UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

August 9, 2023

Mr. Ken J. Peters
Senior Vice President and
Chief Nuclear Officer
Attention: Regulatory Affairs
Vistra Operations Company LLC
Comanche Peak Nuclear
Power Plant
6322 N FM 56
P.O. Box 1002
Glen Rose, TX 76043

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2 – REPORT FOR THE AGING MANAGEMENT AUDIT REGARDING THE LICENSE RENEWAL APPLICATION REVIEW (EPID NO. L-2022-RNW-0018)

Dear Mr. Peters:

By letter dated October 3, 2022 (Agencywide Documents Access and Management System (ADAMS) Package Accession No. ML22276A082), as supplemented by letters dated April 6, 2023 (ML23096A302) and April 24, 2023 (ML23114A377), Vistra Operations Company LLC (Vistra OpCo or the applicant) submitted an application for the license renewal of Renewed Facility Operating License Nos. NPF-87 and NPF-89 for the Comanche Peak Nuclear Power Plant (Comanche Peak) to the U.S. Nuclear Regulatory Commission (NRC). Vistra OpCo submitted the application pursuant to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants."

The NRC staff completed its aging management audit from December 12, 2022 – May 18, 2023, in accordance with the audit plan (ML22304A191), as supplemented by letter dated January 4, 2022 (ML22355A043). The audit report is enclosed.

If you have any questions, please contact me by email at Mark.Yoo@nrc.gov.

Sincerely,

/RA/

Mark Yoo, Senior Project Manager
License Renewal Projects Branch
Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation

Docket Nos. 50-445 and 50-446

Enclosure:
Audit Report

cc w/encl.: Listserv

SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT, UNITS 1 AND 2 – REPORT FOR THE AGING MANAGEMENT AUDIT REGARDING THE LICENSE RENEWAL APPLICATION REVIEW (EPID NO. L-2022-RNW-0018) DATED: AUGUST 9, 2023

DISTRIBUTION:
EMAIL:
PUBLIC
RidsNrrDnrl Resource
RidsACRS_MailCTR Resource
RidsRgn4MailCenter Resource
RidsRgn4Dnms Resource
RidsRgn4Drp Resource
RidsRgn4Drs Resource
RidsRgn4Ora Resource
RidsRgn4Opa Resource
RidsNrrOd Resource
RidsNrrPMComanchePeak Resource
RidsNrrDnrl
RidsNrrDnrlNlrp
RidsNrrDnrlNcsg
RidsNrrDnrlNvib
MYoo, NRR/DNRL
JHammock, NRR/DNRL
LGibson, NRR/DNRL
TTran, NMSS/REFS
TSmith, NMSS/REFS
BSmith, NRR/DNRL
BThomson, NRR/DNRL
DGalvin, NRR/DORL
MChawla, NRR/DORL
DRoth, OGC
RSkokowski, OED
MMcCoppin, OEDO
SBurnell, HQ/OPA
DMcIntyre, HQ/OPA
CWolf, OCA
LWilkins, OCA
VDricks, RGN IV/OPA
GWerner, RGN IV
DProulx, RGN IV
JMelfi, RGN IV
JEllegood, RGN IV
NDay, RGN IV
GPick, RGN IV
CSmith, RGN IV
NTaylor, RGN IV

jay.lloyd@luminant.com
todd.evans@luminant.com
ramiz.gilada@luminant.com
randy.harding@luminant.com
amit.kalia@luminant.com
taylor.smith@luminant.com

ADAMS Accession No.:
Pkg: ML23172A136
Letter: ML23172A146

OFFICE	PM:NLRP:DNRL	LA:NLIB:DNRL	BC:NPHP:DNRL	BC:NCSG:DNRL	BC:NVIB:DNRL
NAME	MYoo	SGreen	MMitchell	SBloom	ABuford
DATE	06/21/23	06/23/23	6/14/23	7/13/23	5/17/23
OFFICE	BC:ESEB:DEX	BC:ELTB:DEX	BC:SNSB:DSS	BC:NLRP:DNRL	PM:NLRP:DNRL
NAME	ITseng	JPaige	PSahd	LGibson	MYoo
DATE	5/24/23	5/4/23	5/2/23	7/28/23	8/9/23

OFFICIAL RECORD COPY

AUDIT REPORT

Aging Management Audit

Comanche Peak Nuclear Power Plant,
Units 1 and 2
License Renewal Application

December 12, 2022 – May 18, 2023

Division of New and Renewed Licenses
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission

Enclosure

U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NUCLEAR REACTOR REGULATION
DIVISION OF NEW AND RENEWED LICENSES

Docket Nos:	50-445 and 50-446
License No:	NPF-87 and NPF-89
Licensee:	Vistra Operations Company LLC (Vistra OpCo)
Facility:	Comanche Peak Nuclear Power Plant, Units 1 and 2
Locations:	Rockville, Maryland Glen Rose, Texas
Dates:	December 12, 2022 – May 18, 2023
Approved By:	Steven D. Bloom, Chief Corrosion and Steam Generator Branch Division of New and Renewed Licenses Angie R. Buford, Chief Vessels and Internals Branch Division of New and Renewed Licenses Lauren K. Gibson, Chief License Renewal Projects Branch Division of New and Renewed Licenses Matthew A. Mitchell, Chief Piping and Head Penetrations Branch Division of New and Renewed Licenses Jason Paige, Chief Long-Term Operations and Modernization Branch Division of Engineering and External Hazards Phillip Sahd, Chief Nuclear Systems Performance Branch Division of Safety Systems Ian Tseng, Chief Structural, Civil, Geotech Engineering Branch B Division of Engineering and External Hazards

Reviewers:	Name	Organization
	Thinh Dinh	PRA Licensing Branch B (APLB)/Division of Risk Assessment (DRA)
	Naeem Iqbal	APLB/DRA
	Adakou Foli	Electrical Engineering Branch/Division of Engineering and External Hazards (DEX)

Jorge Cintron-Rivera	Long-Term Operations and Modernization Branch (ELTB)/DEX
Gurcharan Matharu	ELTB/DEX
Matthew McConnell	ELTB/DEX
Liliana Ramadan	ELTB/DEX
Ata Istar	Structural, Civil, Geotech Branch (ESEB)/DEX
Bryce Lehman	ESEB/DEX
Andrew Prinaris	ESEB/DEX
George Thomas	ESEB/DEX
George Wang	ESEB/DEX
Zuhan Xi	ESEB/DEX
Brian Allik	Corrosion and Steam Generator Branch (NCSG)/Division of New and Renewed Licenses (DNRL)
Lydiana Alvarado	NCSG/DNRL
Reena Boruk	NCSG/DNRL
Tony Gardner	NCSG/DNRL
James Gavula	NCSG/DNRL
Joel Jenkins	NCSG/DNRL
Andy Johnson	NCSG/DNRL
Paul Klein	NCSG/DNRL
Greg Makar	NCSG/DNRL
Leslie Terry	NCSG/DNRL
Matthew Yoder	NCSG/DNRL
Mat Burton	Piping and Head Penetrations Branch (NPHP)/DNRL
Jay Collins	NPHP/DNRL
Robert Davis	NPHP/DNRL
Bart Fu	NPHP/DNRL
Varoujan Kalikian	NPHP/DNRL
Seung Min	NPHP/DNRL
Eric Reichelt	NPHP/DNRL
Ali Rezai	NPHP/DNRL
Karen Sida	NPHP/DNRL
Michael Benson	Vessels and Internals Branch (NVIB)/DNRL
David Dijamco	NVIB/DNRL
Carolyn Fairbanks	NVIB/DNRL
Emma Haywood	NVIB/DNRL
James Medoff	NVIB/DNRL
Cory Parker	NVIB/DNRL
John Tsao	NVIB/DNRL
On Yee	NVIB/DNRL
Christopher Jackson	Nuclear Systems Performance Branch (SNSB)/Division of Safety Systems (DSS)
Adam Rau	SNSB/DSS
Jessica Hammock	License Renewal Projects Branch (NLRP)/DNRL

Bill Rogers	NLRP/DNRL
Andrew Siwy	NLRP/DNRL
Mark Yoo	NLRP/DNRL

TABLE OF CONTENTS

ACRONYMS

ADAMS	Agencywide Documents Access and Management System
AMP	aging management program
AMR	aging management review
ART	adjusted reference temperature
ASME	American Society of Mechanical Engineers
BMI	Bottom-mounted instrumentation
CAP	corrective action program
CASS	cast austenitic stainless steel
CB	core barrel
CCW	component cooling water
CFR	*Code of Federal Regulations*
CLB	current licensing basis
CPNPP	Comanche Peak Nuclear Power Plant
CR	condition report
CRDM	control rod drive mechanism
CRGT	control rod guide tube
CUF	cumulative usage factor
CUF_{en}	environmentally-adjusted cumulative usage factor
DBD	design-basis document
DBE	design-basis event
dpm	drops per minute
EAF	environmentally assisted fatigue
EFPY	effective full power years
EI&C	electrical and instrumentation and controls
EPRI	Electric Power Research Institute
EQ	electrical qualification
FAC	Flow-Accelerated Corrosion
FBOC	fuel building overhead crane
FE	further evaluation
FSAR	final safety analysis report
FTEC	flux thimble tube eddy current
GALL-LR	generic aging lessons learned for license renewal
HELB	high-energy line break
HV	high-voltage
I&C	instrumentation and control

I&E	inspection and evaluation
IASCC	irradiation-assisted stress corrosion cracking
IE	irradiation embrittlement
IPA	integrated plant assessment
ISR/IC	irradiation-enhanced stress relaxation or creep
ISG	Interim Staff Guidance
ISI	inservice inspection
Kv	kilo Volt
LAR	license amendment request
LBB	leak-before-break
LRA	license renewal application
LR	license renewal
LTOP	low temperature overpressure protection
MRP	materials reliability program
MSIP	Mechanical Stress Improvement Process
NDE	nondestructive examination
NEI	Nuclear Energy Institute
NNS	nonnuclear safety
NRC	U.S. Nuclear Regulatory Commission
OE	operating experience
P/T	Pressure and temperature
PTLR	pressure-temperature limits report
PTS	pressurized thermal shock
PWR	pressurized-water reactor
PWROG	Pressurized-Water Reactor Owners Group
PWRVI	pressurized-water reactor vessel internals
PWRVIP	pressurized-water reactor vessel internals program
PWSCC	primary water stress corrosion cracking
RAI	request for additional information
RCI	request for confirmation of information
RCP	reactor coolant pump
RCPB	reactor coolant pressure boundary
RCS	reactor coolant system
RG	Regulatory Guild
RHR	residual heat removal
RIS	regulatory issue summary
RPV	reactor pressure vessel

RT_{NDT}	reference temperature nil ductility
RV	reactor vessel
RVI	reactor vessel internal
QA	quality assurance
SBO	station blackout
SC	structure and component
SCC	stress corrosion cracking
SE	safety evaluation
SG	steam generator
SLR	Subsequent License Renewal
SRP-LR	Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants
SS	stainless steel
SSC	system, structure, and component
SSI	safe-shutdown impoundment
SWIS	service water intake structure
SWOL	structural weld overlay
TE	thermal aging embrittlement
TLAA	time-limited aging analyses
UFW	upper flange weld
UGW	upper girth weld
UIA	upper internals assembly
USE	upper-shelf energy
UT	ultrasonic testing
VS	void swelling
VT	visual examination
WO	work order

Report for the Aging Management Audit
Comanche Peak Nuclear Power Plant, Units 1 and 2
License Renewal Application

1. Introduction

The U.S. Nuclear Regulatory Commission (NRC) staff conducted an aging management audit of Vistra Operations Company LLC (Vistra or the applicant) (1) plant-specific operating experience (OE), (2) methodology to identify the systems, structures, and components (SSCs) to be included within the scope of license renewal (LR) and subject to an aging management review (AMR) (Scoping and Screening Portion), and (3) aging management programs (AMPs), AMR items, time-limited aging analyses (TLAA) and associated bases and documentation as applicable (AMP and TLAA Portion) for the LR of Renewed Facility Operating License Nos. NPF-87 and NPF-89 for Comanche Peak Nuclear Power Plant (CPNPP, Comanche Peak, or the applicant).

The purpose of the plant-specific OE portion of the audit is to identify examples of age-related degradation, as documented in the applicant's corrective action program (CAP) database, and to provide a basis for the staff's conclusions on the ability of the applicant's proposed AMPs to manage the effects of aging in the period of extended operation. Vistra searched their OE database and provided the results for the associated AMPs and TLAAs for NRC staff review. Additional word searches were performed by Vistra upon NRC staff's request, and the results were provided to the NRC staff for review.

The purpose of the Scoping and Screening Portion of the audit is to evaluate the scoping and screening process as documented in the license renewal application (LRA), implementing procedures, reports, and drawings, such that the NRC staff:

- Obtains an understanding of the process used to identify the SSCs within the scope of LR and to identify the structures and components subject to an AMR.

- Has sufficient docketed information to allow the staff to reach a conclusion on the adequacy of the scoping and screening methodology as documented and applied.

The purpose of the AMP and TLAA Portion of the audit is to:

- Examine Vistra's AMPs, AMR items, and TLAAs for Comanche Peak;

- Verify Vistra's claims of consistency with the corresponding NUREG-1801, "Generic Aging Lessons Learned for License Renewal (GALL) Report," (GALL-LR Report) issued in December 2010, AMPs, and AMR items; and

- Assess the adequacy of the TLAAs.

Enhancements and exceptions will be evaluated on a case-by-case basis. The NRC staff's review of enhancements and exceptions will be documented in the safety evaluation (SE).

The regulatory basis for the audit was Title 10 of the *Code of Federal Regulations (*10 CFR) Part 54, "Requirements for Renewal of Operating Licenses for Nuclear Power Plants." The staff also considered the guidance contained in NUREG-1800, "Standard Review Plan for Review of

License Renewal Applications for Nuclear Power Plants" (SRP-LR), dated December 2010, and NUREG-1801. The SRP-LR allows an applicant to reference in its LRA the AMPs described in the GALL-LR Report. By referencing the GALL-LR Report AMPs, the applicant concludes that its AMPs correspond to those AMPs reviewed and approved in the GALL-LR Report and that no further staff review is required. If an applicant credits an AMP for being consistent with a GALL-LR Report program, it is incumbent on the applicant to ensure that the plant program contains all of the elements of the referenced GALL-LR Report program. The applicant should document this determination in an auditable form and maintain the documentation onsite.

2. Audit Activities

A regulatory audit is a planned, license-related activity that includes the examination and evaluation of primarily non-docketed information. A regulatory audit is conducted with the intent to gain greater understanding of an application, to verify information, and, if applicable, to identify information that will require docketing to support the staff's conclusions that form the basis of the licensing or regulatory decision.

The LRA states that every AMP in the LRA is consistent with the program elements of the GALL-LR Report. To verify this claim of consistency, the staff audited each AMP, including any enhancements or exceptions associated with an AMP.

The LRA discusses each time-limited aging analyses, the disposition of the TLAA in accordance with 10 CFR 54.21(c)(1), and the basis for that disposition. To verify that the applicant provided a basis to support its disposition of the TLAA, the staff audited each TLAA.

The staff also audited AMR items not Associated with an AMP to determine if the information in the LRA is consistent with the further evaluation information in the SRP-LR.

Furthermore, the staff audited the FSAR descriptions for each AMP and TLAA for consistency with the SRP-LR. During its audit, the staff interviewed the applicant's staff and reviewed documentation contained in the LRA and provided by the applicant via the ePortal. For the OE review, the applicant made a presentation on the process used to identify and evaluate the pertinent OE. Afterwards, the staff conducted its review of the applicant's methodology and OE by reviewing documentation contained in the LRA and ePortal.

Licensing conclusions or staff findings are not made in the audit reports since licensing and regulatory decisions cannot be made solely based on an audit. Therefore, items identified but not resolved within the scope of the audit will be followed using other NRC processes, such as requests for additional information (RAIs), requests for confirmation of information (RCIs), and public meetings. Licensing conclusions, staff findings, staff review of enhancement and exceptions, and resolution of audit items will be documented in the staff's SE.

The following sections discuss the LRA areas reviewed by the staff.

LRA Section 2.1, Scoping and Screening Methodology

Summary of Information in the Application. LRA Section 2 describes the process for identifying and determining the CPNPP SSCs that are included within the scope of LR. 10 CFR 54.21, "Contents of Application – Technical Information," requires that each application for LR contain an integrated plant assessment (IPA). The IPA must list, for SSCs within the scope of LR, the structures and components (SCs) that are subject to an AMR. 10 CFR 54.4(a), "Scope,"

provides the criteria for inclusion of SSCs within the scope of LR and 10 CFR 54.21(a)(1) requires that SCs within the scope of license, that are determined to be passive and not periodically replaced (long-lived), are subject to an AMR. The staff conducted the scoping and screening methodology audit, from March 20–22, 2023, to review the applicant's administrative controls governing implementation of the scoping and screening methodology and the technical basis for selected scoping and screening results for various plant SSCs.

Audit Activities.

A. Scoping Methodology

Staff Review of Information Sources, Implementing Documents and Scoping Methodology

The audit team reviewed the methodology used by the applicant to identify mechanical, structural, and electrical SSCs within the scope of LR (scoping). In addition, the audit team reviewed documentation pertinent to the scoping process. The audit team assessed whether the scoping methodology outlined in the LRA and implementing procedures was consistent with the requirements of 10 CFR Part 54.

The staff confirmed that the applicant's detailed LR program guidelines specified the use of the current licensing basis (CLB) source information in developing scoping evaluations. The staff reviewed pertinent information sources used by the applicant including the component database, the Final Safety Analysis Report (FSAR), maintenance rule basis documents, design-basis documents (DBD), LR drawings and station drawings.

The staff discussed the applicant's administrative controls for the component database and the other information sources used to verify system information. These controls are described and implemented by plant procedures. Based on a review of the administrative controls and on a sample of the system classification information contained in the applicable documentation, the staff determined that the applicant has established adequate measures to control the integrity and reliability of system identification and safety classification data; therefore, the staff determined that the information sources used by the applicant during the scoping and screening process provided a controlled source of system and component data to support scoping and screening evaluations.

The staff reviewed the implementing procedures and results reports used to support identification of SSCs that the applicant relied on to demonstrate compliance with the requirements of 10 CFR 54.4(a). The applicant's LR program guidelines provided a listing of documents used to support scoping evaluations. The staff determined that the design documentation sources, required to be used by the applicant's implementing procedures, provided sufficient information to ensure that the applicant identified SSCs to be included within the scope of LR consistent with the plant's CLB.

During the audit, the applicant stated that it evaluated the types of events listed in Nuclear Energy Institute (NEI) 95-10 (anticipated operational occurrences, design-basis accidents, external events, and natural phenomena) that were applicable to CPNPP. The staff reviewed the applicant's basis documents, which described design-basis conditions in the CLB, and addressed events defined by 10 CFR 50.49(b)(1) and 10 CFR 54.4(a)(1). The FSAR and basis documents discussed events, such as internal and external flooding, tornados, and missiles. The staff determined that the applicant's evaluation of DBEs was consistent with the SRP-LR.

The staff determined that the applicant's LR project personnel performed the scoping activities, in accordance with the applicable implementing documents, as follows:

- Mechanical scoping: The applicant used information contained in the plant component database to develop a list of plant systems and used CLB information, DBD, and station drawings to identify system intended functions. The intended functions were evaluated using the criteria of 10 CFR 54.4(a) to identify those systems to be included within the scope of LR.

- Structural scoping: The applicant used CLB information, DBD and maintenance rule basis documents to develop a structures list and to identify structural intended functions. The intended functions were evaluated using the criteria of 10 CFR 54.4(a) to identify those systems to be included within the scope of LR.

- Electrical scoping: The applicant used a bounding approach for plant electrical and instrumentation and control (EI&C) systems and included all EI&C systems, and EI&C components contained in mechanical systems, within the scope of LR by default.

Staff Verification of Scoping and Screening Results for Sampled Systems and Components

The staff performed a sampling review of the results of the applicant's implementation of the scoping and screening methodology to confirm that the results were in conformance with the applicable implementing documents and the requirements of 10 CFR Part 54.

