	0	5,800	0	0	5,800
2047	0	0	5,800	0	0	5,800
2048	0	0	7,867	0	0	7,867
2049	0	0	8,228	0	0	8,228
2050	0	0	8,228	0	0	8,228
2051	0	0	8,228	0	0	8,228
2052	0	0	8,435	0	0	8,435
2053	0	0	8,435	0	0	8,435
2054	0	0	8,435	98	0	8,533
2055	0	0	8,934	199	0	9,133
2056	0	0	8,934	172	0	9,106
2057	0	0	8,959	939	0	9,898
2058	0	0	4,905	2,578	0	7,483
2059	0	3,404	3,274	0	0	6,678
Total	305,618	24,101	439,873	3,986	23	773,601

Values updated to reflect 2017 actual costs.

* Spent Fuel Management Expenditures estimates include the following: Years 1995 through 2003 include wet fuel storage costs, ISFSI construction costs, and ISFSI fuel loading costs; Years 2015 through 2019 include costs for ISFSI License Renewal; Years 2048 through 2057 and early 2058 include preparation and packaging spent fuel for shipment costs. Year 2059 includes ISFSI non-radiological decommissioning costs; and Years 2048 through 2059 include a spreading of the \$20 million amount of the project management reserve.

Table 1-0-2

**Trojan Co-Owners' Total Trojan ISFSI Estimated Annual Costs Projected to End in 2059
(Nominal Dollars x 1000)**

Year	Co-Owner Expenditures A	Co-Owner Contributions B	DOE Settlement C	Co-Owner Net Earnings D	Co-Owner Trust, Taxes, Fees, and Expenses E	Trust Fund EOY Balance F
2017						43,787
2018	(6,367)	4,273	4,258	876	(26)	46,801
2019	(6,520)	2,277	5,730	936	(26)	49,198
2020	(6,471)	2,221	5,868	983	(27)	51,772
2021	(6,630)	2,282	5,824	1,034	(27)	54,255
2022	(6,793)	2,288	5,967	1,086	(28)	56,775
2023	(6,965)	2,296	6,114	1,135	(28)	59,327
2024	(7,139)	2,301	6,269	1,186	(29)	61,915
2025	(7,317)	2,307	6,425	1,238	(29)	64,540
2026	(7,496)	2,313	6,585	1,290	(30)	67,202
2027	(7,681)	2,320	6,746	1,344	(31)	69,901
2028	(7,863)	2,325	6,913	1,398	(31)	72,643
2029	(8,049)	2,332	7,077	1,453	(32)	75,424
2030	(8,241)	2,339	7,244	1,509	(32)	78,242
2031	(8,440)	2,347	7,417	1,566	(33)	81,099
2032	(8,644)	2,354	7,596	1,622	(34)	83,994
2033	(8,853)	2,362	7,780	1,679	(34)	86,927
2034	(9,067)	2,370	7,967	1,738	(35)	89,900
2035	(9,283)	2,377	8,161	1,799	(36)	92,918
2036	(9,504)	2,385	8,355	1,859	(36)	95,976
2037	(9,730)	2,393	8,554	1,920	(37)	99,075
2038	(9,962)	2,402	8,757	1,981	(38)	102,216
2039	(10,199)	2,410	8,966	2,044	(39)	105,398
2040	(10,442)	2,418	9,179	2,109	(39)	108,623
2041	(10,690)	2,428	9,397	2,172	(40)	111,890
2042	(10,945)	2,437	9,621	2,238	(41)	115,200
2043	(11,205)	2,447	9,850	2,305	(42)	118,555
2044	(11,472)	2,457	10,085	2,371	(43)	121,953
2045	(11,745)	2,466	10,325	2,439	(44)	125,393
2046	(12,024)	2,476	10,570	2,508	(44)	128,879
2047	(12,310)	2,486	10,822	2,578	(45)	132,410
2048	(17,096)	3,845	11,079	2,647	(46)	132,840
2049	(18,306)	7,532	0	2,656	(47)	124,674
2050	(18,741)	7,662	0	2,494	(48)	116,041
2051	(19,188)	7,796	0	2,321	(49)	106,921
2052	(20,137)	8,081	0	2,138	(50)	96,953
2053	(20,616)	8,225	0	1,939	(51)	86,450
2054	(21,352)	8,446	0	1,728	(52)	75,220
2055	(23,399)	8,993	221	1,504	(53)	62,486
2056	(23,884)	9,067	458	1,249	(54)	49,323
2057	(26,584)	9,893	405	987	(55)	33,969
2058	(20,572)	7,531	2,270	680	(56)	23,822
2059	(18,798)	5,767	6,378	477	(57)	17,589
Total	(516,720)	165,726	255,232	71,216	(1,653)	