The staff reviewed a sample of the scoping and screening implementation and performed walkdowns for portions of various systems, focusing on non-safety-related SSCs in proximity of SR SSCs. The staff reviewed applicable portions of the FSAR, scoping and screening reports, and LR drawings and performed walkdowns to confirm information contained in the LRA.

The staff performed a site walkdown to observe those buildings that were included within the scope of LR, determined to be subject AMR, and were included in AMPs. The staff walkdowns included the exteriors and interiors (as appropriate) of the turbine, emergency diesel generator, switchgear, auxiliary, and containment structures. The staff observed the plant effluent hold-up and monitoring tanks, which were in the proximity of structures that had been included within the scope of LR in accordance with the requirements of 10 CFR 54.4 (a)(1). The staff requested that the applicant provide documentation of the scoping evaluation for the plant effluent hold-up and monitoring tanks, however the applicant indicated that the tanks had not been included within the scope of LR and did not provide a scoping evaluation. Upon the applicant's further review, it was indicated to the staff that the applicant had determined that the plant effluent hold-up and monitoring tanks should be included within the scope of LR and subject to AMR, and that the LRA would be supplemented to include this information.

B. Screening Methodology

The audit team reviewed the methodology used by the applicant to determine if mechanical, structural, and electrical components within the scope of LR would be subject to an AMR (screening) and the applicant provided a discussion indicating the processes used for each discipline.

The staff determined that the applicant's LR project personnel performed the screening activities, in accordance with the applicable implementing documents, as follows:

- Mechanical components were subject to AMR if they met the criteria of being passive and long-lived and the components supported a system intended function, which required the system to be included within the scope of LR. The applicant had identified the component level intended functions (e.g., pressure boundary, heat transfer), which supported a system intended function and highlighted the in-scope components that were subject to AMR on the LR drawings. Mechanical components that were included within scope in accordance with 10 CFR 54.4(a)(2) and subject to AMR were also identified on the LR drawings.

- Structural components had been determined by the applicant to be inherently passive and long-lived and were grouped by common structural intended functions (e.g., support, enclosure protection, fire barrier, flood barrier, pressure boundary). The components were treated as bulk commodities based on material of construction for the purposes for the AMR.

- Electrical and instrumentation and control components, which were included within the scope of renewal in accordance with the bounding method used for EI&C, were evaluated in accordance with the guidance contained in NEI 95-10 to identify the passive and long-lived components subject to AMR.

The audit team noted that the applicant's screening process was performed in accordance with its written requirements and was consistent with the guidance provided in the SRP-LR and NEI 95-10. The audit team determined that the screening methodology was consistent with the requirements of 10 CFR Part 54 for the identification of SSCs that meet the screening criteria of 10 CFR 54.21(a)(1).

C. Aging Management Program Quality Assurance Attributes

The audit team reviewed the AMP quality assurance (QA) elements to verify consistency with the staff's guidance described in SRP-LR, Appendix A, "Branch Technical Positions," Section A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)." The AMP QA elements are corrective action, confirmation process, and administrative controls.

The applicant described the AMP QA elements in LRA Appendix A, "Final Safety Analysis Report Supplement," Section A.1.3, "Quality Assurance Program and Administrative Controls," and LRA Appendix B, "Aging Management Programs," Section B.1.3, "Quality Assurance Program and Administrative Controls," and the individual AMPs.

LRA Appendix A stated that the QA Program for CPNPP implements the requirements of 10 CFR Part 50, Appendix B, and will be consistent with the summary in Appendix A.2, "Quality Assurance for Aging Management Programs (Branch Technical Position IQMB-1)," of NUREG-1800. The QA Program includes the elements of corrective action, confirmation process, and administrative controls, and is applicable to nuclear safety-related SSCs. CPNPP will enhance the QA Program to include nonnuclear safety (NNS) SSCs that are subject to AMR for LR.

LRA Appendix B also stated that the CPNPP QA Program implements the requirements of 10 CFR Part 50, Appendix B, "Quality Assurance Requirements for Nuclear Power Plants and Fuel Reprocessing Plants" and is consistent with the summary in Appendix A.2 of

NUREG-1800. The CPNPP QA Program includes the elements of corrective action, confirmation process, and administrative controls, and is applicable to nuclear safety-related SSCs. CPNPP will enhance the QA Program to include NNS SSCs that are subject to AMR for LR.

Based on the audit team's evaluation, review of the AMPs and information contained in LRA Appendix A and Appendix B, the staff determined that the AMP QA elements are consistent with the staff's position regarding QA for aging management.

Documents Reviewed. The table below lists documents that were reviewed by the staff and were found relevant. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
Report No. LUM00020-REPT-001	System and Structure Scoping Results	Revision 1
Report No. LUM00020-LRPI-001	System and Structure Scoping	Revision 0
Report Nos. LUM00020-Reports 004 – 034	Screening and Aging Management Reports	Various
Boundary Drawing LR-STRUCT-01	Plot Plan	Revision 2

LRA AMP B.2.2.1, Fatigue Monitoring

Summary of Information in the Application. The LRA states that AMP B.2.2.1, "Fatigue Monitoring," is an existing program with enhancements that is consistent with the program elements in GALL-LR Report (NUREG-1801, Revision 2) AMP X.M1, "Fatigue Monitoring."

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this enhanced program, and the staff's audit addressed only the program elements described in the applicant's basis document.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
TBX/TCX-IPA-AMP-X.M1	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Fatigue Monitoring Aging Management Program Basis Document	Revision 2 12/14/2022
WCAP-18711-P/NP	Comanche Peak Units 1 and 2 NUREG/CR-6260 Environmentally Assisted Fatigue Results in Support of First License Renewal	Revision 1 08/18/2022
LTR-SDA-II-21-30-P/NP	Comanche Peak Units 1 & 2 License Renewal: Primary Equipment and Piping Environmentally Assisted Fatigue Screening Evaluation Results	Revision 1 01/11/2022
LTR-SDA-II-21-28	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal – 60 Year Transient Projections for Class 1 RCS and Auxiliary Systems, Class 2 Heat Exchangers, and Class 1, 2 and 3 Valves	Revision 2 08/05/2022
STI-706	Station Administration Manual: Transient and Fatigue Cycle Monitoring	Revision 2 09/12/2014

Document	Title	Revision / Date
STI-706.01	Station Instruction Manual: Transient and Fatigue Cycle Monitoring	Revision 0 09/23/2014
CN-MRCDA-07-42	Comanche Peak Unit 1 and Unit 2 Power Uprate – Reactor Vessel Evaluation	Revision 1 08/07/2007
CN-RIDA-07-36	Comanche Peak Unit 1 and Unit 2 Reactor Internal Components Evaluation	Revision 0 2007
CN-SDA-II-19-014	Comanche Peak Units 1 and 2 Thermal Event and Fatigue Monitoring Update for 1/1/2018 to 12/31/2018	Revision 0 07/19/2019
CN-SDA-21-011	Comanche Peak Units 1 & 2 License Renewal: Primary Equipment and Piping Environmentally Assisted Fatigue Screening Evaluation Results	Revision 1 12/01/2021
ER-ME-103	Summary Information: Thermal Monitoring Data and Evaluation	Revision 14 04/02/2018
LTR-SDA-II-21-02	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Fatigue AOR Usage and Material Inputs	Revision 5 08/20/2021
LTR-SDA-II-21-32-P/NP	Comanche Peak Unit 1 and 2 License Renewal: Class 2 and 3 Piping Fatigue Evaluation	Revision 2 08/10/2022
CN-SDA-21-012	Comanche Peak Unit 1 and Unit 2 60-Year Transient Cycle Projections	Revision 3 08/05/2022
LTR-SDA-II-21-42-P	Comanche peak Unit 1 and 2 License Renewal: ASME Code Class 1 Piping High Energy Line Break (HELB) TLAA Evaluation	Revision 1 12/5/2022
LTR-SEE-21-31	Comanche Peak, Units 1 and 2, Transient Set and Cycles Considered in License Renewal Project	Revision 2 11/04/2021
WCAP-16477-P	Addendum to Analytical Reports for the Comanche Peak Unit No. 1 Reactor Vessel (Replacement Steam Generator Project)	September 2005
CR-2012-003683	Strategic Self-Assessment of Thermal Stratification and Fatigue Cycle Monitoring	04/11/2012
CR-2014-00818	Several Reactor Vessel Closure Stud/Hole Threads Have Incurred Damage Over the Life of the Plant Resulting in Stud/Hole Thread Loss	07/16/2014
CR-2015-002780	015 Strategic Self-Assessment of the Reactor Coolant System (RCS) Materials Management Program	03/26/2015
TR-2021-000782	Track and Document the Planning, Performance and Reporting for 2021 Self-Assessment for the Thermal Stratification Monitoring Program	02/01/2021
CR-2011-007576	Review and Implement (NEI 03-08) Needed Requirements of MRP-146, Rev. 1	07/05/2011

During the audit, the staff verified the applicant's claim that the "detection of aging effects" and "monitoring and trending" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements.

The staff found that, for the "scope of program," "preventive actions," "parameters monitored or inspected," "acceptance criteria," and "corrective actions" program elements sufficient information was not available to verify whether they were consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

During the audit, the staff made the following observations.

- In relation to the "scope of program" and "preventive actions" program elements, Enhancement 1 states that the program will be modified to include environmentally-

assisted fatigue (EAF) analyses for locations that have been determined to be sentinel (limiting) locations through the EAF screening evaluation in addition to those listed in NUREG/CR-6260. The applicant's approach for EAF analyses is described in LRA Section 4.3.4. However, the LRA does not clearly describe whether the applicant will use a staff-approved flaw tolerance analysis methodology (e.g., ASME Code, Section XI, Appendix L) if the applicant performs a flaw tolerance analysis to manage the effects of fatigue based on the results of the EAF analyses that are described in Enhancement 1.

- In relation to the "preventive actions" program element, Enhancement 2 states that the program will be modified, as needed, to monitor the environmental effects at the sentinel locations. However, the LRA does not clearly describe whether this enhancement addresses the monitoring of chemistry parameters that are used as input to the environmental cumulative usage factor (CUF_{en}) calculations. The staff also needs clarification on whether the monitoring in this enhancement will ensure that the CUF_{en} values do not exceed the design limit of 1.0 during the period of extended operation.

- In relation to the "parameters monitored or inspected" program element, Enhancement 3 states that the program will be revised to account for additional critical thermal and pressure transients for components that have been identified to have a fatigue TLAA. During the audit, the applicant explained that the transients, which will be added to the cycle monitoring as part of this enhancement, will be based on the EAF analyses that are described in Enhancement 1. The applicant also indicated that the design transients in LRA Tables 4.3.1-2, 4.3.1-3 and 4.3.1-4 will be compared with the transients under cycle monitoring in this enhancement. However, the LRA does not clearly address how the applicant will determine the transients that are not be monitored for the period of extended operation (i.e., technical basis for not monitoring a transient).

- In relation to the "acceptance criteria" program element, Enhancement 4 states that the program will be modified to include acceptance criteria based on the 60-year cycle projections used in the supporting analyses. However, the LRA does not clearly describe whether this enhancement includes an acceptance criterion to ensure that CUF_{en} values do not exceed the design limit of 1.0.

- In relation to the "corrective actions" program element, Enhancement 5 states that the program will be modified to provide clarity on when to initiate corrective action. However, the enhancement does not clearly explain what clarity will be specifically provided regarding when to initiate corrective action. The staff also need clarification on whether this enhancement includes corrective actions for new additional high-energy line break (HELB) locations (e.g., additional HELB analysis for newly identified break locations and their effects during the period of extended operation).

The staff also audited the description of the LRA Fatigue Monitoring AMP provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA AMP B.2.2.2, Environmental Qualification of Electric Components

Summary of Information in the Application. The LRA notes that AMP B.2.2.2, "Environmental Qualification of Electric Components," is an existing program with an enhancement that will be consistent with the program elements in GALL-LR Report X.E1, "Environmental Qualification (EQ) of Electric Components."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title/Description	Revision / Date
LUM00020-REPT-038	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Environmental Qualification of Electric Components Aging Management Program Basis Document	Revision 0
LUM00020-REPT-081	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Time-Limited Aging Analysis-Environmental Qualification of Electrical Equipment	Revision 1
DBD-EE-031	Comanche Peak Nuclear Power Plant Units 1 and 2 – Design-Basis Document - Environmental Qualification of Safety-Related Electrical Equipment	Revision 9
TR-2018-000995	Tracking Report - Track Items Associated with the 2018 EQ Excellence Plan	Created: 02/05/2018
TR-2020-001719	Tracking Report - Review EPRI Technical Report 'A Review of Equipment Aging Theory and Technology: Revision 1 of NP-1558' (Product ID 3002018283) for incorporation into the EQ program	Closed: 10/18/2020

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored/inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP, or will be consistent after implementation of the identified enhancement.

The staff also audited the description of the LRA Environmental Qualification of Electric Components provided in the FSAR supplement. The staff verified that the description is consistent with the acceptance criteria provided in SRP-LR Section 4.4.3.2.

LRA AMP B.2.3.1, ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD

Summary of Information in the Application. The LRA states that AMP B.2.3.1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, & IWD" is an existing program consistent with the program described in GALL-LR Report AMP XI.M1, "ASME Section XI Inservice Inspection, Subsections IWB, IWC, & IWD."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-039	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal ASME Section XI Inservice Inspection, Subsections IWB, IWC, & IWD Aging Management Program Basis Document	Revision 1 08/20/2020
CP-201900257	Unit 1 – Third Interval ASME Section XI ISI Program Plan	Revision 2 04/17/2019
CP-201800909	Unit 2 – Third Interval ASME Section XI ISI Program Plan	Revision 2 12/20/2018
CR-2016-003811	During ISI VT-3 Inspection for Pre-Outage 1RF18, Strut SW-1-132-046-A43R (ISI Number SW-1-AB-001-H1) Failed Visual Exam	Occurrence Date: 04/27/2016 Closed Date: 06/06/2016

CR-2014-003902	White Residue Found During 2RF14 ISI Exam of Control Rod Drive Penetration 77 On Top of Unit 2 Reactor Vessel Head	Occurrence Date: 04/05/2014 Closed Date: 04/12/2014
CR-2013-003784	During ISI LPT of Head-to-Shell Weld on the Letdown Reheat Heat Exchanger, TBX-TRAHLR-01, a Linear Indication Was Found	Occurrence Date: 04/08/2013 Closed Date: 08/06/2013
CR-2014-002396	IN 2014-02 “Failure to Properly Pressure Test Reactor Vessel Flange Leak Off Lines”	Occurrence Date: 02/28/2014 Closed Date: 06/16/2014
CR-2001-002837	The Potential for Alloy 600 Cracking in PWR Reactor Vessel Head Penetrations Has Been Identified by the NRC in Bulletin 2001-01	Occurrence Date: 12/04/2001 Closed Date: 01/13/2005
CR-2013-006188	IDDEAL Program Incorrectly Identifies Piping Welds Exam Category	Occurrence Date: 06/06/2013 Closed Date: 09/30/2013
CR-2019-009042	For Station Service Water System 30” Buried Supply Piping, Test Instructions Fail to Specify and Document the Use of Temporary Flow Instrumentation and the Basis for Accepting Test Results is Not Well Documented	Occurrence Date: 11/21/2019 Closed Date: 10/01/2020
TR-2020-001247	IR Written to Track Implementation of NSAL-20-1, (Reactor Vessel Head Control Rod Drive Mechanism Penetration Thermal Sleeve Cross-Sectional Failure)	Occurrence Date: 11/21/2019 Closed Date: 10/01/2020
EPG-731	CPNPP Station Engineering Programs Manual, ASME Section XI Repair / Replacement Activities	Revision 6 03/16/2021
STA-730	CPNPP Station Administration Manual, Corrosion Monitoring Program	Revision 5 02/02/2010
EPG-703	CPNPP Engineering Programs Manual, Inservice Inspection Program	Revision 4 08/03/2014

During the audit, the staff verified the applicant’s claim that the “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” “acceptance criteria,” and “corrective actions” program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements.

The staff also audited the description of the LRA ASME Section XI Inservice Inspection, Subsections IWB, IWC, & IWD Program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.2, Water Chemistry

Summary of Information in the Application. The LRA states that AMP B.2.3.2, “Water Chemistry,” is an existing program with one enhancement and one exception that will be consistent with the program elements in GALL-LR Report AMP XI.M2, “Water Chemistry.”

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-040	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Water Chemistry Aging Management Program Basis Document	Revision 1
CHM-120	Primary Chemistry	Revision 15
CHM-130	Secondary Chemistry	Revision 10
N/A	Primary Chemistry Strategic Plan	Revision 16
N/A	Secondary Chemistry Strategic Plan	Revision 10
STA-609	Reactor Coolant Water Chemistry Control Program	Revision 14
STA-610	Secondary Water Chemistry Control Program	Revision 15
TR-2020-004330	Perform a Self-Assessment of Primary Chemistry	Occurrence date 06/08/2020 Closed date 01/25/2021
TR-2017-000399	This TR is created to track action items and document a targeted self-assessment on Secondary Chemistry	Occurrence date 01/10/2017 Closed date 05/30/2017
TR-2021-001760	Unit 2 Steam Generator chemistry is showing indications of a possible condenser tube leak	Occurrence date 03/10/2021 Closed date 10/27/2022
TR-2019-004928	Evaluation of corrosion for Unit 1 steam generators during 1RF20 establishing wet layup chemistry	Occurrence date 05/13/2019 Closed date 06/18/2019

During the audit, the staff verified the applicant's claim that the "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements.

The staff also verified the applicant's claim that aspects of the "scope of program," program element not associated with the exception identified in the LRA or by the staff during the audit are consistent with the corresponding program elements in the GALL-LR Report AMP.

The staff also audited the description of the LRA Water Chemistry Program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.3, Reactor Head Closure Stud Bolting

Summary of Information in the Application. The LRA states that AMP B.2.3.3, "Reactor Head Closure Stud Bolting," is an existing program with enhancements and exceptions that will be consistent with the program elements in GALL-LR Report AMP XI.M3, "Reactor Head Closure Stud Bolting."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title or Description	Revision / Date
LUM00020-REPT-041	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal - Reactor Head Closure Stud Bolting Aging Management Program Basis Document	Revision 1
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0
CN-MRCDA-14-14 (PROPRIETARY)	Comanche Peak Units 1 and 2 Reactor Vessel Closure Thread Damage Evaluation	Revision 0
CR-2014-008181	Condition report on thread damage	07/16/2014 (Occurrence) 07/27/2015 (Closure)
CR-2019-003497	Condition report on water in stud holes	04/26/2019 (Occurrence) 08/20/2019 (Closure)
CR-2017-004534 and CR-2021-006481	Condition reports related to stuck studs	April 2017 and October 2021
TR-2017-012881	Tracking report related to alternative lubrication for the bottom threads of the reactor vessel head studs	11/21/2017 (Occurrence) 09/20/2018 (Closure)
CR-2013-000912	Condition report on HydraNuts	01/28/2013 (Occurrence) 07/31/2013 (Closure)
MED-PCE-11320	Engineering Report for the Evaluation of the Stuck Stud in the TU Electric Comanche Peak Unit No. 1 Reactor Vessel	November 1991
PCE-91-0055 (Appendix B of MED-PCE-11320)	Out-of-Service Stud Evaluation	November 1991
1RF20 ISI Report.pdf	Inservice Inspection Report at the Comanche Peak Nuclear Power Plant Unit 1	May 5, 2019
2RF19 ISI Report.pdf	Inservice Inspection Report at the Comanche Peak Nuclear Power Plant Unit 2	October 29, 2021
MSM-C1-9901	Reactor Vessel Head Removal and Installation (Unit 1)	09/30/20, Revision 7
MSM-C2-9901	Reactor Vessel Head Removal and Installation (Unit 2)	09/14/21, Revision 10

During the audit, the staff verified the applicant's claim that the "scope of program," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP. During the audit, the staff also verified the applicant's claim that the "preventive actions," and "corrective actions" program elements of the LRA AMP will be consistent with the corresponding elements of the GALL-LR Report AMP after implementation of the identified enhancements. In addition, the staff will consider issuing an RAI regarding the enhancement on the "preventive actions" program element.