Note 1: Positive numbers indicate cash flow into trust; negative numbers indicate cash flow out of trust.

Note 2: Current EOY balance = Previous EOY balance + Current year A + B + C + D + E.

Note 3: In Oregon PUC Order Number 07-105, the OPUC approved the continuation of collections until completion of Decommissioning of the Trojan Facility.

Table 1-0-2-1

Portland General Electric Trojan ISFSI Funding Cash Flow
(Nominal Dollars x 1000)

Year	PGE Trust Fund Expenditures	PGE Trust Fund Contributions	PGE DOE Settlement	PGE Trust Fund Net Earnings	PGE Taxes, Fees, and Expenses	PGE Trust Fund EOY Balance
	A	B	C	D	E	F
2017						41,910
2018	(4,298)	3,500	2,874	838	(26)	44,799
2019	(4,401)	1,900	3,868	896	(26)	47,035
2020	(4,368)	1,900	3,961	940	(27)	49,442
2021	(4,475)	1,900	3,931	988	(27)	51,759
2022	(4,585)	1,900	4,028	1,036	(28)	54,110
2023	(4,701)	1,900	4,127	1,082	(28)	56,490
2024	(4,819)	1,900	4,231	1,130	(29)	58,904
2025	(4,939)	1,900	4,337	1,178	(29)	61,351
2026	(5,060)	1,900	4,445	1,227	(30)	63,833
2027	(5,185)	1,900	4,554	1,276	(31)	66,347
2028	(5,307)	1,900	4,666	1,327	(31)	68,902
2029	(5,433)	1,900	4,777	1,378	(32)	71,492
2030	(5,563)	1,900	4,890	1,430	(32)	74,116
2031	(5,697)	1,900	5,006	1,483	(33)	76,776
2032	(5,835)	1,900	5,127	1,535	(34)	79,469
2033	(5,976)	1,900	5,251	1,589	(34)	82,199
2034	(6,120)	1,900	5,378	1,644	(35)	84,966
2035	(6,266)	1,900	5,508	1,700	(36)	87,773
2036	(6,415)	1,900	5,639	1,756	(36)	90,617
2037	(6,568)	1,900	5,774	1,813	(37)	93,499
2038	(6,724)	1,900	5,911	1,870	(38)	96,418
2039	(6,884)	1,900	6,052	1,929	(39)	99,376
2040	(7,049)	1,900	6,196	1,988	(39)	102,372
2041	(7,216)	1,900	6,343	2,047	(40)	105,406
2042	(7,388)	1,900	6,494	2,108	(41)	108,479
2043	(7,563)	1,900	6,649	2,170	(42)	111,593
2044	(7,743)	1,900	6,807	2,232	(43)	114,746
2045	(7,928)	1,900	6,969	2,295	(44)	117,939
2046	(8,116)	1,900	7,135	2,359	(44)	121,172
2047	(8,309)	1,900	7,305	2,424	(45)	124,447
2048	(11,540)	1,900	7,479	2,488	(46)	124,727
2049	(12,356)	1,900	0	2,494	(47)	116,718
2050	(12,650)	1,900	0	2,334	(48)	108,254
2051	(12,952)	1,900	0	2,165	(49)	99,318
2052	(13,593)	1,900	0	1,986	(50)	89,561
2053	(13,916)	1,900	0	1,791	(51)	79,285
2054	(14,412)	1,900	0	1,585	(52)	68,306
2055	(15,795)	1,900	149	1,366	(53)	55,874
2056	(16,123)	1,900	309	1,117	(54)	43,023
2057	(17,944)	1,900	273	861	(55)	28,058
2058	(13,886)	1,900	1,532	562	(56)	18,110
2059	(12,688)	1,900	4,305	363	(57)	11,933
Total	(348,786)	81,400	172,282	66,780	(1,653)	

Note 1: Positive numbers indicate cash flow into trust; negative numbers indicate cash flow out of trust.

Note 2: Current EOY balance = Previous EOY balance + Current year A + B + C + D + E.

Note 3: In Oregon PUC Order Number 07-105, the OPUC approved the continuation of collections until completion of Decommissioning of the Trojan Facility.

Table 1-0-2-2

**EWEB / BPA Trojan ISFSI Funding Annual Cash Obligations
(Nominal Dollars x 1000)**

Year	EWEB Expenditures	EWEB Contributions	EWEB DOE Settlement
	A	B	C
2017			
2018	(1,910)	633	1,277
2019	(1,956)	237	1,719
2020	(1,941)	181	1,760
2021	(1,989)	242	1,747
2022	(2,038)	248	1,790
2023	(2,090)	256	1,834
2024	(2,142)	261	1,881
2025	(2,195)	267	1,928
2026	(2,249)	273	1,976
2027	(2,304)	280	2,024
2028	(2,359)	285	2,074
2029	(2,415)	292	2,123
2030	(2,472)	299	2,173
2031	(2,532)	307	2,225
2032	(2,593)	314	2,279
2033	(2,656)	322	2,334
2034	(2,720)	330	2,390
2035	(2,785)	337	2,448
2036	(2,851)	345	2,506
2037	(2,919)	353	2,566
2038	(2,989)	362	2,627
2039	(3,060)	370	2,690
2040	(3,132)	378	2,754
2041	(3,207)	388	2,819
2042	(3,283)	397	2,886
2043	(3,362)	407	2,955
2044	(3,442)	417	3,025
2045	(3,523)	426	3,097
2046	(3,607)	436	3,171
2047	(3,693)	446	3,247
2048	(5,129)	1,805	3,324
2049	(5,492)	5,492	0
2050	(5,622)	5,622	0
2051	(5,756)	5,756	0
2052	(6,041)	6,041	0
2053	(6,185)	6,185	0
2054	(6,406)	6,406	0
2055	(7,019)	6,953	66
2056	(7,165)	7,027	138
2057	(7,975)	7,853	122
2058	(6,172)	5,491	681
2059	(5,640)	3,727	1,913
Total	(155,016)	78,446	76,570

Note 1: BPA provides decommissioning funding from its operating budget as such funds are needed. Financial assurance is provided by an EWEB Statement of Intent. Therefore, no external trust fund is required.