The staff noted the exception to the "preventive actions" program element. The staff verified the applicant's claim that the aspects of this program element not associated with the exception are consistent with the corresponding program element in the GALL-LR Report AMP.

During the audit, the staff made the following observations:

- The AMP basis document (LUM00020-REPT-041, Revision 1) states that the studs, nuts, and washers of CPNPP Unit 1 and the studs of CPNPP Unit 2 meet GALL-LR Report AMP guidance criterion of having actual yield stress values of less than 150 ksi. The AMP basis document also states that the nuts and washers of CPNPP Unit 2 and HydraNuts and washers of both units have been identified as having some yield strength values from test results as high as 151.75 ksi but the average yield strength value is less

than 150 ksi; and that HydraNuts and washers are not currently used at both units for reactor head stud closure bolting application.

- The AMP basis document states that CPNPP reactor head closure stud bolting configuration does not have bushings.

- No recordable indications in the reactor head closure studs were found, as documented in the inservice inspection reports.

- Condition report CR-2014-008181 documents the plant-specific OE on thread damage.

- The staff will consider issuing an RAI in order to obtain the information to resolve OE related to thread damage.

The staff also audited the description of the LRA Reactor Head Closure Stud Bolting AMP (LRA Section A.2.2.3) provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.4, Boric Acid Corrosion

Summary of Information in the Application. The LRA states that AMP B.2.3.4, "Boric Acid Corrosion," is an existing program that is consistent with the program elements in GALL-LR Report AMP XI.M10, "Boric Acid Corrosion."

Audit Activities. In addition to the OE documentation contained in the LRA and ePortal, the staff conducted additional searches of the applicant's CAP database, using alternate keywords.

The table below lists documents relevant to the program that were reviewed by the staff during the audit. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-042	Boric Acid Corrosion Aging Management Program Basis Document	Revision 2
LUM00020-REPT-003	OE Review	Revision 0
STA-737	Boric Acid Corrosion Detection and Evaluation	Revision 8
STI-737.01	Boric Acid Corrosion Detection and Evaluation, Attachment 8A, Principal Locations of Potential Boric Acid Corrosion	Revision 1
N/A	BAAC Program Health Scorecard – 2021 First Half	January 26, 2021
N/A	BAAC Program Health Scorecard – 2020 First Half	February 5, 2020
N/A	BAAC Program Health Scorecard - 2019 First Half	February 1, 2019
CR-2017-002887	While performing OPT-102A/B-7 found boric acid leaks	March 4, 2017
CR-2017-005171	Corrosion discovered on Unit 1 CVCS pipe supports	April 17, 2017
CR-2018-002385	Replace X-FIS-4847A due to small boric acid leak	March 28, 2018
CR-2019-003467	Boric acid leak identified during Unit 1 mode 3 boric acid inspection	April 25, 2019
CR-2019-003727	Excessive discolored boric acid identified on valve flange after insulation removal	May 1, 2019
CR-2020-000145	Results of boric acid inspection on 2-02 containment spray heat exchanger	January 7, 2020
CR-2021-0008469	Boric acid leaks identified during quarterly system walk down	December 15, 2021

During the audit, the staff verified that applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and

trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also reviewed the FSAR summary of the Boric Acid Corrosion program provided in LRA Appendix A, Section A.2.2.4. The staff verified that this summary is consistent with the associated FSAR supplement in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.5, Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-Induced Corrosion in Reactor Coolant Pressure Boundary Components

Summary of Information in the Application. The LRA states that AMP B.2.3.5, "Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-Induced Corrosion in Reactor Coolant Pressure Boundary Components," is an existing program that is consistent with the program elements in GALL-LR Report AMP XI.M11B, "Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-Induced Corrosion in Reactor Coolant Pressure Boundary Components."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-043	Cracking of nickel alloy components and loss of material due to boric acid-induced corrosion in reactor coolant pressure boundary components aging management program basis document	Revision 2, 08/20/2022
TPEPG_EPG-9.07	Reactor Vessel Lower Head – Bottom-Mounted Instrumentation (BMI) Penetration Visual Examination	Revision 1, 07/30/2020
TPEPG_EPG-9.08	Reactor Vessel Closure Head Visual Examination	Revision 3, 09/22/2021
TPEPG_EPG-9.02	Comanche Peak Nuclear Power Plant (CPNPP) Alloy 600 management program	Revision 3, 5/17/2019
OER-2018-009051	Operating experience report	07/22/2020
TPEPG_EPG-756	Nondestructive Examination Program	Revision 6, 11/21/2016
CPNPP DM Weld Visual Examination	CPNPP Dissimilar Metal DM Weld Visual Examination	Revision 6, 04/12/2016
CR-2013-002005_1	Nondestructive Evaluation Improvement Focus Group Extent of Condition Actions in Response to North Anna Dissimilar Metal Weld Operating Experience	02/27/2013
LTR-SDA-II-20-19	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal – Identification of Time Limited Aging Analyses	Revision 0, 07/12/2021

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The NRC staff audited the applicant's information regarding compliance with Table 1, Note 10 of ASME Code Case N-770-5, "Alternative Examination Requirements and Acceptance Standards for Class 1 PWR Piping and Vessel Nozzle Butt Welds Fabricated with UNS N06082 or UNS W86182 Weld Filler Material With or Without Application of Listed Mitigation Activities Section XI, Division 1," and the applicant's AMP to address structural weld overlays (SWOLs) dissimilar metal butt welds in the reactor coolant pressure boundary. The applicant noted the NRC safety evaluation (SE) for the installation of the SWOLs (ML072270704) and WCAP-16681-P, Revision 2 showed compressive stress on each of the SWOLs to address the

concern of primary water stress corrosion cracking initiation or growth from the material of concern. The NRC staff reviewed and compared the WCAP-16681-P, Revision 2 weld residual stress profiles with similar geometries in independent calculations performed in NRC-sponsored research under, "Evaluation of Full Structural and Optimized Weld Overlays As Mitigation Strategies for Primary Water Stress Corrosion Cracking in Pressurized Water Reactors," Lee Fredette and Paul Scott, Battelle Columbus, April 2010 (ML101260540). Through this review the NRC staff found the applicant's current AMP is effective to address implementation of Table 1, Note 10 of ASME Code Case N-770-5.

The staff also audited the description of the LRA Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-Induced Corrosion in Reactor Coolant Pressure Boundary Components provided in the FSAR supplement. The NRC staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.6, Thermal Aging Embrittlement of Cast Austenitic Stainless Steel

Summary of Information in the Application. The LRA states that AMP B.2.3.6, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel," is a new condition monitoring program that will be consistent with the program elements in GALL-LR Report AMP XI.M12, "Thermal Aging Embrittlement of Cast Austenitic Stainless Steel."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
TBX-TCX-IPA-AMP-XI.M12	Comanche Peak Units 1 and 2 License Renewal, Thermal Aging Embrittlement of CASS Program Basis Document	Revision 1 January 3, 2023
LTR-SDA-II-21-28	Comanche Peak Units 1 and 2 License Renewal, 60 Year Transient Projections, for Class 1 RCS and Auxiliary Systems, Class 2 Heat Exchangers, and Class 1, 2, and 3 Valves	Revision 2 August 5, 2022
CR2012-002117	Strategic Self-Assessment of the RCS Materials Management System	Revision 1
LTR-SDA-20-093-NP	Comanche Peak Units 1 and 2 Reactor Coolant Pump Casings ASME Code Case N-481 Analysis for 60-Year License Renewal	Revision 0 April 14, 2021
WCAP-10528-NP	Technical Justification for Eliminating Large Primary Loop Pipe Rupture as the Structural Design-Basis for Comanche Peak Units 1 and 2 for the License Renewal Program (60 years)	Revision 3
LTR-SDA-20-087-NP	Flaw Tolerance Evaluation for Susceptible Reactor Coolant Loop Cast Austenitic Stainless Steel Piping Components in Comanche Peak Units 1 and 2 for 60-Year License Renewal	Revision 0 September 24, 2021

For the audit of the "operating experience" program element, the staff reviewed the OE provided by the applicant in the AMP basis document and on the ePortal. The staff performed a search of the operating experience database using keywords: "flaw tolerance evaluation," "N-481," "pump casing," "weld overlay," "CF8M," "thermal aging," "surge nozzle examination," "embrittlement," "CASS" and "cast stainless steel." The staff will document its review of relevant OE in the SE.

The staff also audited the description of the LRA AMP provided in the FSAR supplement. The staff verified that this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.7, PWR Vessel Internals

Summary of Information in the Application. LRA states that AMP B.2.3.7, PWR Vessel Internals, is a new program (abbreviated PWRVIP) that will be consistent with the program elements in AMP XI.M16A, "PWR Vessel Internals," of GALL-LR Report, Revision 2, as modified in Interim Staff Guidance (ISG) SLR-ISG-2021-01-PWRVI (ML20217L203). The staff also audited LRA Table 3.1-1, "Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System," and Table 3.1.2-2, "Reactor Vessel Internals – Summary of Aging Management Evaluation."

Audit Activities. In addition to the OE documentation contained in the LRA and ePortal, the staff conducted additional searches of the applicant's CAP database, using alternate keywords.

The table below lists documents that were reviewed by the staff and were found relevant to the AMP B.2.3.7 and to the AMR of PWR Vessel Internals. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LRA Section B.2.3.7	PWR Vessel Internals	Revision 0
EPRI Non-Proprietary Report No. 3002017168	Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines (MRP-227, Revision 1-A)	June 2020 ML20175A112
NRC Safety Evaluation	Final Safety Evaluation for Electric Power Research Institute Topical Report MRP-227, Revision 1, Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluations Guideline	April 25, 2019 ML19081A001
Nuclear Energy Institute (NEI) Non-Proprietary Report No. 03-08	Guidelines for the Management of Materials Issues	Revision 4 ML20315A536
NRC Interim Staff Guidance (ISG) No. SLR-ISG-2021-01-PWRVI	Updated Aging Management Criteria for Reactor Vessel Internal Components for Pressurized-Water Reactors	January 2021 ML20217L203
EPRI Proprietary Report No. 3002010399, MRP-228, Revision 3	Materials Reliability Program: Inspection Standard for PWR Internals (MRP-228, Rev. 3).	November 2018 Proprietary, ML19081A064; Non-proprietary, ML19081A058
LUM00020-REPT-005	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Screening and Aging Management Review Report for the Reactor Vessel Internals	Revision 1
LUM00020-REPT-044	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal PWR Vessel Internals Aging Management Program Basis Document	Revision 1
PWROG OG-21-160	PWR Owners Group NEI 03-08 Needed Guidance: PWR Lower Radial Support Clevis Insert X-750 Bolt Inspection Requirements.	September 2021
PWROG-15105-NP	PWR RV Internals Cold Work Assessment.	Revision 0, April 2016 ML16222A300
WCAP-17451-P, Rev. 1	Reactor Internals Guide Tube Wear-Westinghouse Domestic Fleet Operational Projections.	Revision 1, December 2013

Document	Title	Revision / Date
LR-ISG-2011-04	Final Updated Aging Management Criteria for Reactor Vessel Internal Components for Pressurized Water Reactors	ML12270A436
NUREG-1801	Generic Aging Lessons Learned (GALL) Report,"	Revision 2, December 2010 ML103490041
NUREG-1800	Standard Review Plan for Review of License Renewal Applications for Nuclear Power Plants, SRP-LR	Revision 2, December 2010 ML103490036
CPNPP FSAR	Final Safety Analysis Report.	Amendment 111
EPRI Letter No. MRP 2018-022	Transmittal of MRP-191-SLR Screening, Ranking and Categorization Results and Interim Guidance in Support of Subject License Renewal at U.S. PWR Plants	August 31, 2018 ML19081A061
NRC Subsequent License Renewal Interim Staff Guidance (SLR-ISG) Document No. SLR-ISG-2021-01-PWRVI	Updated Aging Management Criteria for Reactor Vessel Internal Components for Pressurized-Water Reactors	Jan. 8, 2021 ML20217L203.
NUREG-2191, Volume 1	Generic Aging Lessons Learned for Subsequent License Renewal (GALL-SLR) Report	Feb. 7, 2017 ML17187A031
Electric Power Research Institute (EPRI) Report No. 3002017168, MRP-227, Revision 1-A	Materials Reliability Program: Pressurized Water Reactor Internals Inspection and Evaluation Guidelines MRP-227, Revision 1-A	December 2019 ML20175A112
LRA Table 3.1-1	Summary of Aging Management Programs for Reactor Vessel, Internals, and Reactor Coolant System	October 3, 2022
LRA Table 3.1.2-2	Reactor Vessel Internals – Summary of Aging Management Evaluation	October 3, 2022

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program element(s) of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

During the audit, the staff verified that the applicant addressed the guidance in SRP-LR Section A.1.2.3 for the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP.

During the audit, the staff made following observations regarding AMP B.2.3.7:

- Audit AMP Topic No. 1

  The staff observed that, in relation to the "detection of aging effects" program element of AMP XI.M16A of GALL-LR Report, Revision 2, LRA Section B.2.3.7 indicates that the CPNPP AMP will implement the guidelines in PWR Owners Group (PWROG) letter OG-21-160 as an additional guideline to address clevis insert degradation. The OG-21-160 report provides new guidance for ultrasonic testing (UT) inspections of the clevis insert bolts. The current aging management basis for clevis insert bolts and wear surfaces in Item W14 in Table 4-9 of MRP-227, Revision 1-A only calls for VT-3 visual inspections per the ASME Code, Section XI, of the clevis insert bolts and wear surfaces, as modified by the VT-3 visual examination criteria in Westinghouse Bulletin No. TB-14-5. The staff notes that Item W14 in Table 4-9 of MRP-277, Revision 1-A does not

include or reference use of OG-21-160, although the OG-21-160 guidance was added to Item W14 in MRP 2018-022.

During the audit, the staff asked the applicant to discuss how Item W14 in Table 4-9 of MRP-227, Revision 1-A will be implemented during the period of extended operation for the CPNPP units and the scope of supplemental Westinghouse or PWROG guidance that will be implemented under the inspection and evaluation (I&E) criteria. In addition, if the guidance in OG-21-160 will be implemented in addition to Westinghouse Bulletin No. TB-14-5, the staff asked the applicant to discuss whether OG-21-160 will be identified as an Enhancement of Item W14 in Table 4-9 of MRP-227, Revision 1-A and an enhancement as part of LRA Section B.2.3.7. The applicant stated that currently, the PWRVI AMP is written to be consistent with the guidance contained in MRP-227, Revision 1-A. However, as stated in the AMP description in LRA Section B.2.3.7, the program will implement the requirements of Revision 1-A or the latest NRC-approved version of MRP-227. The applicant further stated that the PWRVI AMP at CPNPP will be implemented in accordance with NEI 03-08. Therefore, the applicant will evaluate NEI 03-08 "Needed" guidance, such as OG-21-160, and track the issue in its Alloy 600, ISI, and Reactor Internals Plan. Given that GALL-LR Report AMP XI.M16A permits use of supplemental methodologies in addition to MRP-227, Revision 1-A and that OG-21-160 provides additional guidance for performing UT inspections of clevis insert bolts, the staff considers this technical topic to be closed for the audit.

- Audit AMP Topic No. 2

  The staff observed that, in relation to "detection of aging effects," "monitoring and trending," and "operating experience" program elements of AMP XI.M16A, LRA Section B.2.3.7 discusses industry OE of upper and lower assembly fuel alignment pins that have shown surface breaking indications induced by wear, as evaluated in Westinghouse Technical Bulletin No. TB-14-6. The applicant indicated that recommendations for managing wear in the pins is given in Westinghouse Bulletin TB-14-6 but clarified that the guidance only applies to the fuel alignment pins made from Type 304 stainless steel (SS) with a malcomized surface treatment. The applicant stated that this OE is not applicable to CPNPP because the fuel alignment pins at CPNPP are made of cold-worked Type 316 SS (316 SS). The staff notes that MRP-227, Revision 1-A is not to be used as a replacement for implementing ASME Code, Section XI inspections of reactor vessel internal components that are designated as ASME Code Class Internal components in the CLB.

  During the audit, the staff asked the applicant to discuss whether the fuel alignment pins in the upper and lower reactor internal assemblies at CPNPP units are designed as ASME Code, Section XI Examination Category B-N-3 components. If so, discuss whether the ASME Code, Section XI inspection will be performed on the alignment pins regardless the alignment pins do not include a malcomized surface that would make them susceptible to wear. The staff also asked about whether the design of the alignment pins at CPNPP are susceptible to cracking based on the cold working of the 316 SS materials that were used in fabrications of the alignment pins. The applicant stated that fuel alignment pins at CPNPP are designed as Category B-N-3 components and are therefore inspected in accordance with the ASME Code, Section XI. As such, line items in LRA Table 3.1.2-2 for Examination Category B-N-3 internals components are inclusive of the fuel alignment pins. The applicant further stated that the cold-worked type 316 SS fuel alignment pins are susceptible to cracking per PWROG-15105-NP,

which assumes greater than 20% cold-work for 316 SS fuel alignment pins. However, the applicant explained that because the fuel alignment pins are not made from type 304 SS, the guidance of Westinghouse TB 16-4 is not applicable to CPNPP. The applicant indicated that no relevant flaws related to the 316 SS fuel alignment pins were identified during past ASME Section XI visual VT-3 inspections performed on the fuel alignment pins. Given that the staff has confirmed that cracking in the upper and lower fuel alignment pins is appropriately addressed by the generic AMR item in LRA Table 3.1.2-2 and that GALL-LR Report AMP XI.M16A permits VT-3 visual inspection methods to be applied as an nondestructive examination (NDE) method for managing cracking in redundant RVI component types (e.g., the fuel alignment pins), the staff considers this technical topic to be closed for the audit.

- Audit AMP Topic No. 3

  The staff observed that, in relation to "detection of aging effects," "monitoring and trending," and "operating experience" program elements of AMP XI.M16A, LRA Section B.2.3.7 discusses industry OE with loss or material due to wear in Westinghouse-design control rod guide tube (CRGT) assembly support plates (guide cards) and how these components will be managed as Primary-category components at CPNPP using visual inspections in Westinghouse Proprietary Report No. WCAP-17451-P, Revision 1. The staff noted that inspections of Westinghouse-design CRGT guide plates (guide cards) are covered by Item W1 in Tables 4-3 and 5-3 of MRP-227, Revision 1-A. The fourth paragraph in LRA Section B.2.3.7 on page B-60 states that during the Spring 2022 outage, all 53 Unit 1 guide tubes and associated guide cards were inspected and measured for wear based on guidance in Westinghouse report, WCAP-17451, Revision 1. The applicant stated that the low wear levels were observed at Unit 1. The applicant further stated that it will inspect Unit 2 guide cards in Spring 2023. Item W1 in Tables 4-3 and 5-3 of MRP-227, Revision 1-A includes the CRGT guide cards as Primary-category components that are subject to VT-3 visual inspections for wear-type flaw indications, without any designated or linked "Expansion" category components. Item W1 indicates that the inspections are done per the guidance in Westinghouse report, WCAP-17451, Revision 1. However, contrary to Item W1 in Table 4-3 of MRP-227, Revision 1-A, WCAP-17451, Revision 1 indicates that there are two types of Westinghouse CRGT assembly components that serve as Expansion components for Westinghouse-design CRGT guide cards, instead of being the Primary component.