Table 1-0-2-3

**PacifiCorp Trojan ISFSI Funding Cash Flow
(Nominal Dollars x 1000)**

Year	PacifiCorp Trust Fund Expenditures A	PacifiCorp Trust Fund Contributions B	PacifiCorp DOE Settlement C	PacifiCorp Trust Fund Net Earnings D	PacifiCorp Taxes, Fees, and Expenses E	PacifiCorp Trust Fund EOY Balance F
2017						1,877
2018	(159)	140	106	38	0	2,002
2019	(163)	140	143	40	0	2,162
2020	(162)	140	147	43	0	2,330
2021	(166)	140	146	46	0	2,496
2022	(170)	140	149	50	0	2,665
2023	(174)	140	153	53	0	2,837
2024	(178)	140	157	56	0	3,011
2025	(183)	140	161	60	0	3,189
2026	(187)	140	165	63	0	3,370
2027	(192)	140	169	68	0	3,554
2028	(197)	140	173	71	0	3,741
2029	(201)	140	177	75	0	3,932
2030	(206)	140	181	79	0	4,126
2031	(211)	140	185	83	0	4,324
2032	(216)	140	190	87	0	4,525
2033	(221)	140	194	90	0	4,728
2034	(227)	140	199	94	0	4,934
2035	(232)	140	204	99	0	5,145
2036	(238)	140	209	103	0	5,359
2037	(243)	140	214	107	0	5,577
2038	(249)	140	219	111	0	5,798
2039	(255)	140	224	115	0	6,022
2040	(261)	140	229	121	0	6,251
2041	(267)	140	235	125	0	6,484
2042	(274)	140	241	130	0	6,721
2043	(280)	140	246	135	0	6,962
2044	(287)	140	252	139	0	7,206
2045	(294)	140	258	144	0	7,454
2046	(301)	140	264	149	0	7,707
2047	(308)	140	271	154	0	7,963
2048	(427)	140	277	159	0	8,112
2049	(458)	140	0	162	0	7,956
2050	(469)	140	0	160	0	7,787
2051	(480)	140	0	156	0	7,603
2052	(503)	140	0	152	0	7,392
2053	(515)	140	0	148	0	7,165
2054	(534)	140	0	143	0	6,914
2055	(585)	140	6	138	0	6,613
2056	(596)	140	11	132	0	6,300
2057	(665)	140	10	126	0	5,911
2058	(514)	140	57	118	0	5,712
2059	(470)	140	159	114	0	5,656
Total	(12,918)	5,880	6,381	4,436	0	

Note 1: Positive numbers indicate cash flow into trust; negative numbers indicate cash flow out of trust.
Note 2: Current EOY balance = Previous EOY balance + Current year A + B + C + D + E.

Table 1-1 - Regulatory Compliance Cross-Reference Matrix

License Renewal Application Section Number and Heading	NUREG-1927 R1 Section Number and Heading	CFR Requirement
1.0 – General Information	Section 1.4.1, General Information	10 CFR 72.22(a),(b),(c),(d)
1.1 – Application Format and Content	Section 1.4.4, Application Content	10 CFR 72.22(a),(b),(c),(d)
1.2 – Facility Description	Section 1.4.1, General Information	10 CFR 72.22(a),(b),(c),(d)
1.3 – Information Required by 10 CFR 72.22	Section 1.4.1, General Information Section 1.4.2, Financial Information	10 CFR 72.22(e) 10 CFR 72.30(c)
1.4 – References		
2.0 – Scoping Evaluation	Section 2.4.1, Scoping Process	10 CFR 72.24(g) 10 CFR 72.42(b)
2.1 – Scoping Evaluation Process		
2.2 – Scoping Evaluation Discussion and Results		
2.2.1 – Description of SSCs		
2.2.2 – SSCs within the Scope of License Renewal	Section 2.4.2, Structures, Systems, and Components within the Scope of Renewal	10 CFR 72.24(b),(c),(d) 10 CFR 72.24(g)
2.2.3 – SSCs Not Within the Scope License Renewal	Section 2.4.3, Structures, Systems, and Components not within the Scope of Renewal	10 CFR 72.24(b),(c),(d) 10 CFR 72.24(g)
2.3 – References		
3.0 – Aging Management Reviews		
3.1 – Aging Management Review Methodology		
3.1.1 – Identification of In-Scope Subcomponents Requiring Aging Management Review		
3.1.2 – Identification of Materials	Section 3.4.1.1, Identification of Materials and Environments	
3.1.3 – Identification of Environments	Section 3.4.1.1, Identification of Materials and Environments	