  During the audit, the staff asked the applicant to discuss CRGT guide card inspections and the results of past inspections performed at Unit 1. Specifically, the staff asked whether there are applicable "Expansion" components for the CRGT guide cards in LRA Section B.2.3.7. If so, identify the linked Expansion-category components for the Primary-category CRGT guide cards in the AMP. Also, the staff asked that if there are applicable Expansion-category components for the CRGT guide cards, whether the degree of wear detected from the Unit 1 inspections sufficient to call for sample-*expansion* to the linked CRGT Expansion-category component types. The applicant indicated that the date for the Unit 2 guide card inspection is incorrect. The applicant stated that a supplement is needed to correct this date from Spring 2023 to Fall 2024. The applicant further stated that its document WO-5954259 provides an evaluation and conclusions of the minimal guide card wear observed during the initial Unit 1 inspections. The applicant further stated that there are no applicable "Expansion" components for the CRGT guide cards because MRP-227, Revision 1-A does not provide an "Expansion"

link component for guide cards. The applicant explains that MRP-227, Revision 1-A references WCAP-17451-P, Revision1 for additional examination and acceptance criteria. The applicant further stated that should significant wear be detected on the CRGT guide cards, the guidance of WCAP-17451-P will be used. The staff will confirm that the Unit 2 guide card inspection is changed from Spring 2023 to Fall 2024 in an applicant's supplement when preparing the SE. Based on the explanations from the applicant, the staff considers the inspection bases for the CRGT guide cards and linked Expansion-category components (as specified in WCAP-17451-P, Revision 1) to be closed for the audit.

- Audit AMP Topic No. 4

  The staff observed that, in relation to PWRVIP's "*detection of aging effects,*" "*monitoring and trending,*" and "*operating experience*" program elements, LRA Section B.2.3.7 discusses industry OE with PWR control rod drive mechanism (CRDM) penetration nozzle thermal sleeves, as discussed and evaluated in Westinghouse Nuclear Safety Advisory Letters NSAL-18-01 and NSAL-20-01, Revision 1, and the guidelines in EPRI Letter MRP-2018-027. The staff observed that the third paragraph on page B-61 of the LRA states that "…At CPNPP, baseline inspections [of the CRDM thermal sleeves] were completed during the Fall 2021 outage for Unit 2. Normal wear was found during visual inspections with a recommendation to re-inspect within six cycles. Baseline inspections for Unit 1 were completed during the Spring 2022 outage, also showing normal wear with a recommendation to re-inspect in 12 cycles…" The staff noted that the re-inspection for the thermal sleeve flange wear at Unit 2 is 6 cycles but for Unit 1 the re-inspection is 12 cycles.

  During the audit, the staff asked the applicant to confirm whether Unit 1 has a longer re-inspection interval because Unit 1 has a new reactor pressure vessel (RPV) head which has not had significant wear at the thermal sleeve flange. The applicant explained that the re-inspection interval is longer for Unit 1 because significantly less thermal sleeve flange wear than Unit 2 was observed during the initial measurements, due to the fact that the Unit 1 replacement RPV head has a shorter operating duration than the Unit 2 head. The applicant stated that initial wear measurements, evaluation, and conclusions are included in WO-5998393 for Unit 1 and WO-5668060 for Unit 2. Based on the applicant's explanations, the staff considers the re-inspection interval for CPNPP CRDM penetration nozzle thermal sleeves to be closed for the audit.

- Audit AMP Topic No. 5

  The staff observed that, in relation to PWRVIP's "*detection of aging effects,*" "*monitoring and trending,*" and "*operating experience*" program elements, LRA Section B.2.3.7 discusses inspection categories, inspective and evaluation criteria, relevant OE with Westinghouse-design core barrel (CB) assembly upper girth welds (UGWs) and upper flange welds (UFWs). The staff noted that in MRP-277, Revision 1-A, Table 4-6, the CB assembly UGW is established as an Expansion-category Item W3.1 weld for the linked Primary-category Item W3 UFW in Table 4-3 of MRP-227, Revision 1-A. The staff further noted that recently the licensee for an U.S. Westinghouse-design nuclear plant detected several significant circumferential flaws in the CB UGW of that unit during the Fall 2022 refueling outage.

During the audit, the staff asked that considering recent OE of the degraded UGW in a domestic PWR plant, discuss whether CPNPP will inspect the CB UGWs in the near future. The staff also asked the applicant to discuss whether the UFWs and UGWs are designated as ASME Code, Section XI Examination Category B-N-3 weld for the CB assemblies. If so, discuss whether past ASME Code, Section XI VT-3 inspections have identified any flaws in the UFWs and UGWs. The applicant stated that CPNPP is currently following the CB focus group, made up of EPRI, Westinghouse, and industry experts. The applicant stated that developments from the industry focus group will be tracked under TR-2023-001108. Presently, CPNPP will follow the guidance of MRP-227, Revision 1-A. The applicant confirmed that UFWs and UGWs are part of the Category B-N-3 examination population at CPNPP. The applicant reported that no relevant flaws in these welds have been identified throughout past inspections performed on the welds. Given that the applicant has inspected the UGWs and is following the guidance of the industry focus group, this the staff considers this technical matter to be closed for the audit.

During the audit, the staff observed the following regarding the AMR of PWR Vessel Internals:

The staff noted that the applicant is conservatively using the updated set of AMR items for PWR RVI components in SRP-SLR Table 3.1-1 and GALL-SLR Report Table IV.B2 (as updated in SLR-ISG-2021-01-PWRVI) as the AMR item basis for the PWR RVI components at CPNPP. The staff noted that this is permitted as an AMR development option for initial LRA PWRVIPs that have converted over to the EPRI MRP guidance in MRP-227, Revision 1-A, as discussed and clarified on Page 5 of SLR-ISG-2021-01-PWRVI. Thus, while the AMR items in SLR-ISG-2021-01-PWRVI are identified as being applicable to subsequent LRAs, they can be applied to initial LRA PWRVIPs at CPNNP that are based on MRP-227, Revision 1-A (without the need for a gap analysis of the MRP-227, Revision 1-A guidelines from 60 to 80 years).

- Audit AMR Topic No. 1

  Items IV.B2.RP-345a and IV.B2.R-424 in LRA Table 3.1.2-2 on page 3.1-83 are identified as bottom-mounted instrumentation (BMI) flux thimble tubes with Notes C, D, and E. These two items are correlated to aging effects of loss of fracture toughness due to irradiation embrittlement (IE), loss of material due to wear, change of dimensions to void swelling (VS) or distortion, and loss of preload due to irradiation-assisted stress relaxation or creep (ISR/IC) that are associated with Items IV.B2.RP-345a, IV.B2.RP-345 and IV.B2.R-424 in Table 3.1-1 of SLR-ISG-2021-01-PWRVI and/or GALL-SLR Report.

  The staff observed that these line items apply to the reactor vessel internal portion of the flux thimble tubes, which are not part of the reactor coolant pressure boundary. However, the BMI flux thimble tubes extend to the outside of the reactor vessel which become part of pressure boundary and are associated with GALL/GALL-SLR Report Items IV.A2.RP-28, -154 and -284 (as updated in SLR-ISG-2021-01-PWRVI) in LRA Table 3.1.2-1 (page 3.1-62). The aging effects for portions of the flux thimble tubes outside of the RPV are different from the portions of the flux thimble tubes that are located inside of the RPV. However, the staff observed that LRA Section 3.1.2.2.9 (LRA page 3.1-13), indicates that the internal, non-reactor coolant pressure boundary portions of the flux thimble tubes are “No Additional Measures” components per MRP-227, Revision 1-A, as linked to SRP-SLR Table 3.1-1, Item 3.1-1, 055c and GALL-SLR Report Item IV.B2.RP-265.

During the audit, the staff noted that a potential discrepancy exists regarding: (1) which line item or items should be used for the PWR vessel internals portions of the flux thimble per LRA Section 3.1.2.2.9 and those cited for the flux thimble tube non-pressure boundary portions in Table 3.1.2-2, and (2) whether the PWR vessel internal, non-pressure boundary portions of the BMI flux thimble tubes are being subject to MRP-227 aging management activities (i.e., condition monitoring inspections).

The applicant stated that the last paragraph of LRA Section 3.1.2.2.9 currently states that flux thimble tubes are “No Additional Measures” components. However, this section should be amended to state that flux thimble tubes are “Existing Programs” components, as discussed in Item 3.1-1, 053c. The applicant stated that no discrepancy exists in either Table 3.1.2-1 or Table 3.1.2-2 except that LRA Section 3.1.2.2.9 contains an error, Flux thimble tubes are not linked to item 3.1-1, 055c, but are instead linked to item 3.1-1, 053c. The staff will confirm that the applicant has amended the LRA Section 3.1.2.2.9 when preparing its SE.

- Audit AMR Topic No. 2

  LRA Table 3.1.2-2, page 3.1-96, includes line items, IV.B2.RP-289 and IV.B2.RP-345 on cracking of the CB flanges that align to GALL-SLR Report Item IV.B2.RP-289 using either Note C or D. However, the staff noted that the applicable and corresponding Item IV.B2.RP-289 in SLR-ISG-2021-01-PWRVI applies specifically to MRP-227 Existing Program bases for Westinghouse-design lower core plates or extra-long lower core plates. The plates are subject to ASME Code, Section XI VT-3 visual inspections per Item W12.a in Table 4-9 of MRP-227, Revision 1-A and for loss of material due to wear per Item W12.b in Table 4-9 of MRP-227, Revision1-A. The staff also noted that GALL-SLR Report (as updated inclusive of changes made in SLR-ISG-2021-01-PWRVI) does not include an applicable AMR item for cracking of CB flanges.

  During the audit, the staff asked the applicant to confirm that the aging effect of cracking on CB flanges associated with line item IV.B2.RP-289 is included in LRA Table 3.1.2-2 on page 3.1-83. The staff tried to determine that CB flange is aligned with Item IV.B2.RP-289 in SLR-ISG-2021-01-PWRVI for the ASME Section XI, VT-3 visual inspections that will be applied to the “Existing Program” category CB flanges per Item W10 in MRP-227, Revision 1-A. The applicant stated that Item IV.B2.RP-289, which credits the PWRVI and water Chemistry AMPs for management of cracking, is applied to CB flanges. The applicant further stated that the VT-3 visual inspections will be applied through the PWRVI AMP to confirm the effectiveness of the preventive maintenance Water Chemistry AMP. Based on the applicant’s explanations, the staff consider this technical topic to be closed for the audit.

- Audit AMR Topic No. 3

  LRA Table 3.1.2-2, page 3.1-96 includes line items for neutron shield panel support pins that align to GALL-SLR Report Items IV.B2.RP-271 and IV.B2.RP-272 Note C or D. These line items manage irradiation-assisted stress corrosion cracking (IASCC) and fatigue induced cracking, loss of material due to wear, loss of preload due to ISR/IC, and loss of fracture toughness due to IE in the pins. The staff noted that these two items also apply to management of applicable cracking, loss of preload, loss of fracture, changes in dimensions, and loss of material mechanism in Primary-category Westinghouse-design

baffle-to-former bolts using GALL-LR Report AMP XI.M16A, where the bolts are subject to augmented aging management inspections per Item W9 in Table 4-3 of MRP-227, Revision 1-A.

The staff observed that the LRA's adoption of these two items under Note C or D bases could only be applied to the neutron shield panel support pins if the pins were subject to augmented Primary item inspections in the manner that Primary-category UT inspections are applied to and performed on Westinghouse-design baffle-former-bolts per Item W9 in Table 4-3 of MRP-227, Revision 1-A. However, the staff observed that, in MRP-227, Revision 1-A, all neutron shield panel components are placed in the "No Additional Measures" category because the pins do not screen-in for any aging effects per MRP-227, Revision 1-A.

During the audit, the staff asked the applicant to discuss the discrepancies on the AMR items provided for neutron shield panel supports pins on LRA page 3.1-96. Specifically, (1) Will the referenced AMR line items for the neutron shield panel support pins be subject to augmented, Primary-category inspections per a plant-specific adjustment of the MRP-227, Revision 1-A protocols? (2) If the neutron shield panel support pins are justified for placement in the "No Additional Measures" category of AMP B2.3.7, discuss why LRA Table 3.1.2-2 is not giving a single line item for the neutron shield panel support pins that aligns to SRP-SLR Table 3.1-1, Item 3.1-1, 055c and GALL-SLR Report Item IV.B2.RP-265?

The applicant stated that neutron panel support pins will not be subject to augmented, primary-category inspections to be consistent with MRP-227, Revision 1-A. The applicant further stated that neutron shield panel support pins were conservatively included as primary components, akin to the management of thermal shield flexures for sites which utilize thermal shields. However, the applicant explained that, upon further consideration, the items for neutron shield panel support pins in LRA Table 3.1.2-2 which are linked to Items 3.1-1, 053a and 3.1-1, 059a should be deleted items as "No Additional Measures" in LRA Table 3.1.2-2. The staff will confirm that the applicant has amended the LRA when preparing the SE.

- Audit AMR Topic No. 4

  LRA Table 3.1.2-2, page 3.1-97, includes line items IV.B2.RP-285 and IV.B2 RP-399 for radial support keys and associated bolts that align to either GALL-SLR Report Items IV.B2.RP-285 or RP-399 using Note C or D. These line items manage IASCC and fatigue induced cracking, changes in dimension due to VS or distortion, loss of material due to wear, loss of preload due ISR/IC, and loss of fracture toughness due to IE in the radial support key components.

  The staff noted that the cross-referenced GALL-SLR Report Items IV.B2.RP-285 and IV.B2.RP-399 items (as updated in SLR-ISG-2021-01-PWRVI) apply to aging management of cracking due to stress corrosion cracking or fatigue, loss of material due to wear, and loss of preload due to ISR/IC (bolts only) in RPV interfacing clevis insert assembly components, including bolts or screws, dowels, and clevis insert surfaces. The staff observed that the GALL-LR Report line item calls out the ASME Code, Section XI inspection-based Existing Program criteria in Item W14 of Table 4-9 in MRP-227, Revision 1-A for the clevis insert assembly component types. The GALL-LR Report, Revision 2, and GALL-SLR Report do not include any similar Existing Program-based

AMR line items for the radial support key components. However, the staff observed that EPRI MRP added the radial support keys in as new Existing Program components in MRP-2018-022.

During the audit, the staff asked the applicant to discuss Note C or D-related AMR line items for radial support keys and associated bolts in LRA Table 3.1.2-2, page 3.1-97. Specifically, the staff asked whether the proposed AMR line items are conservatively being included in LRA Table 3.1.2-2. page 3.1-97, to add in the radial support keys and associated bolts as ASME Code, Section XI-based Existing Program components for the LRA AMP B2.3.7 and the referenced aging effects, such that LRA Table 3.1.2-2 is consistent with the updated EPRI recommendations for Westinghouse-design radial support keys in MRP 2018-022.

The applicant stated that radial support keys and associated bolts were conservatively included as “Existing Programs” components in LRA Table 3.1.2-2 as integral alignment and interfacing components. The staff observed that this is consistent with the EPRI MRP supplemental guidelines in MRP 2018-022, which assesses aging through an 80-year subsequent LR service period and is conservative for the assessment of aging in the CPNPP RVI components through a 60-year service period. Thus, the staff considers this matter to be closed for the audit.

- Audit AMR Topic No. 5

  LRA Table 3.1.2-2, page 3.1-98, includes two line items for the upper internals assembly (UIA) support ring that aligns to GALL-SLR Report Item IV.B2.RP-288 using Note C. These two line items manage loss of fracture toughness due to IE and loss of material due to wear in the UIA support rings. The staff observed that the cross-referenced Item IV.B2.RP-288 in SLR-ISG-2021-01-PWRVI applies to aging management of loss of material due to wear, and loss of fracture toughness due to IE, and changes in dimension due to VS or distortion.

  During the audit, the staff asked the applicant to discuss the basis for the Note C or D-related AMR line items for the UIA support rings on LRA page 3.1-98. Specifically, the staff asked the applicant to confirm whether the proposed AMR line items are conservatively being included in LRA Table 3.1-2, page 3.1-98, to add loss of fracture toughness and loss of material due to wear as aging effects (i.e., in addition to cracking) for the ASME Code, Section XI-based Existing Program criteria for the UIA support rings that are aligned to Item W11 of Table 4-9 in MRP-227, Revision 1-A. The staff also asked whether the IV.B2.RP-288 based line items for UIA support ring in LRA Table 3.1.2-2 need to include an associated AMR line item on aging management of changes in dimension due to VS or distortion in the UIA support rings to be consistent with Item IV.B2.RP-288 in SLR-ISG-2021-01-PWRVI.

  The applicant stated that the items in LRA Table 3.1.2-2 for loss of fracture toughness and loss of material of the UIA support ring were conservatively included. However, the applicant stated that, upon further consideration, these items should be deleted from LRA Table 3.1.2-2, leaving only the items for cracking of the UIA support ring, consistent with MRP-227, Revision 1-A. The staff will confirm that the applicant has amended the LRA 3.1.2-2 when preparing the SE.

- Audit AMR Topic No. 6

  LRA Table 3.1.2-2, pages 3.1-91 to 3.1-96, includes a number of AMR line items for lower support columns and associated column components that align to GALL-SLR Report Item IV.B2.RP-290 (for non-cracking effects) or IV.B2,RP-291 (for cracking) using Note A or B. These items correspond to Expansion Item W4.4 in Table 4-6 of MRP-227, Revision 1-A. However, the line item entries in LRA Table 3.1.2-2 differentiate between the lower support column components in Unit 1 and Unit 2.

  During the audit, the staff asked the applicant to discuss any unit-specific differences between the design of the lower support columns and associated components in Unit 1 from those that are included in Unit 2. The staff further asked that if applicable, whether those design differences will cause any adjustments of the MRP-227, Revision 1-A I&E protocols for the Expansion-Category Item W4.4 in Table 4-6 of MRP-227, Revision 1-A, independent of whether the lower support columns are made from either cast austenitic stainless steel (CASS) materials or wrought SS materials.

  The applicant stated that, as discussed in Section 4.1 of RVI screening and AMR document LUM00020-REPT-005, the core support columns and sleeves for Unit 1 are constructed from CASS (A351, Gr. CF8 or CF8A), whereas core support columns and sleeves for Unit 2 are constructed from 304 stainless steel. The applicant also explained that the material differences between Units 1 and 2 will not cause any adjustment of the MRP-227, Revision 1-A I&E protocols. The applicant stated that there is no significant difference in configuration of the core support columns between the two units. Based on the applicant's explanations, the staff confirmed that thermal embrittlement has been generically eliminated as a concern for CF8 CASS lower support columns, as evaluated in Section 3.6.7 of the staff's April 25, 2019, SE for MRP-227, Revision 1-A. Therefore, based on the applicant's explanations and staff's SE for MRP-227, the staff considers this matter to be closed for the audit.

- Audit AMR Topic No. 7

  LRA Table 3.1.2-2, pages 3.1-85 to 3.1-86 includes line items for aging management of loss of material due to wear in the Primary Item W1 CRGT guide plates (i.e., CRGT guide cards). The staff noted that line Item IV.B2.RP-386 in Table IV.B2 of GALL, Revision 2 covers management of loss of material due to wear in Westinghouse-design CRGT C-tubes and sheaths. However, LRA Table 3.1.2-2 does not include corresponding AMR items for the CRGT C-tubes and sheaths.

  During the audit, the staff asked the applicant to discuss why LRA Table 3.1.2-2 does not include any AMR item or items for managing loss of material due to wear in the CRGT C-tubes and sheaths. The applicant indicated that a line item for "CRGT assemblies: C-tubes and sheaths" with a structural support intended function, managing loss of material due to wear, and linked to GALL-LR Report Item IV.B2.RP-386 should be added to LRA Table 3.1.2-2. In addition, the applicant stated that a corresponding item for C-tubes and sheaths should be added to LRA Table 2.3.1-2. The applicant clarified that as identified in Section 4.1 of RVI screening and AMR document LUM00020-REPT-005, CRGT C-tubes and sheaths are constructed from 304 stainless steel. The staff will confirm that the applicant has amended the LRA 3.1.2-2 when preparing the SE.

- Audit AMR Topic No. 8

  LRA Table 3.1.2-2 does not include any component-specific AMR line items for CRGT support pins (spilt pins) that are included in the CPNPP unit-specific CRGT assembly designs. The staff noted that in SRP-SLR Table 3.1-1, Item 028 (as updated in SLR-ISG-2021-01-PWRVI), the basis for managing Westinghouse-design CRGT spilt pins was dependent on whether the pins were made from X-750 nickel-based alloy materials (versus Type 316 SS materials), and whether the spilt pins were designated as Examination Category B-N-3 components of Table IWB-2500-1 of the ASME Code, Section XI, where the ASME Section XI inspections would be credited for aging management of cracking in the pins.

  The staff also observed that in the updated SRP-SLR Table 3.1-1, Item 028 (as updated in SLR-ISG-2021-01-PWRVI), the staff permitted CRGT split pins made from type 316 stainless pins (and not subject to ASME Code Class inspections credited for aging management) to be placed in the “No Additional Measures” category, as consistent with the criteria established for CRGT spilt pins in MRP-227, Revision 1-A. The staff notes that this is predicated on the condition that, if CRGT spilt pins are ASME Code Class components, the ASME Section XI inspections of the pins are not credited for Existing Program credit in MRP-227, Revision1-A such that the ASME inspections of the pins would be credited under the applicant’s AMP B.2.3.1 ISI Program per the staff’s update of GALL-SLR Report Item IV.E.R-444 in the SLR-ISG-2021-01-PWRVI.

  During the audit, the staff asked the applicant to discuss how the CRGT split pins are being managed for “cracking” consistent with criteria defined in the “GALL-SLR Item” column entry of Table 3.1-1, Item 028, in SLR-ISG-2021-01-PWRVI. The staff asked the applicant to discuss the following design-basis for the CRGT spilt pins: (1) material of fabrication for the pins in both units, (2) whether the CRGT spilt pins in both units are original pins or replacement pins, (3) whether the CRGT spilt pins are defined as ASME Code Class 1 components in the design-basis and are required to be inspected periodically under Examination Category B-N-3 of Table IWB-2500-1 of the ASME Code, Section XI, and (4) if the pins are ASME Code Class components, discuss whether the ASME Section XI inspections scheduled for the CRGT split pins are being credited for aging management of cracking in the pins per the LRA AMP B.2.3.1, ASME Section XI ISI Program versus ASME-based Existing Program basis in the LRA AMP B.2.3.7.

  The applicant explained that the split pins in both Unit 1 and Unit 2 were replaced in 2004 and 2005, respectively, and that the replacement pins are made from Type 316 SS as a replacement material for the design of the original pins, which were made from Alloy X-750 Nickel-based alloy materials. The applicant also explained that the replacement CRGT split pins are Examination Category B-N-3 components of Table IWB-2500-1 of the ASME Code, Section XI. As such, the generic line items linked to GALL-SLR Report Item IV.E.R.444 (as updated in SLR-ISG-2021-01-PWRVI) for SS ASME Code, Section XI B-N-3 vessel internals components in LRA Table 3.1.2-2 are inclusive of the split pins. Based on the applicant’s explanations, the staff confirmed that the applicant is appropriately managing age-related degradation in the CRGT split pins using the applicant’s inservice inspection AMP. Therefore, the staff considers this matter to be closed for the audit.

The staff also audited the description of the LRA AMP B.2.3.7 provided in the FSAR supplement in LRA Appendix A, Section A.2.2.7. The staff verified that the description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.8, Flow-Accelerated Corrosion

Summary of Information in the Application. The LRA states that AMP B.2.3.8, "Flow-Accelerated Corrosion," is an existing condition monitoring program with an exception and enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.M17, "Flow-Accelerated Corrosion," as amended by ISG LR-ISG-2012-01, "Wall Thinning Due to Erosion Mechanisms."

Audit Activities. The table below lists documents relevant to the program that were reviewed by the staff during the audit. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-045	Flow-Accelerated Corrosion Aging Management Program Basis Document	Revision 1
LUM00020-REPT-003	Operating Experience Review	Revision 0
EPG-9.04	Flow-Accelerated Corrosion Program	Revision 3
STA-730	Corrosion Monitoring Program	Revision 5
STA-170-1	Software Quality Assurance Form FAC Manager	September 13, 2019
1RF22 EOC	End of Cycle Report (November 2020 to April 2022)	December 22, 2022
1RF21 EOC	End of Cycle Report (May 2019 to October 2020	February 1, 2021
1RF20 EOC	End of Cycle Report (November 2017 to April 2019)	December 3, 2020
2RF19 EOC	End of Cycle Report (Spring 2020 to Fall 2021)	November 17, 2022
2RF18 EOC	End of Cycle Report (January 2019 to April 2020)	January 25, 2021
2RF17 EOC	End of Cycle Report (May 2017 to December 2018)	December 3, 2020
TERPT ER-ME-093	Flow-Accelerated Corrosion System Susceptibility Analysis for Comanche Peak Unit 1	Revision 0
TERTP ER-ME-095	Flow-Accelerated Corrosion CHECWORKS Database for Comanche Peak Unit 1	Revision 0
11-2235-TR-001	Flow-Accelerated Corrosion Program System Susceptibility Evaluation and Susceptible Non-Modeled Line Review	Revision 0

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP with the proposed enhancements will be consistent with the corresponding elements of the GALL-LR Report AMP, as amended by LR-ISG-2012-01.

The staff also reviewed the FSAR summary of the Flow-Accelerated Corrosion program provided in LRA Appendix A, Section A.2.2.8. The staff verified that this summary is consistent with the associated FSAR supplement in SRP-LR, Table 3.0-1, as amended by LR-ISG-2012-01, and appropriately documented the exception being taken to the earlier program guidance.

LRA AMP B.2.3.9, Bolting Integrity

Summary of Information in the Application. The LRA states that AMP B.2.3.9, "Bolting Integrity," is an existing program with enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.M18, "Bolting Integrity."

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this enhanced program, and the staff's audit addressed only describe extent of audit (e.g., the program elements described in the applicant's basis document).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-046	CPNPP Units 1 and 2 License Renewal, Bolting Integrity Aging Management Program Basis Document	Revision 1
LUM00020-REPT-039	CPNPP Units 1 and 2 License Renewal, ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD, Aging Management Program Basis Document	Revision 1
LUM00020-REPT-041	CPNPP Units 1 and 2 License Renewal, Reactor Head Closure Stud Bolting Aging Management Program Basis Document	Revision 1
LUM00020-REPT-066	CPNPP Units 1 and 2 License Renewal ASME Section XI, Subsection IWE Aging Management Program Basis Document	Revision 1
STI-748.01	CPNPP Station Instruction Manual, System Monitoring and Health Reporting	Revision 3
MSG-0695	CPNPP Maintenance Section - Generic Manual	Revision 3
MSM-C0-7310	CPNPP Maintenance Section Mechanical Manual, Service Water Pump Maintenance	Revision 10
EPG-703	CPNPP Engineering Programs Manual, Inservice Inspection Program	Revision 4
MSM-G0-0203	CPNPP Maintenance Section Mechanical Manual, Flange Alignment and Fastener Torque Data	Revision 8
MSM-G0-0209,	CPNPP Maintenance Section Mechanical Manual, Torque Standard with Correction Factor for Adaptors	Revision 1
STI-626.01	Controlled Material Approval Request Process (CMAR)	Revision 0
U1 ISI Program Plan	Unit 1 - Third Interval ASME Section Xi Inservice Inspection Program Plan	Revision 2
U2 ISI Program Plan	Unit 2 - Third Interval ASME Section Xi Inservice Inspection Program Plan	Revision 2
CR-2016-003559	The flange between the Jacket Water Heater and the 2-01 Keep Warm Pump suction isolation is leaking Jacket Water at a rate of approximately 4 dpm	04/21/2016 (Closed Date)
CR-2016-008691	EDG 2-01 right bank intercooler lower adaptor flange fasteners were loose.	02/13/2017 (Closed Date)
TR-2020-008159	Two of the body to bonnet bolts on valve 1DD-0069 have backed off and need to be tightened	11/04/2020 (Closed Date)

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP, or will be consistent after implementation of the identified enhancements.

During the audit, the staff made the following observation:

- The staff noted that the system walkdown procedure referenced for the AMP Basis Document in the ePortal did not contain clear guidance on how to conduct closure bolting inspections for non-safety-related bolted connections.

The staff also audited the description of the LRA Bolting Integrity program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.10, Steam Generators

Summary of Information in the Application. The LRA states that AMP B.2.3.10, "Steam Generators," is an existing program with exceptions that will be consistent with the program elements in GALL-LR Report AMP XI.M19, "Steam Generators," as modified by LR-ISG-2016-01.

Audit Activities. The table below lists documents relevant to the program that were reviewed by the staff during the audit. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-047	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Steam Generators Aging Management Program Basis Document	Revision 1
Procedure No. NDE-7.10	Steam Generator Tube Selection and Examination	Revision 16
Procedure No. NDE-7.13	Steam Generator Degradation Mechanism Assessment	Revision 7
Procedure No. NDE-7.14	Steam Generator Tube Integrity Assessment	Revision 6
Procedure No. NDE-7.15	Steam Generator Secondary Side Management	Revision 6
Procedure No. STA-732	Primary-to-Secondary Leakage	Revision 8
Procedure No. STA-733	Steam Generator Reliability Program	Revision 14
PM 308483	Job Plan #34801 EDDY CURRENT INSP S/G TUBE	Revision 10
CR-2012-000073	Westinghouse Proprietary. "Admin CR built for trending INPO's recommendations stemming from their 14 November 2011 Steam Generator Review visit"	Occurrence 01/03/2012 Closed 7/9/2014
CR-2012-000075	No title. The description field starts with, "The following is a Admin CR built for trending INPO's recommendations stemming from their 14 November 2011 Steam Generator review"	Occurrence 01/03/2012 Closed 07/09/2014
TR-2018-002217	No title. Action type is Tracking Report. The description field says, "The Steam Generator Management Program requires a component engineer and a backup component engineer to oversee the program. At this time, not backup has been identified"	Occurrence 03/22/2018 Closed 11/21/2019
CR-2014-007718	No title. Description is 1RF16 sludge sample analysis report contains photos depicting presence of whole-bead resin in all four SG sludge samples	Occurrence 07/01/2014 Closed 02/02/2015
TR-2015-007963	No title. During the performance of the Targeted Self-Assessment of the Steam Generator Management Program, the following opportunity was made	Occurrence 09/03/2015 Closed 02/02/2017
Westinghouse LTR-CECO-21-081 P-Attachment	Westinghouse Proprietary Responses to EPRI Checklist "Guidance for Addressing Aging Management Plans for Steam Generator Channel Head Components," for Comanche Peak Nuclear Power Unit 2 Steam Generator Divider Plate Assemblies	Revision 1
TR-2019-004928 (also, under B.2.3.2 Water Chemistry)	Evaluation of corrosion for Unit 1 steam generators during 1RF20 establishing wet layup chemistry	Occurrence 05/13/2019 Closed 06/18/2019
N/A	Evaluation of Corrosion in Unit 1 Steam Generators Due to Inadequate Wet Layup Chemistry During 1RF20	05/21/19
EPRI 1011774	Pressurized Water Reactor Steam Generator Lay-up: Corrosion Evaluation	Interim Report, December 2005

During the audit, the staff verified the applicant's claim that the "preventive actions," "detection of aging effects," "monitoring and trending," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also verified the applicant's claim that aspects of the "scope of program," "parameters monitored or inspected," and "acceptance criteria," program elements not associated with the

exceptions identified in the LRA or by the staff during the audit are consistent with the corresponding program elements in the GALL-LR Report AMP.

The staff also audited the description of the LRA Steam Generators Program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.11, Open-Cycle Cooling Water System

Summary of Information in the Application. The LRA states that AMP B.2.3.11, "Open-Cycle Cooling Water System," is an existing program with enhancements that will be consistent with NUREG-1801, Section XI.M20, "Open-Cycle Cooling Water System," as modified by LR-ISG-2013-01, "Aging Management of Loss of Coating or Lining Integrity for Internal Coatings/Linings on In-Scope Piping, Piping Components, Heat Exchangers, and Tanks," and LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation."

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this enhanced program, and the staff's audit addressed only the program elements described in the applicant's basis document.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-048	Open-Cycle Cooling Water Aging Management Program Basis Document	Revision 1
N/A	Open Cooling Water Plant Specific Guidelines	08/04/2021
STA-734	Service Water System Fouling Monitoring Program (GL 89-13 Response)	06/15/2016
COP-501	Chemistry Operating Procedures Manual	11/12/2020
CR-2012-013203	Deviation identified of fouling monitoring on the component cooling water heat exchanger during summer months	12/17/2012
CR-2011-009305	Fouling monitoring program identified a lower than desired level of chemical treatment	08/19/2011
CR-2014-013376	Identification of service water piping sections with stagnant water and determine flushing periodicity	03/11/2015
CR-2020-9117	Service Water Heat Exchanger Leaking	12/06/2020
CR-2020-002492	CCW Heat Exchanger Leaking	04/07/2020
CR-2016-004786	Service Water Piping Pitting	05/16/2016

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements. The staff also audited the description of the LRA AMP for the Open-Cycle Cooling Water System provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.12, Closed Treated Water Systems

Summary of Information in the Application. The LRA states that AMP B.2.3.12, "Closed Treated Water Systems," is an existing program with enhancements and one exception that will be

consistent with the program elements in GALL-LR Report AMP XI.M21A, “Closed Treated Water Systems.”

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this enhanced program, and the staff’s audit addressed only the program elements described in the applicant’s basis document.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-049	XI.M21A Closed Treated Water	Revision 0
300200590	EPRI Closed Cooling Water Chemistry Guideline	Revision 2
System Health Report	Turbine Plant Cooling Water	4th Quarter FY20
COP-313A	Chemistry Operating Procedures Manual, Turbine Plant Cooling Water	Revision 5
CHM-100	Chemistry Specifications	Revision 4
CHM-150	Chemistry/Radiochemistry Manual – Closed Cooling Water Systems	Revision 4
COP-502A/502B	Chemistry Operating Procedures Manual, Component Cooling Water Unit 1/Unit 2	Revision 7
TR-2019-003741	Unit 2 TGPW system copper concentration remains high >5ppb	05/01/2019
CR-2015-007651	CHN Ventilation Chiller has leaking tubes	08/24/2015
CR-2015-002628	Leaking weld in coupling in pipe segment TW-1-011	03/23/2015
CR-2013-007967	CHS train A has bacterial infection and needs nitrite addition	08/29/2013
CR-2011-005600	TPCW Head Tank levels indicate Unit 2 TW leaking into Unit 1	05/04/2011

During the audit, the staff verified the applicant’s claim that the “scope of program,” “preventive actions,” “detection of aging effects,” “monitoring and trending,” “acceptance criteria,” and “corrective actions” program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements. The staff also verified the applicant’s claim that aspects of the “parameters monitored or inspected” program element not associated with the exception identified in the LRA are consistent with the corresponding program elements in the GALL-LR Report AMP.

The staff also audited the description of the LRA AMP for the Closed Treated Water Systems provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.13, Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems

Summary of Information in the Application. The LRA states that AMP B.2.3.13, “Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems,” is an existing program with enhancement(s) that will be consistent with the program elements in GALL-LR Report AMP XI.M23, “Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems.”

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
TPMDA-MDA-402	Control of Load Handling Equipment Procedure, NO. MDA-402	Revision 13
TPMDA-MDA-402	Control of Load Handling Equipment Procedure, TPMDA-MDA-402	Revision 12
TDBD-DBD-ME-006	Control of Heavy Loads at Nuclear Plants, DBD-ME-006	40
TPDCS-DCS-109-3-PCN-0001	Dry Cask Storage Procedure Manual	3
TPMDA-MDA-308	Requirements for load handling Personnel Procedure, NO. MDA-308	10
CR-2018-009059	During hoisting operations of RHR Motor 2-02, the one set of bearings on the permanently installed 5 ton hoist failed. The load was secured with two 3 ton chain falls and the load is 5100 lbs. A replacement solution is being pursued	03/19/2019
TPSTA-STA-606	Control of Maintenance and Work Activities Procedure, No. STA-606	35
CR-2018-005660	Condition Report: use the right oil & will be good; sample oil & change periodically; run hoist unloaded before handling additional loads; continue with rebuild schedule (every 10 outages should be fine)	10/31/2018
CR-2017-000801	Condition Report: The crane's 5 ton block's sheaves are starting to showing wear. On one in particular the wire rope is beginning to leave an impression in the metal	01/24/2017
WO-4598977	Fuel Handling Refueling Manipulator Crane 1-01. Preventive maintenance	05/25/2019
TR-2019-002369	Tracking Report: During 2RF17 hoisting operations of RHR Motor 2-02, one set of bearings on the permanently installed 5 ton hoist failed. The hoist from 1-01RHR Pump was removed and transferred to the 2-02 RHR Pump. The degraded hoist has been inspected and repairs do not appear feasible. This IR is to track the purchase and installation of a new hoist for 1-01 RHR Pump / Motor	011/15/2021
WO-5383403	Fuel Building Overhead Crane X-01 – Deficient Maintenance	07/3/2017
TPMSM_MSM-P0-2014	Containment Maintenance Building Jib Crane Mechanical Inspection, NO. MSM-P0-2014	1
TPMSM-MSM-PX-2021	Fuel Building Wonder hoist Crane Pre-Operational Checkout/Mechanical Inspection	0
TR-2019-002369	Degraded hoist and generated IR for the purchase of new hoist.	01/15/2021
TR-2018-005487	Parts for the manipulator crane hoist inspections and refurbishments were obtained through Konecranes	07/02/2020
DBD-ME-006	Design-Basis Document - Control of Heavy Loads at Nuclear Plants	Revision 40
MSM-PO-2012	Refueling Machine Mechanical Inspection Procedure	Revision 6
CPNPP	CPNPP Final Safety Analysis Report (FSAR): Table 17A-1, Table 8.3-11	Amendment 111
CMAA, Specification, No.70	Specification for Electric Overhead Travelling Cranes	1975
NUREG-0554	Single-Failure Proof Cranes for Nuclear Power Plants	May 1979
NUREG-0612	Control of Heavy Loads at Nuclear Power Plants	July 1980
ASME NUM-1	Rules for Construction of Cranes, Monorails, and Hoists (With ridge or Trolley or Hoist of the Underhung Type)	2016
ASME NOG-1	Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)	2015
ASME B30.2	Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)	2005
ASME B30.16	Overhead Hoists (Underhung)	2016

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program element(s) of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements.

The staff also audited the description of the LRA AMP provided in the FSAR supplement in Section A.2.2.13, "Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems." The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.14, Compressed Air Monitoring

Summary of Information in the Application. The LRA states that AMP B.2.3.14, "Compressed Air Monitoring," is an existing program that is consistent with the program elements in GALL-LR Report AMP XI.M24, "Compressed Air Monitoring."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-051	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Compressed Air Monitoring Basis Document	07/27/2022 Revision 1
PROCEDURE NO. STA-422	Corrective Action Program	Revision 36 09/08/2022
CR-2020-005882	Valve has a known leak. Ref CR-2015-003608	Revision 1 08/10/2020-10/07/2020
CR-2015-008751	During the 3rd quarter PM for instrument air sample testing (per WO 5066629 and 5066839), two of the five sample points for the Instrument Air (CI) System were reported by the testing lab (Trace Analytics) to have exceeded the maximum particle size requirement	09/29/2015-04/12/2016
PM 345698	Perform Dryer Maintenance	07/25/2022
WO-5935531	Repair the 1-01 Instrument Air Dryer Outlet Isolation Valve	01/25/2022
PM 341871	Inspect Clean Tank at INSTRUMENT AIR RECEIVER 1-01	01/30/2020
PM 345699	Perform Dryer Maintenance	09/13/2021
PROCEDURE NO. SOP-509B	Instrument Air System	11/30/2011 Revision No. 15
PM 350206	Inspect Tank at Instrument Air Receiver X-02	08/02/2021
PM 337738	Perform Dryer Maintenance	11/15/2021
PM 304094	Inspect/Clean Tank at Instrument Air Receiver 2-02	06/09/2016
PM 305332	Perform Dryer Maintenance at Instrument Air Dryer X-02	06/21/2021
PROCEDURE NO. STA-606	Control Of Maintenance and Work Activities	Revision No. 35
Picture	IAC 2002	12/15/2022
DBD-ME-218	Instrument Air System	10/31/2022 Revision 24
Picture	1-01 IAD	11/22/2022
PROCEDURE NO. SOP-509A	Instrument Air System	01/26/2022 Revision No. 27
PM 341881	Inspect/Clean Tank at Instrument Air Receiver 2-01	09/15/2021
PM 350205	Inspect Tank at Instrument Air Receiver X-01	03/10/2022
PM 344913	Perform Dryer Maintenance at INSTRUMENT Air Dryer X-01	02/01/2022
PM 339607	Sample Instrument Air at UNIT 1	07/01/2021

Document	Title	Revision / Date
PM 339606	Sample Instrument Air at Unit 2	07/01/2021
PM 341881	Inspect/Clean Tank at Instrument Air Receiver 2-01	09/15/2021
CR-2017-002554	Drain Valve 1-02 Instrument Air Dryer Leak	03/01/2017
Picture	Air Receiver 1	12/15/2022
WO-5054968	Preventive Maintenance for Instrument Air Dryer X-02	09/21/2010
WO-5398976	Replace Solenoid Drain Valve	03/02/2017
PROCEDURE NO. STA-421	Control of Issue Reports	Revision No. 21 09/09/2016
Picture	Air Receiver	12/15/2022
Picture	1-02 IAD	11/22/2022
PROCEDURE NO. MSM-P0-7336	Instrument Air Dryer Maintenance	02/22/2022 Revision No. 2

During the audit, the staff verified Comanche Peak's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

During the audit of the "operating experience" program element, the staff reviewed a search of results of the plant-specific database to identify any previously unknown or recurring aging effects. The staff will evaluate any identified plant-specific OE in the SE.