Table 1-1 - Regulatory Compliance Cross-Reference Matrix

License Renewal Application Section Number and Heading	NUREG-1927 R1 Section Number and Heading	CFR Requirement
3.1.4 – Identification of Aging Effects Requiring Management	Section 3.4.1.2, Identification of Aging Mechanisms and Effects	10 CFR 72.24(d) 10 CFR 72.120(a),(d) 10 CFR 72.122(a),(b),(c),(h1),(h5),(l) 10 CFR 72.124 10 CFR 72.126 10 CFR 72.128(a) 10 CFR 72.158 10 CFR 72.162 10 CFR 72.164
3.1.5 – Determination of Aging Management Activity Required to Manage Effects of Aging	Section 3.4.1.3, Aging Management Activities	
3.1.6 – Operating Experience Review for Process Confirmation		
3.2 – Aging Management Review Results – MPC		
3.3 – Aging Management Review Results – Transfer Cask		
3.4 – Aging Management Review Results – Concrete Cask		
3.5 – Aging Management Review Results – Fuel Assembly	Section 3.4.1.4, Aging Management Review for Dry Storage System Internals	
3.6 – Aging Management Review Results – Transfer Station		
3.7 – Aging Management Review Results – ISFSI Pad		
3.8 – Time-Limited Aging Analyses	Section 3.5, Time-Limited Aging Analyses	10 CFR 72.24(d) 10 CFR 72.120(a),(d) 10 CFR 72.122(a),(b),(c),(h1),(h5),(l) 10 CFR 72.122(f),(h4),(l) 10 CFR 72.124 10 CFR 72.126 10 CFR 72.128(a)

Table 1-1 - Regulatory Compliance Cross-Reference Matrix

License Renewal Application Section Number and Heading	NUREG-1927 R1 Section Number and Heading	CFR Requirement
		10 CFR 72.170
3.9 – Aging Management Programs	Section 3.6, Aging Management Programs	10 CFR 72.82(d) 10 CFR 72.122(f)(h4)(I) 10 CFR 72.126 10 CFR 72.128(a) 10 CFR 72.158 10 CFR 72.162 10 CFR 72.164 10 CFR 72.168(a)
3.10 – Change Documents		
Appendix A – Aging Management Programs	Section 3.6, Aging Management Programs	10 CFR 72.82(d) 10 CFR 72.122(f)(h4)(I) 10 CFR 72.126 10 CFR 72.128(a) 10 CFR 72.158 10 CFR 72.162 10 CFR 72.164 10 CFR 72.168(a)
Appendix B – TLAAAs	Section 3.5, Time-Limited Aging Analyses	10 CFR 72.240(c)(2)
Appendix C – Tollgates		
Appendix D – Pre-Application/Baseline Inspections	Section 3.4.1.2, Identification of Aging Mechanisms and Effects	10 CFR 72.240(c)(3)
Appendix E – PGE-1070, Trojan ISFSI Environmental Report, Supplement 1	Section 1.4.3, Environmental Report	10 CFR 51.45(a) through (d) 10 CFR 51.60(a) 10 CFR 72.34
Appendix F – Proposed Changes to Trojan ISFSI License and Technical Specifications	Section 1.4.7, Terms, Conditions, and Specifications for Specific Licenses and CoCs in the Period of Extended Operation	10 CFR 72.240(c)
Appendix G – Proposed Changes to Trojan ISFSI SAR	Section 1.4.7, Terms, Conditions, and Specifications for Specific Licenses and CoCs in the Period of Extended Operation	10 CFR 72.240(c)

Table 1-1 - Regulatory Compliance Cross-Reference Matrix

License Renewal Application Section Number and Heading	NUREG-1927 R1 Section Number and Heading	CFR Requirement
Appendix H – PGE-1082, Trojan ISFSI Preliminary Radiological Decommissioning Plan, Proposed Revision 1	Section 1.4.2, Financial Information	10 CFR 72.30(b)(5) 10 CFR 72.30(c)