The staff also audited the description of the LRA AMP Compressed Air Monitoring program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.15, Fire Protection

Summary of Information in the Application. The LRA states that AMP B.2.3.15, "Fire Protection," is an existing program with enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.M26, "Fire Protection."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title/Description	Revision / Date
LUM00020-REPT-003	Final 2011-2021 OE Spreadsheet	Revision 0 / November 30, 2022
N/A	Final 2011-2021 OE Spreadsheet – Additional Search Requests	Version 1 / December 9, 2022
N/A	OE Spreadsheet (Filtered by AMP) XI.M26	December 5, 2022
CR-2021-000389	Degraded fireproofing material	January 15, 2021
CR-2014-003171	Thermo-lag unsatisfactory condition	March 21, 2014
CR-2015-004772	Missing material in penetration seal	May 6, 2015
CR-2017-007406	Cracked penetration seal and cracked fire walls	June 16, 2017
CR-2011-001600	Boric acid leak impacting cable trays	February 11, 2011
CR-2014-001767	Thermo-lag exposed to water	February 17, 2014
CR-2014-007705	Thermo-lag exposed to water	June 1, 2014

Document	Title/Description	Revision / Date
CR-2015-005229	Seal damage and damper cleaning	June 9, 2015
CR-2012-004353	Degraded fire doors	April 26, 2012
CR-2012-002474	Damaged fire rated seals	March 9, 2012
CR-2015-008133	Damaged fire damper	September 9, 2015
CR-2012-006446	Degraded gravity damper	June 26, 2012
CR-2015-000452	Fire wall – cracked cinder blocks and missing grout	January 14, 2015
CR-2012-001373	Fire protection requirements	February 9, 2012
CR-2021-007743	Crack in fire barrier	November 12, 2021
CR-2012-009412	Damaged penetration seal	September 19, 2012
CR-2014-011221	Damaged penetration seal	October 12, 2014
CR-2017-002696	Damaged penetration seal	February 28, 2017
CR-2016-006096	Rattling damper blade	
CR-2017-007746	2017 Triennial Fire Protection Baseline Inspection	June 26, 2017
TR-2019-003186	Incorporate penetration seal list into FIR-310	April 18, 2019
WO 5459899	Repair damaged penetration seal	September 5, 2017
WO 5459901	Repair cracks in fire rated wall	May 2, 2018
WO 4971966	Fire water pumphouse diesel fire pump room gravity damper	2016
WO 4426374	Fire water pumphouse electric fire pump room gravity damper	2014
FIR-310	Penetration Seal Inspection	Revision 6 / October 25, 2021
FIR-311	Fire Rated Assembly Visual Inspection	Revision 3 / March 5, 2014
MSM-P0-0705	Fire Damper Inspection and Cleaning	Revision 4 / November 15, 2017
MSG-1005	Application of Thermo-lag Materials	Revision 1 / November 14, 2013
FIR-302	Fire Door Tests and Inspections	Revision 9 / January 19, 2022
FIR-303	Halon Fire Suppression System Inspection	Revision 5 / March 11, 2004
MSG-1018	Installation and Rework of Penetration Seals	Revision 1 / August 19, 2008

During the audit, the staff verified that for the program elements that the applicant declared was consistent, the “preventive actions,” “acceptance criteria,” and “corrective actions” program elements of the LRA AMP is consistent with the corresponding element of the GALL-LR Report AMP.

The staff also verified the applicant’s claim that aspects of the “detection of aging effects,” program element not associated with the enhancements identified in the LRA are consistent with the corresponding program elements in the GALL-LR Report AMP.

In addition, the staff found that for the “scope of the program,” “parameters monitored or inspected,” and “monitoring and trending” program elements, sufficient information was not available to determine whether they are consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify whether the program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

During the audit of the “operating experience” program element, the staff reviewed a search of results of the plant-specific database to identify any previously unknown or recurring aging effects. The staff will evaluate the identified plant-specific OE in the SE.

The staff also audited the description of the LRA Fire Protection program provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description. The staff will consider issuing RAIs in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA AMP B.2.3.16, Fire Water System

Summary of Information in the Application. The LRA states that AMP B.2.3.16, “Fire Water System,” is an existing program with exceptions and enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.M27, “Fire Water System.”

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title/Description	Revision / Date
LUM00020-REPT-053	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Fire Water System Aging Management Program Basis Document	Revision 1 / August 2, 2022
WO 4099265	Leaking fire protection strainer flange	February 2011
WO-5481074	Deluge valve drain piping corroded and partially clogged	March 2020
TR-2021-001032	Sprinkler pipe pinhole leak	February 9, 2021
CR-2011-005044	Drain line blocked by obstruction	April 20, 2011
CR-2017-009105	Clogged drain line	August 9, 2017
WO-4564912	Hole in valve body	September 2013
WO-5808240, WO-5808241, WO-5808242, and WO-5808244	Engineering review of future underground loop flow testing	March and April 2020
TR-2021-007069	Fire protection piping leak	October 23, 2021
CR-2020-008911	Fire protection piping leak	November 28, 2020
CR-2014-002027	Valve body crack	February 21, 2014
CR-2017-005038	Leaking insulated fire suppression piping and corroded metal exterior of insulation	April 15, 2017
CR-2013-005787	Rust on fire water storage tank	May 22, 2013
CR-2021-008314	Through-wall leak on 6-inch fire protection pipe	December 8, 2021
CR-2020-004585	Leaking fire hydrant	June 16, 2020
TR-2021-002788 and TR-2021-002787	Corroded fire protection piping	April 23, 2021
WO-4145841	Leaking flange, clogged drain, debris in gong	June 2011
CR-2012-002209	Jockey pump running continuously	February 23, 2012
WO-4786713	Corrosion buildup on trim piping strainer	September 2014
CR-2011-012923	Jockey fire pump had zero discharge pressure	November 14, 2011
CR-2014-001329	Corrosion buildup on trim piping	February 5, 2014

Document	Title/Description	Revision / Date
WO-21-405717	Walk down of fire protection system and equipment on 2MTI Transformer	June 2021
CR-2018-003010	Pitting of pipe wall due to corrosion	April 24, 2018
MSG-0104	Fire Protection Piping and Sprinklers	Revision 0 / June 18, 2004
CR-2013-000964	Hole in dry pipe sprinkler system low point drain isolation valve body	January 29, 2013
CR-2011-001768	Fire protection strainer leaking	February 16, 2011
WO-5291829	Piping and components with excessive rust	October 2017
WO-5585159, WO-5585160	Fire protection sprinkler head fouling	August 2020
CR-2013-009025	Fire protection piping through-wall leak	August 29, 2013
CR-2017-012056	Fire protection deluge valve rust	October 27, 2017
WO-5423836	Leaking insulated fire suppression piping and corroded metal exterior of insulation	April 2017
CR-2016-006407	Fire protection piping through-wall leak on 90-degree elbow	July 3, 2016
TR-2021-006759	Moderate corrosion and mineral deposits on sprinkler deluge piping	October 15, 2021
TR-2021-003891	Walk down of fire protection system and equipment on 2MTI Transformer	June 10, 2021
CR-2013-009785	Jockey fire pump discharge header vent valve line clogged	September 23, 2013
CR-2017-007536	Engineering review of future underground loop flow testing	June 20, 2017
WO-4479825	Strainer housing with through-wall leaks	October 2016
CR-2012-009671	Strainer housing with through-wall leaks	September 26, 2012
CR-2018-004753	Fire protection pipe leaking	July 16, 2018
CR-2018-002302	Fire protection sprinkler head fouling	March 26, 2018
FIR-P1-3301	Transformer Deluge Flow Test CP1-EPTRMT-01/02 and CP1-EPTRUT-01	Revision 4 / September 26, 2017
OPT-220-11	Fire Hose Station Flow Test	N/A
FIR-PX-3601	Fire Hydrant Yearly Flow Test	Revision 2 / May 20, 2021
FIR-P2-3436	Main Feedwater Pump CP2-FWAPFP-02 Air Flow and Deluge Valve 2-TV-4102C Test	Revision 4 / January 26, 2021
FIR-P2-3120	Containment Building Hose Stations Air Flow and Deluge Valve 2-HV-4075D Test	Revision 6 / April 12, 2021
FIR-P2-3432	Generator Hydrogen Seal Oil Air Flow and Flooding Valve 2-TV-4102A Test	Revision 3 / March 24, 2021
FIR-307-1	Sprinkler System Inspection Form	Revision 3
FIR-PX-3801	Electric Driven Fire Protection Pump CPX-FPAPFP-04 Operability Test	Revision 5 / June 10, 2020
FIR-PX-3211	Fire Protection Branch Line Flow Test FP-X-037/38	Revision 0 / July 30, 2020
FIR-307	Inspection of Sprinkler Systems	Revision 4 / January 31, 2017
FIR-P0-3141	Deluge Valves 1/2-TV-4107Y-1/2 for Charcoal Filter Units CP1/2-VAFUPK-17/18	Revision 3 / August 27, 2020
FIR-P1-3437	Turbine Generator Main Bearing Air Flow and Deluge Valve 1-TV-4102G Test	Revision 4 / April 12, 2021
FIR-P2-3433	Lube Oil Storage Room Air Flow and Deluge Valve 2-TV-4103 Test	Revision 4 / March 24, 2021
FIR-PX-3802	Diesel Driven Fire Protection Pump CPX-FPAPFP-05 Operability Test	Revision 5 / January 26, 2021
FIR-309	Hose Station and Hydrant/Hose House Inspections	Revision 5 / August 24, 2021

Document	Title/Description	Revision / Date
FIR-PX-3200	Fire Suppression Loop Flow Test	Revision 3 / February 14, 2013
N/A	Fire Protection Report	Revision 33 / July 1, 2020
MSM-C0-1856	Grinnell Strainer Maintenance (Models A and B-1)	Revision 2 / June 30, 1997
FIR-312	Hydrostatic Testing of Fire Hose	Revision 1 / August 6, 2012
STA-723	Fire Protection Systems/Equipment Requirements	Revision 5 / January 22, 2002

During the audit, the staff verified that for the program elements that the applicant declared was consistent, the "preventive actions" program element of the LRA AMP is consistent with the corresponding element of the GALL-LR Report AMP.

The staff also verified the applicant's claim that aspects of the "acceptance criteria" and "corrective actions" program elements not associated with the exceptions and enhancements identified in the LRA are consistent with the corresponding program elements in the GALL-LR Report AMP.

In addition, the staff found that for the "scope of the program," "parameters monitored or inspected," "detection of aging effects," and "monitoring and trending" program elements, sufficient information was not available to determine whether they are consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify whether the program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

During the audit of the "operating experience" program element, the staff reviewed a search of results of the plant-specific database to identify any previously unknown or recurring aging effects. The staff will evaluate the identified plant-specific OE in the SE.

The staff also audited the description of the LRA Fire Water System program provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description. The staff will consider issuing RAIs in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA AMP B.2.3.17, Fuel Oil Chemistry

Summary of Information in the Application. The LRA states that AMP B.2.3.17, "Fuel Oil Chemistry," is an existing program with enhancements that, with exceptions, will be consistent with the program elements in GALL-LR Report AMP XI.M30, "Fuel Oil Chemistry."

By letters dated April 6, 2023 (ML23096A302), the applicant provided a supplement to LRA Section B.2.3.17, page B-121, Fuel Oil Chemistry AMP. The supplement addresses staff audit questions by clarifying the tank sampling location.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
9.7 PM 352042, MSM-S0-5713	Clean DG 1-01 Fuel Oil STG TK	
9.8 PM 352043, MSM-S0-5713	Clean DG 1-02 Fuel Oil STG TK	
9.9 PM 352044, MSM-S0-5713	Clean DG 2-01 Fuel Oil STG TK	
9.10 PM 352045, MSM-S0-5713	Clean DG 2-02 Fuel Oil STG TK	
9.26 VISTRA OPCO CPNPP Quality Assurance Manual		Revision 23
9.47 TR-2019-007125	Feasibility and Actions Required to Extend the Frequency of EDG Fuel Oil Tank Cleaning and Inspection Activities	
Tracking Report	TR-2019-007125 IR to Determine the Feasibility and Actions Required to Extend the Frequency of Performing EDG Fuel Oil Storage Tank Cleaning and Inspection Activities	09/10/2019
PROCEDURE NO. OPT-214B	DIESEL GENERATOR OPERABILITY TEST COMANCHE PEAK NUCLEAR POWER PLANT UNIT 2 OPERATIONS TESTING MANUAL	Revision No. 20 02/11/2021
PM 352043	CLEAN DG 1-02 FUEL OIL STG TK	10/15/2020
PM 352044	CLEAN DG 2-01 FUEL OIL STG TK	07/13/2020
PM 352045	LEAN DG 2-02 FUEL OIL STG TK	07/13/2020
PM 350076	SAMPLE THE DIESEL FUEL OIL STORAGE TANK FOR OFFSITE ANALYSIS	09/29/2020
PROCEDURE NO. COP-904	COMANCHE PEAK NUCLEAR POWER PLANTUNIT COMMONCHEMISTRY OPERATING PROCEDURES MANUAL	02/17/2021 Revision No. 8
PROCEDURE NO. CHM-140	COMANCHE PEAK NUCLEAR POWER PLANTUNIT COMMONCHEMISTRY/RADIOCHEMISTRY MANUAL	01/28/2009 Revision No. 3
(FODT Drawing)	DDVEN_H-2328_-_4	12/14/2022
DIESEL GENERATOR OPERABILITY TEST PROCEDURE NO. OPT-214 A	COMANCHE PEAK NUCLEAR POWER PLANTUNIT 1 OPERATIONS TESTING MANUAL	02/11/2021 Revision No. 25
PM 350075	SAMPLE THE DIESEL FUEL OIL STORAGE TANK FOR OFFSITE ANALYSIS	05/18/2021
PM 301012	FUEL OIL ANALYSIS	03/23/2021
PM 352042	CLEAN DG 1-01 FUEL OIL STG TK	07/13/2020
PM 301011	Fuel Oil Analysis	03/23/2021
Preventative Maintenance Form CHM-140-904-2	TEST DATA SHEET FOR DIESEL DRIVEN FIRE PUMP FUEL TANK	Revision 0
DIESEL GENERATOR FUEL OIL STORAGE TANK CLEANING PROCEDURE NO. MSM-P0-3713	COMANCHE PEAK NUCLEAR POWER PLANTUNIT 1 AND 2MAINTENANCE SECTION – MECHANICAL MANUAL	Revision No. 0 08/26/2021
PM 350077	SAMPLE THE DIESEL FUEL OIL STORAGE TANK FOR OFFSITE ANALYSIS	11/16/2020
Picture	CP1-DOATDT-01 (Representative FODT) Left	December 14, 2022
Picture	CPX-FPTNFP-05 (front label)	December 14, 2022
Picture	CPX-FPTNFP-05 (back label)	December 14, 2022
Picture	FOST Internal Top	December 14, 2022
Picture	Diesel Oil Storage Tank construction	December 14, 2022
Picture	CPX-FPTNFP-05 (front view)	December 14, 2022
Picture	CPX-FPTNFP-06 (front label)	December 14, 2022
Picture	CPX-FPTNFP-06 (back label)	December 14, 2022
Picture	FOST Internal Bottom	December 14, 2022
Picture	CP1-DOATDT-01 (Representative FODT)	December 14, 2022
Picture	CP1-DOATDT-01 (Representative FODT) Right	December 14, 2022
Picture	CPX-FPTNFP-06 (front view)	December 14, 2022
Picture	CP1-DOATDT-01 (Representative FODT) Top	December 14, 2022
Picture	CPX-FPTNFP-05 (side view)	December 14, 2022
Picture	CP1-DOATDT-01 (Representative FODT) Label	December 14,2022

During the audit, the staff verified Comanche Peak's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the GALL-LR Report AMP with enhancements stated in Elements 3 through 6, to the corresponding elements and with exceptions in Element 4. During the audit of the "operating experience" program element, the staff independently searched the plant-specific database to identify any previously unknown or recurring aging effects. The staff will evaluate the identified plant-specific OE in the SE.

The staff also audited the description of the LRA Fuel Oil Chemistry program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.18, Reactor Vessel Surveillance

Summary of Information in the Application. The LRA states that AMP B.2.3.18, "Reactor Vessel Surveillance" is an existing program with enhancements that will be consistent with the program elements in GALL Report AMP XI.M31, "Reactor Vessel Surveillance."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the Reactor Vessel Surveillance program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
STA-502-R16	Comanche Peak Nuclear Power Plant Station Administration Manual	Revision 16, Effective Date 10/26/2022
TBX/TCX-IPA-AMP-XI.M31	Reactor Vessel Surveillance Aging Management Program Basis Document	Revision 1, 07/29/2022
NA	Comanche Peak Operating Experience Spreadsheet – XI.M31 Vessel Surveillance	12/05/2022
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	08/31/2022
WCAP-18630-NP	Comanche Peak Units 1 and 2 Time Limited Aging Analysis on Reactor Vessel Integrity	05/2021
WCAP-17269-NP	Analysis of Capsule W from the Comanche Peak Unit No. 2 Reactor Vessel Radiation Surveillance Program (ML102920160)	09/2010
WCAP-1661-NP	Analysis of Capsule X from the TXU Energy Company Comanche Peak Unit 1 Reactor Vessel Radiation Surveillance Program (ML063050191)	09/2006
NA	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Application (ML22276A082)	10/2022
TR-2019-005570	Tracking Report - The Comanche Peak Units 1 and 2 Pressure Temperature Limits Report (PTLR) needs to be updated to account for the latest test results from the reactor vessel surveillance program	07/01/2019

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements.

During the audit, the staff made the following observations:

- The staff confirmed that reinsertion of Capsule W or V, in lieu of Capsule Z, into the Unit 1 reactor vessel for an additional 13 effective full power years (EFPY) of operation would be capable of achieving at least a reactor vessel equivalent neutron fluence 5.23 x 10^{19} n/cm^2.

- The staff confirmed that reinsertion of Capsule Y or V, in lieu of Capsule Z, into the Unit 2 reactor vessel for an additional 14 EFPY of operation would be capable of achieving at least a reactor vessel equivalent neutron fluence of 4.83 x 10^{19} n/cm^2.

- With respect to the enhancement in LRA Section B.2.3.18 and FSAR supplement (A.2.2.18), the LRA lacked sufficient clarity and details regarding the capsule withdrawal schedule (e.g., capsule identification and EFPY withdrawal time) for Units 1 and 2. By letter dated April 6, 2023 (ML23096A302), the applicant supplemented LRA Table A-3, and LRA Section B.2.3.18, to provide explicit details regarding stating when they plan to withdraw capsules at the necessary EFPY for multiple available capsules, which will be addressed in the staff's SE.

- With respect to the "monitoring and trending" and "operating experience" program elements, the staff noted an instance that the PTLR may not have been assessed in a timely manner based on surveillance data from a recent capsule withdrawal. By letter dated April 6, 2023 (ML23096A302), the applicant supplemented LRA Section B.2.3.18, to include an enhancement to the "monitoring and trending" program element to ensure an update to the PTLR consistent with the surveillance test results, which will be addressed in the staff's SE.

The staff also audited the description of the Reactor Vessel Surveillance program, as supplemented by letter dated April 6, 2023, provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.19, One-Time Inspection

Summary of Information in the Application. The LRA states that AMP B.2.3.19, "One-Time Inspection," is a new program that will be consistent with the program elements in GALL-LR Report AMP XI.M32, "One-Time Inspection.

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff's audit addressed only the program elements described in the applicant's basis document.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-056	XI.M32 One-Time Inspection AMP Basis Document	Revision 1
LTR-CECO-21-081	Responses to EPRI Checklist "Guidance for Addressing Aging Management Plans for Steam Generator Channel Head Components," for Comanche Peak Nuclear Power Unit 2 Steam Generator Divider Plate Assemblies	Revision 1

CR-2012-008911	DG Fuel Oil Storage Tank Unit 2 East – cracked gasket	09/04/2012
CR-2012-008993	DG Fuel Oil Storage Tank Unit 2 West – gasket leakage	09/04/2012
CR-2018-000888	Diesel Oil Storage Tank 1-02 – corrosion particulate found	01/30/2018
CR-2018-002118	EDG Starting Air Compressors 2-03 and 2-04 – both show an increase in wear particle concentration	03/19/2018
CR-2019-001676	Priming pump fuel line to the 1-02 alternate power diesel generator leaking	02/20/2019
CR-2019-002541	1-PI-3410-1 differential pressure fuel oil filter gauge leak	03/25/2019
TR-2020-003049	Update procedure to discontinue 3-level sampling for specific gravity on diesel fuel oil	04/26/2020

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA AMP for the One-Time Inspection program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.20, Selective Leaching

Summary of Information in the Application. The LRA states that AMP B.2.3.20, "Selective Leaching," is a new program that will be consistent with the program elements in GALL-LR Report AMP XI.M33, "Selective Leaching," as amended by LR-ISG-2011-03, "Changes To The GALL-LR Report Revision 2 Aging Management Program XI.M41, "Buried And Underground Piping And Tanks,"" and LR-ISG-2015-01, "Changes to Buried and Underground Piping and Tank Recommendations."

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff's audit addressed only the program elements described in the applicant's basis document.

Audit Activities. In addition to the OE documentation contained in the LRA and ePortal, the staff observed the applicant's search of its operating experience database using the keyword "graphiti" (to capture "graphitic corrosion" or "graphitization") which did not return any results.

The table below lists the document that was reviewed by the staff and was found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-057	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Selective Leaching Aging Management Program Basis Document	Revision 1

During the audit, the staff verified the applicant's claim that the "preventive actions," "parameters monitored or inspected," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP. In addition, the staff found that for the "scope of program" and "detection of aging effects" program elements, sufficient information was not available to verify whether they were consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify

whether these program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA Selective Leaching program provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description of the LRA Selective Leaching program. The staff will consider issuing an RAI in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA AMP B.2.3.21, One-Time Inspection of ASME Code Class 1 Small-Bore Piping

Summary of Information in the Application. The LRA states that AMP B2.3.21, "One-Tme Inspection of ASME Code Class 1 Small-Bore Piping," is a new condition monitoring program that will inspect a sample of Class 1 piping less than nominal pipe size (NPS) 4 and greater than or equal to NPS 1. When implemented it will be consistent with the program elements in GALL-LR Report AMP XI.M35, "ASME Code Class 1 Small-Bore Piping."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the One-Time ASME Code Class 1 Small-Bore Piping program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-058	One-Time Inspection of ASME Code Class 1 Small-Bore Piping Aging Management Program Basis Document	Revision 1 08/01/2022
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0 08/03/2022
LUM00020-REPR-039	ASME Section XI Inservice Inspection, Subsections IWB, IWC, and IWD Aging Management Program Basis Document	Revision 1 08/20/2022
LR-AMP-017-IWBDC	ASME Section XI, Subsections IWB, IWC, and IWD Inservice Inspection Program Basis Document for License Renewal	Revision 9
CR-2013-004868	OPT 303, Reactor coolant System (RCS) Water Inventory, has been performed indicating a 0.5gpm RCS leak. U1 has entered Action Level 3 Response actions per OPT 303 and U1 CR has dispatched personnel to find leak	04/25/2013
CR-2013-006270	Unit 1 entered Action Level 2 for OPT-303 leakrate for 2 of 3 consecutive leak rates being above the average plus 2 times the standard deviation	06/07/2013
CR-2014-011871	U1 Reactor Cavity Sump pumps have run 3 times during 1RF17 while the Reactor cavity was flooded. This is abnormal and an inspection of below the vessel for leak sources needs to be scheduled	10/24/2014
CR-2015-006001	Discovered potential through wall leak from pipe segment SI-2-070 in Unit 2 Train B SI pump room. There is a 1-2 cup boric acid accumulation on the floor underneath 2SI-0055. There is a drip hanging from the bottom of the insulation on SI-2-070 pipe segment below 2SI-0055 – evidence of active leakage. All accumulations are white	07/07/2015

Document	Title	Revision / Date
CR-2016-004610	Socket weld #FW1-4 in safety injection line #3/4-1501R-2 (1SI-0119) in Unit 1 has been examined with phased array ultrasonics. This is a non-ASME Code exam done in response to a similar weld that leaked last year in Unit 2. WestDyne and Electric Power Research Institute (EPRI) have analyzed this data and have concluded there is relevant indication in the weld. The indication is 0.2 inches long in the circumferential axis and is in the vicinity of the fusion line between the root and the toe	05/13/2016
CR-2016-001844	U2 has entered Action Level 3 for RCS leakage based on Deviation from the Baseline Mean; One unidentified RCS Inventory Balance >3 standard deviations	02/25/2016
CR-2018-009224-1	Possible boric acid accumulation was identified at 2-TE-0443A, Reactor Coolant System Hot Leg 2-04 Temperature Element 0443A	12/30/2018
IN 2007-21, Supp. 1 ML20225A204	Pipe Wear Due to Interaction of Flow-Induced Vibration and Reflective Metal Insulation	Supplement 1 12/11/2020
OE 2021-0004	Information Notice (IN) 07-21. Supplement 1, “Pipe Wear Due to Interaction of Flow-Induced Vibration and Reflective Metal Insulation”	01/21/2021

During the audit, the staff verified applicant’s claim that the “scope of program,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” “acceptance criteria,” and “corrective actions” program elements of the LRA AMP are consistent with the corresponding program elements in the GALL-LR Report AMP.

For the audit of the “operating experience” program element, the staff reviewed the OE provided by the applicant in the AMP basis document and on the ePortal. The staff performed a search of the provided OE using keywords: “RCS leakage,” “sockolet,” “stress corrosion,” “PWSCC,” “small bore,” “socket weld,” and “weldolet.” The staff will document its review of relevant OE in the SE.

The staff also audited the description of the LRA AMP provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.22, External Surfaces Monitoring of Mechanical Components

Summary of Information in the Application. The LRA states that AMP B.2.3.22, “External Surfaces Monitoring of Mechanical Components,” is an existing program with enhancements that will be consistent with the program elements in the GALL-LR Report AMP XI.M36, “External Surfaces Monitoring of Mechanical Components.”

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this enhanced program, and the staff’s audit addressed only the program elements described in the applicant’s basis document.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-059	External Surfaces Monitoring of Mechanical Components Aging Management Program Basis Document	Revision 1

STI-748.01	System Monitoring and Health Reporting	Revision 3
TR-2021-001284	Ruptured piping downstream of 2HD-0857 and 2HD-0759	02/18/2021
TR-2019-007943	Corrosion of valve bonnet XSW-0025	10/11/2019
CR-2019-001830	Piping segment 30-SW-X-009-100-5 has surface corrosion	02/26/2019
CR-2016-006524	NRC green NCV finding for inadequate engineering operability input for degraded conditions involving piping corrosion	07/07/2016
CR-201-012370	Main Condenser Drain Valve 2CO-0295 has surface corrosion	12/30/2015
CR-2014-011075	Corrosion of the 2" carbon steel pipes CV-1-013 and CV-1-042	10/09/2014
CR-2013-001016	Water trapped in insulation on pipe segment CH-2-248	01/30/2013
CR-2012-008723	Degraded conditions in the SSW pipe tunnel	08/30/2012

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements.

The staff also audited the description of the LRA AMP for the External Surfaces Monitoring of Mechanical Components provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.23, Flux Thimble Tube Inspection

Summary of Information in the Application. LRA AMP B.2.3.23, "Flux Thimble Tube Inspection," is an existing program that is consistent with the program elements in GALL-LR Report AMP XI.M37, "Flux Thimble Tube Inspection."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-060	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Flux Thimble Tube Inspection Aging Management Program Basis Document	Revision1
	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Application	October 3, 2022
PWROG-21043-P	Flux Thimble Eddy Current Inspections Frequency Decrease – Task 2 Report	Revision 0
WCAP-12866	Bottom-Mounted Instrumentation Flux Thimble Wear	January 1991
	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Application Supplement 1, Attachment C	April 6, 2023
MRS-GEN-1180	Generic Flux Thimble Tube Eddy Current (FTEC) Inspection Field Service Procedure	Revision 3
MRS-GEN-1304	Generic Flux Thimble Tube Eddy Current (FTEC) Field Service Procedure Using Corestar System 8.1	Revision 7
WO 5669174	Perform Seal Table Eddy Current Test – Unit 2 (inspection results)	May 8, 2020
WO 5172648	Perform Seal Table Eddy Current Test – Unit 2 (inspection results)	April 27, 2017
WO 5258047	Perform Seal Table Eddy Current Test – Unit 1 (inspection results)	October 19, 2017
WO 5743564	Perform Seal Table Eddy Current Test – Unit 1 (inspection results)	October 18, 2020

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

During the audit, the staff made the following observations:

- WCAP-12866, a report that has not been generically approved by the NRC, provides the plant-specific wear projection methodology and acceptance criteria.
    - As it relates to Comanche Peak Units 1 and 2, wall thickness is projected using plant-specific data and a methodology that includes sufficient conservatism to ensure that wall thickness acceptance criteria continue to be met during plant operation between scheduled inspections.
    - As it relates to Comanche Peak Units 1 and 2, the acceptance criteria are technically justified to provide an adequate margin of safety to ensure that the integrity of the reactor coolant system pressure boundary is maintained. The acceptance criteria include allowances for factors such as instrument uncertainty, uncertainties in wear scar geometry, and other potential inaccuracies, as applicable, to the inspection methodology chosen for use in the program.
- The LRA and AMP Basis Documents had conflicting information about the frequency of eddy current testing for the flux thimble tubes. This discrepancy was corrected by the applicant in letter dated April 6, 2023 (ML23096A302).
- The applicant indicated participation in a PWROG effort towards possibly extending the interval between flux thimble tube inspections.
- The AMP has employed capping, moving, and replacing flux thimble tubes to reduce wear or prevent it in the case of the acceptance criteria being exceeded.
- No through-wall wear has been recorded at Comanche Peak Unit 1 or 2.

The staff also audited the description of the Flux Thimble Tube Inspection provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.24, Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components

Summary of Information in the Application. The LRA states that AMP B.2.3.24, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components," is a new program that will be consistent with the program elements in GALL-LR Report AMP XI.M38, "Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components," as modified by LR-ISG-2012-02, "Aging Management of Internal Surfaces, Fire Water Systems, Atmospheric Storage Tanks, and Corrosion Under Insulation."

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff's audit addressed only the program elements described in the applicant's basis document.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-061	Comanche Peak Nuclear Power Plant Units 1 And 2 License Renewal Inspection of Internal Surfaces In Miscellaneous Piping And Ducting Components Aging Management Program Basis Document	Revision 1
CR-2013-000747	Through Wall Leak In Pipe Segment VD-X-045	01/23/2013
TR-2021-004074	Multiple New Leaks Developing on Pipe VD-X-061	06/18/2021
TR-2019-001908	Pinhole Leak Downstream of 2VD-0017	02/28/2019

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP. In addition, the staff found that for the "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," and "corrective actions" program elements, sufficient information was not available to verify whether they were consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components program provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description of the LRA Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components program. The staff will consider issuing an RAI in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA AMP B.2.3.25, Lube Oil Analysis

Summary of Information in the Application. The LRA states that AMP B.2.3.25, "Lubricating Oil Analysis," is an existing program that will be consistent, with enhancement stated in Element 6, to the program elements in GALL-LR Report AMP XI.M39, "Lubricating Oil Analysis."

Audit Activities. The table below lists the documents that were reviewed by the staff and were found relevant to the Lubricating Oil Analysis. These documents were provided by the applicant's ePortal. The staff will document its review of relevant OE in the SE.

Document	Title	Revision / Date
LUM00020-REPT-062	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Lubricating Oil Analysis Basis Document	07/27/2022 Revision 1
Condition Report CR-2021-002216	FWP 1A Tripped After Experiencing Speed, Flow, and Pressure Oscillations	03/29/2021-09/27/2022
Condition Report CR-2020-007334	Binding in SV-13 Lockout Solenoid or Hydraulic Trip Relay Due to Poor Oil Quality	10/10/2020-03/09/2021
Procedure No. MSM-PO 3360	Emergency Diesel Generator Oil Sampling	February 5, 1999 Revision 3
Procedure No. MSM G0-0101	Lubricating Sample	09/09/2021 Revision No. 5

Document	Title	Revision / Date
Condition Report CR-2013-005274	Oil samples from the CCW Pump 1-02 Outboard Bearing has an Elevated Wear Particle Concentration (WPC)	05/08/2013-05/09/2013
Condition Report CR-2015-011917	Oil Sample from Main Feed Water Pump 1-01 (CP1-MSTDFP-01) Shows Indication of Water Ingression	12/14/2015-03/24/2016
Condition Report CR-2018-000941	Thrust Bearings not Secured Against the Shaft Shoulder Allowing (for impacting between the bearings) the Increased Wear Particulate Seen in the Oil Sample	02/01/2018-01/29/2019
INSTRUCTION NO. TSP-514	Lubricant Analysis Program	Revision 4 02/22/2021
Procedure No. STA-421	Control Of Issue Reports	09/09/2016 Revision No. 21
Procedure No. SE-P0-4312	RHR Pump Motor Inspection	05/02/18 Revision No. 7
Condition Report CR-2018-005481	Oil Samples from Containment Spray Pump 2-04 Show Increasing Wear Particle Concentration (WPC)	08/15/2018-08/21/2018
Tracking Report TR-2021-002559	CR-2021-002216 was Rejected by MRC Resulting in a Fourth Holdover	04/13/2021-04/20/2021

During the audit, the staff verified Comanche Peak's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP will be consistent after implementation of the identified enhancement stated in Element 6. During the audit of the "operating experience" program element, the staff reviewed a search of results of the plant-specific database to identify any previously unknown or recurring aging effects. The staff will evaluate any identified plant-specific OE in the SE.

The staff also audited the description of the LRA Lubricating Oil Analysis program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.26, Monitoring of Neutron-Absorbing Materials Other Than Boraflex

Summary of Information in the Application. The LRA states that AMP B2.3.26, "Monitoring of Neutron-Absorbing Materials Other Than Boraflex," is an existing program that, with enhancements, will be consistent with the program elements in NUREG-1801, Section XI.M40, "Monitoring of Neutron-Absorbing Materials Other Than Boraflex."

Audit Activities. The table below lists the documents that were reviewed by the staff and were found relevant to the Monitoring of Neutron-Absorbing Materials Other Than Boraflex Program. These documents were provided by the applicant and identified in the staff's search of the applicant's operating experience database. The staff will document its review of relevant OE in the SE.

Document	Title	Revision / Date
DCVDI_HI-2188305_-_0	Comanche Peak Boral Coupon Surveillance Report	10/12/2018
DCVDI_HI-2002436_-_9	Criticality Safety Analysis of Holtec Spent Fuel Racks for Comanche Peak	Revision 9
HI-2135720R1_R01	Comanche Peak Boral Coupon Surveillance Report	09/25/2013
TS	Technical Specifications for Comanche Peak Nuclear Power Plant Units 1 and 2	
DCVDI_Hpp-2303-1_-_0	Test Procedure for Comanche Peak Spent Fuel Pool Neutron Absorbing Materials Surveillance Program	Revision 0

Document	Title	Revision / Date
TPNUC_NUC-211_7_-_-(2)	SFP Storage Limitations for Reactivity Control	01/28/2019
NUC-211-1-101618_1_NA	Comanche Peak Boral Coupon Surveillance Report	10/12/2018
HI-2156882R1_R01	Comanche Peak Boral Coupon Surveillance Report	12/23/2015
STA-422	Corrective Action Program	8/31/2016
TFNUC_NUC-211-1_1_-_-(1)	Boral Coupon Documentation Form	Revision 1
TFNUC_NUC-211-2_0_-_-	Boral Coupon Visible Degradation Trending	Revision 0

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," and "acceptance criteria" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also verified the applicant's claim that aspects of the "corrective actions" program element not associated with the enhancement identified in the LRA are consistent with the corresponding program element in the GALL-LR Report AMP.

During the audit of the "operating experience" program element, the staff reviewed a search of results of the plant-specific database to identify any previously unknown or recurring aging effects. The staff will evaluate any identified plant-specific OE in the SE.

The staff also audited the description of the LRA AMP Monitoring of Neutron-Absorbing Materials Other Than Boraflex program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.27, Buried and Underground Piping and Tanks

Summary of Information in the Application. The LRA states that AMP B.2.3.27, "Buried and Underground Piping and Tanks," is an existing program with enhancements and an exception that will be consistent with the program elements in GALL-LR Report AMP XI.M41, "Buried and Underground Piping and Tanks," as amended by LR-ISG-2015-01, "Changes to Buried and Underground Piping and Tank Recommendations."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-064	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Buried and Underground Piping and Tanks Aging Management Program Basis Document	Revision 0
CR-2020-006151	Underground Water Leak Between Protected Area Fence and Delay Fence North Of The Admin Building	08/20/2020
CR-2018-000888	Corrosion Product Particulate Found in The Well Portion Of Diesel Oil Storage Tank 1-02	01/30/2018
CR-2015-003427	Buried Fire Protection Piping was Exposed and Noted to Have Coating (Coal Tar Wrap) Damage	04/15/2015
CR-2012-005813	2012 WANO Peer Review Evaluation Area for Improvement	06/08/2012
CR-2015-010120	Service Water Pipe Support Issues Identified By NRC Resident	10/22/2015
MSE-P0-1328	Cathodic Protection Annual Survey	Revision 4

Document	Title	Revision / Date
MSE-P0-1327	Bi-Monthly Cathodic Protection Inspection	Revision 7
2323-SS-008	Excavation And Backfill	Revision 7
EPG-9.03	Underground Pipe and Tank Program	Revision 5
CPES-M-1128	Linings and Coatings Outside Containment Safety-Related and Reliability-Important	Revision 0
MSM-P0-3713	Diesel Generator Fuel Oil Storage Tank Cleaning	Revision 0
EV-TR-2019-007125-2	Evaluate the Technical Basis For Extension Of The Fuel Oil Storage Tank Cleaning/Inspection PM Beyond 10 Years	10/24/2019
CP-201000067	Soil Analysis for Comanche Peak Nuclear Power Plant Project	02/04/2010
2323-MS-67A	Comanche Peak Steam Electric Station Unit Nos. 1 and 2 Diesel Generator Oil Storage Tanks Specification	01/24/1977

During the audit, the staff verified the applicant's claim that the "scope of program" program element of the LRA AMP is consistent with the corresponding element of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancement. In addition, the staff found that for the "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements, sufficient information was not available to determine whether they were consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA Buried and Underground Piping and Tanks program provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description of the LRA Buried and Underground Piping and Tanks program. The staff will consider issuing RAIs in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA AMP B.2.3.28, Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks

Summary of Information in the Application. The LRA states that AMP B.2.3.28, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks," is an existing program with enhancements and exceptions that will be consistent with the program elements in GALL-LR Report AMP XI.M42, "Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks," as added by LR-ISG-2013-01, "Aging Management of Loss of Coating or Lining Integrity for Internal Coatings/Linings on In-Scope Piping, Piping Components, Heat Exchangers, and Tanks."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-065	Comanche Peak Nuclear Power Plant Units 1 And 2 License Renewal Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, And Tanks Aging Management Program Basis Document	Revision 0
TR-2021-004953	1-02 CCW [Component Cooling Water] Heat Exchanger Fouling	07/28/2021
CR-2017-011789	1-02 CCW Heat Exchanger Noted Significant Coating Pitting at Both The Inlet And Outlet Manway Sealing Flanges	10/22/2017
CR-2012-010973	CCW Heat Exchanger 2-02 Discharge (CP2-CCAHHX-02) Has Coatings with Less Than Desirable Adhesion	10/20/2012

Document	Title	Revision / Date
CR-2012-010936	Circulating Water System Was Disassembled and It Was Noted That Plasite 7122 Coatings In All These Areas Has Reached Its End Of Life	10/19/2012
EPG-5.01	Engineering Support - Protective Coatings Program	Revision 2
MSM-C0-5877	Component Cooling Water Heat Exchanger Maintenance	Revision 5
MSM-P0-3357	Emergency Diesel Engine Jacket Water Cooler Cleaning	Revision 1
MSM-G0-0908	Maintenance Of Linings And Coatings Outside Containment Safety-Related And Reliability-Important	Revision 1
EPG-5.03	Certification and Qualification of Personnel Performing Inspection of Lining/Coating Work	Revision 1
MSM-G0-0101	Lubricant Sampling	Revision 5
TSP-514	Lubricant Analysis Program	Revision 4

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements. In addition, the staff found that for the "parameters monitored or inspected" and "detection of aging effects" program elements, sufficient information was not available to determine whether they were consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks program provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description of the LRA Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks program. The staff will consider issuing an RAI in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA AMP B.2.3.29, ASME Section XI, Subsection IWE

Summary of Information in the Application. The LRA states that AMP B.2.3.29, "ASME Section XI, Subsection IWE," is an existing program with enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.S1, "ASME Section XI, Subsection IWE."

Audit Activities. In addition to the OE documentation contained in the LRA and ePortal, the staff conducted additional searches of the applicant's CAP database, using the following phrases: "containment liner," "moisture barrier," "IWE examination," "liner augmented examination," "liner thickness loss," "liner distress," "liner discontinuities," "liner irregularities."

The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-066	ASME Section XI, Subsection IWE Aging Management Program Basis Document, Comanche Peak NPP Units 1 and 2 License Renewal	Revision 1
LUM00020-REPT-003	Operating Experience Review	Revision 0

Document	Title	Revision / Date
N/A	OE Spreadsheet Filtered by AMP XI.S1	12/05/2022
N/A	IWE Additional Search Requests	12/14/2022
N/A	IWE OE Search Results from 12/15/2022 Discussion	12/15/2022
OER-2016-004606	Operating Experience Report: RIS-2016-07 Containment Shell or Liner MB Inspection	05/13/2016
CR-2015-005740 IWE	U1 Containment Personnel Air Lock: Site OE PAL Door Seals	06/29/2015
CR-2014-0005950	IN 2014-07 Degradation of Leak Chase Channel Systems	05/12/2014
AI-CR-2011-008866-1 & EV-CR-2011-0088662-2	Condition Report for IN 2011-1: Steel Containment Degradation and Associated License Renewal Aging Management Issues	08/09/2011
CR-2011-004424	Unit 2 Containment Personnel Air Lock (CP2-MEMEPE-01) XI.S1- IWE Recordable Loose bolt	04/12/2011
N/A	1RF22 IWE Pictures of Unit 1 Containment Liner	Provided on ePortal 12/21/2022
CR-2010-006271	NRC IN 2010-12: Containment Liner Corrosion	06/23/2010
TX-ISI-IWE	Metal Containment Visual Examination (Viewed on Teams with Westinghouse on 1/5/23)	Revision 5 & Revision 6
N/A	Comanche Peak Unit 1 1RF22 Spring 2022 IWE/IWL Inspection Final Report Interval 3, Period 3; Interval 4, Period 1, Westinghouse Inspection Services	05/02/2022
N/A	Comanche Peak Unit 2 2RF19 Fall 2021 IWE Final Report Interval 3, Period 3; Interval 4, Period 1, Westinghouse Inspection Services	10/29/2021
N/A	Comanche Peak NPP Unit 1 IWE/IWL Examinations Outage 1RF20 Interval 3 Period 3 / IWL Period 2, Prepared for Luminant by Wesdyne, Book 1 of 1	05/2019
N/A	Comanche Peak NPP Unit 1 IWE Examinations Outage 1RF19 Interval 3 Period 3, Prepared for Luminant by Wesdyne, Book 1 of 1	10/2017
N/A	ISI Program Health Scorecard (CPNPP: 2019 – Post 1RF20 and 2RF17)	08/19/2019
N/A	ISI Program Health Scorecard (CPNPP: 2020 – 2nd Half Post 1RF18)	07/20/2020
N/A	ISI Program Health Scorecard (CPNPP: 2021 – Post 1RF21)	02/21/2021
EPG-703	Inservice Inspection Program Procedure	Revision 4
EPG-731	ASME Section XI Repair/Replacement Activities Procedure	Revision 6
CP-202100660	Containment Inservice Inspection Program Plan Units 1 and 2 – Third CISI Interval (September 10, 2012 to September 9, 2021)	Revision 1
CP-202100693	Containment Inservice Inspection Program Plan Units 1 and 2 – Fourth CISI Interval (September 10, 2021 to September 9, 2031)	Revision 0
Specification No. 2323-SS-15	Comanche Peak Units 1 & 2, Containment Personnel Air Lock, Equipment Hatch and Emergency Airlock Specification	Revision 3

During the audit, the staff verified the applicant's claim that the "scope of program," "parameters monitored or inspected," "monitoring and trending," "acceptance criteria" and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP

In addition, the staff found that for the "preventive actions," "detection of aging effects," and "corrective actions" program elements, sufficient information was not available to determine whether they were consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will use a voluntary LRA supplement offered by the applicant or consider issuing RAIs in order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

During the audit, the staff made the following observations:

- The staff reviewed the program basis document (LUM00020-REPT-066, Revision 1) and the LRA with respect to the program enhancements and noted that the language of all four program enhancements needed additional clarification or revision to make the LRA AMP consistent or adequate to manage the aging effects. These issues are indicated in the breakout questions and the staff will consider issuing RAI(s) or use a voluntary LRA supplement offered by the applicant to address the issues.

- The staff's review of the operating experience description of LRA B.2.3.29 noted that the factual description of plant-specific OE appeared to not adequately support the stated conclusion, and therefore needed to be supplemented with a description of the general observed material condition of the containment pressure-retaining boundary components within the scope of the AMP based on past inspections. The staff will consider issuing an RAI or use a voluntary LRA supplement offered by the applicant to address the issue.

The staff also audited the description of the LRA AMP ASME Section XI, Subsection IWE provided in the FSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR. However, the staff may consider issuing RAI(s) to verify the sufficiency of the FSAR supplement program description if conforming changes related to revised wording of enhancements offered by the applicant in a voluntary LRA supplement are not reflected in the corresponding LR Commitments in LRA Table A-3.

LRA AMP B.2.3.30, ASME Section XI, Subsection IWL

Summary of Information in the Application. The LRA states that AMP B.2.3.30, "ASME Section XI, Subsection IWL," is an existing program with enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.S2, "ASME Section XI, Subsection IWL."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-067	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal ASME Section XI, Subsection IWL Aging Management Program Basis Document	Revision 0
CP-202100660	CISI Program Plan, Units 1 and 2 – Third Containment ISI Interval, September 10, 2012, to September 9, 2022	Revision 1 09/29/21
	CISI Program Plan, Units 1 and 2 – Fourth Containment ISI Interval, September 10, 2021, to September 9, 2031	Revision 0 10/12/21
EPG-703	Inservice Inspection Program Procedure No. EPG-703	Revision 4 08/3/14
TR-2022-002161 Tracking Report	Document and Evaluate the Unit 1 and Unit 2 ASME Section XI IWL examinations and Unit 1 IWE examinations performed in the Spring of 2022	03/30/22
TX-ISI-8 PROP	VT-1 and VT-3 Visual Examination Procedure	Revision 11
TX-ISI-IWL PROP	Concrete Structural Visual Examination	Revision 8
	Comanche Peak 1RF22, Spring 2022, IWE/IWL Final Report Interval 3, Period 3, Interval 4, Period 1	05/02/22

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are

consistent with the corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements.

The staff also audited the description of the LRA ASME Section XI, Subsection IWL AMP provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.31, ASME Section XI, Subsection IWF

Summary of Information in the Application. The LRA states that AMP B.2.3.31 "ASME Section XI, Subsection IWF," is an existing program with an exception and enhancements, when implemented, will be consistent with the program elements in GALL-LR Report, Revision 2, AMP XI.S3, "ASME Section XI, Subsection IWF."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision/Date
Enercon LUM00020-REPT-068	Comanche Peak Nuclear Power Plant (CPNPP) Units 1 and 2 License Renewal, ASME Section XI, Subsection IWF AMP Basis Document	07/27/2022
Enercon LUM00020-REPT-066	Comanche Peak Nuclear Power Plant (CPNPP) Units 1 and 2 License Renewal, ASME Section XI, Subsection IWE AMP Basis Document	07/27/2022
Procedure NO. STI-422.04	Processing of Condition Reports	Revision 1
Procedure No. EPG-731	ASME Section XI Repair/Replacement Activities	Revision 6
Procedure No. EPG-703	Inservice Inspection Program (ISI)	Revision 4
Procedure No. STA-703	Inservice inspection Program	Revision 14
Procedure No. STA-422	Corrective Action Program	09/07/2022
Procedure No. STA-677	Preventive Maintenance Program	05/05/2022
Procedure No. STA-744	Maintenance Effectiveness Monitoring Program	02/09/2017
Procedure No. STA-746	Industry Operating Experience Program	03/31/2022
Procedure No. MSM-G0-0210	Constant and Variable Spring Pipe Support Maintenance	Revision 0
Procedure No. MSG-0103	Installation, Modification and Removal of Sway Struts and Snubbers	Revision 0
Procedure No. MSG-1008	Pipe Support Adjustments and Verifications	Revision 0
CPES-M-1078	Specification Fabrication and Erection of Piping (ASME Code Class 1, 2, & 3,ANSI Safety Class 1, 2, & 3, and ANSI B31.1	Revision 13
CPES-P-1079	Specification Fabrication and Erection of Pipe Supports	Revision 11
WESDYNE Westinghouse Report	2RF15 Interval 3, Period 1 ISI Examinations (see pgs. 42 to 45 for CRDM seismic support examinations)	10/23/2015
WESDYNE Westinghouse Report WDI-PJF-1316363-FSR-001	1RF18 Interval 3, Period 2 (see Pages 22 & 35 for CRDM seismic support examinations)	06/19/2016
Westinghouse Final Report	CPNPP Fall 2021 2RF19 ISI Report, Interval 3, Period 2 & Interval 3, Period 3	10/29/2021
Westinghouse Final Report	CPNPP Spring 2022 1RF22 ISI Report, Interval 4, Period 2 & Interval 4, Period 3	05/02/2022
Luminant CP-201900257	Unit 1 ISI Program Plan, Third Interval, (Unit 1: 2007 Edition of ASME Code Section XI, 2008 Addenda, Start Date 08/13/2010)	Revision 2
Shaw - CPSES -200800331	Unit 2 ISI Program Plan, Second Interval, (Unit 2: 1998 Edition of ASME Code Section XI, 1999 and 2000 Addenda, Start Date 08/03/2004)	Revision 3
WESDYNE Westinghouse Report	Unit 1 Aug. Examinations Originals, Outage 1RF20, Interval three, Period Three	05/13/2019

Document	Title	Revision/Date
CR-201-007061	Mechanical Stress Improvement Process (MSIP) Squeeze of Unit 2 RCS Cold Leg 1	11/17/2021
CR-2011-009629	OE 34106- RV supports not included in the ISI Program (Cook Nuclear Power Plant). CPNPP need to determine if inspection of RFV supports is required as part of the ISI program	08/302011
CR-2021-003041	CPNPP Unit 1 and Unit 2 RV supports have been classified as inaccessible for examination of ASME Section XI Table IWF-2500-1 requirements. Investigated examination history and requirements. Perform the examination in the next Unit 1 and Unit 2 refueling outages	05/05/2021
CR-2018-008440	2RF17 ISI visual examination of pipe support H-SI-2-RB-034-704-1 (ISI support TCX-1-4205-H25) cotter pins missing	12/13/2018
CR-2015-009272	2RF15 ISI VT-3 examination of the CRDM seismic supports with following conditions found multiple cotter pins not spread, loose jam nut and insufficient thread engagement	10/30/2015
CR-2021-003041-3	Examination of Unit 2 RV Supports	05/05/2021
CR-2021-003041-2	Examination of Unit 1 RV Supports	02/22/2022
CR 2014-010074	Based on Sequoyah (SQN) OE312397, CPNPP failed to include and execute ISI VT-3 of CRDM seismic supports resulting in a Green non-cited violation	03/17/2015
WO-21-374015_1	AI-CR-2021-003041-2, ISI Examination of Unit 1 RV Supports	05/19/2022
WO-21-373898_1	AI-CR-2021-003041-3, ISI Examination of Unit 2 RV Supports	11/01/2021
WO 4952046	U1 RF18 CRDM Support Examination	05/2/2016
WO 4834769	U2 RF15 CRDM Support Examination	10/23/2015
WO-21-807879	ISI Examination of Unit 2 Cold Leg 1 RV support following MSIP malfunction	10/25/2021
Trident Presentation	Reactor Vessel Supports	03/08/2023

During the audit, the staff verified the applicant's claim that the "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report, Revision 2, AMP, or will be consistent after implementation of the identified enhancements.

The staff also verified the applicant's claim that aspects of the "scope of program," program element not associated with the exception identified in the LRA or by the staff during the audit are consistent with the corresponding program elements in the GALL-LR Report, Revision 2, AMP.

In addition, the staff found that for the "operating experience," program element sufficient information was not available to determine whether the RV Class 1 supports would be adequately managed by LRA AMP B.2.3.31, ASME Section XI, Subsection IWF, for the period of extended operation. The staff will consider issuing RAIs, RCIs or use the applicant's voluntary supplement in order to obtain the information necessary to verify whether there is reasonable assurance of program adequacy to manage the effects of aging for the RV Class 1 supports consistent with the GALL-LR Report, Revision 2, XI.S3 AMP for the period of extended operation.

During the audit, the staff made the following observations:

- The CPNPP Inservice Inspection (ISI) Program Plan outlines the requirements for the ASME Code, Section XI, Subsection IWF inspections of Class 1, 2, and 3 component supports. Inspection requirements for ASME Class MC component supports are

included in the CPNPP Containment Inservice Inspection Program Plan as documented in staff reviewed IWF and IWE basis documents.

The staff also audited the description of the LRA AMP "ASME Section XI, Subsection IWF" provided in the FSAR supplement. The staff verified this description is consistent with the general description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.32, 10 CFR Part 50, Appendix J

Summary of Information in the Application. The LRA states that AMP B.2.3.32, "10 CFR Part 50, Appendix J," is an existing program that is consistent with the program elements in GALL-LR Report AMP XI.S4, "10 CFR Part 50, Appendix J."

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-069	CPNPP Units 1 and 2 License Renewal,10 CFR Part 50, Appendix J Program Basis Document	Revision 1
LUM00020-REPT-056	CPNPP Units 1 and 2 License Renewal, One-Time Inspection Aging Management Program Basis Document	Revision 1
LUM00020-REPT-059	External Surfaces Monitoring of Mechanical Components Aging Management Program Basis Document	Revision 1
TXX-15001	LAR 14-002 Extension of Containment Leakage Test Frequency	11/28/2015
TSP-734	10 CFR Part 50, Appendix J, Option B Test Intervals and Administrative Limits	Revision 3
TXX-15001_CP-201500034_1	License Amendment Request 14-002 Extension of Containment Leakage Rate Testing Program	01/28/2015
PPT-S1-7014	CPNPP Testing Manual, Unit 1, Containment Integrated Leakage Rate Test	Revision 2
STA-734	CPSES Station Administration Manual, 10 CFR Part 50, Appendix J Containment Leakage Rate Testing Program	Revision 2
PPT-S2-7014	CPNPP Testing Manual, Unit 2, Containment Integrated Leakage Rate Test	Revision 1
OER- 2015-004707	Operating Experience Report	02/27/2019
WO-4776569	CPNPP Routine Test-Surveillance Containment Integrated Leak Rate Test	04/10/2022
TR-2017-011293	SI-0035 and 1SI-0034 had seat leakage	10/17/2017
CR-2018-006944	2CA-0016 Failed LLRT	09/30/2019
CR-2017-010071	Elevated leakage, EAL Local leak rate test	09/12/2017
CR-2015-005769	A 6" Portion of the inner door seal fell off	07/01/2015

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA 10 CFR Part 50, Appendix J provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.33, Masonry Walls

Summary of Information in the Application. The LRA states that AMP B.2.3.33, "Masonry Walls," is an existing program with enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.S5, "Masonry Walls.

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this enhanced program, and the staff's audit addressed only describe extent of audit (e.g., the program elements described in the applicant's basis document).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-070	CPNPP Units 1 and 2 License Renewal, Masonry Walls Aging Management Program Basis Document	Revision 1
STI-744.09	CPNPP Station Instruction Manual, Structural Monitoring Inspection Guide	Revision 0
LUM00020-REPT-031	CPNPP Units 1 and 2 License Renewal, Screening and Aging Management Review Report for the Auxiliary Building and Other Structures	Revision 0
LUM00020-REPT-071	CPNPP Units 1 and 2 License Renewal, Structures Monitoring, Aging Management Program Basis Document	Revision 1
2323-AS-004	Unit Masonry Specification	Revision 0
STA-722	CPNPP Station Administration Manual, Fire Protection Program	Revision 8
LUM00020-REPT-052	CPNPP Units 1 and 2 License Renewal Fire Protection Program Aging Management Program Basis Document	Revision 1
STA-422	Corrective Action Program	Revision 34
LUM00020-REPT-003	CPNPP Units 1 and 2 License Renewal Operating Experience Review	Revision 0
CR-2021-002911	Rain water leaking from removable block on roof on to motor of SSWP 2-02	04/29/2021
CR-2021-002670	Multiple leaks in the roof at the SWIS	04/17/2021
CR-2020-006451	Multiple leaks in the roof at the SWIS	09/02/2020
WO-5098306	Preventive Maintenance. Perform Cross Functional Walkdown Aux Bldg. Unit1, TRN A	02/16/2017
WO-6032169	Applied sealant outer edge of gasket area an verified no leakage while raining	04/17/2021
WO-4805895	Preventive Maintenance. Structural inspection of Fuel building and associate SSCs to satisfy STA-744 requirements	01/27/2020

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP, or will be consistent after implementation of the identified enhancements.

During the audit, the staff made the following observation:

- A degradation mechanism checklist applicable to masonry walls referenced in Section 4.3 of the AMP basis document in the ePortal does not mention gaps between supports and masonry walls as recommended by GALL-LR Report AMP XI.S5 Masonry Walls Element 3, Parameters Monitored or Inspected.

The staff also audited the description of the LRA Masonry Walls program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.34, Structures Monitoring

Summary of Information in the Application. The LRA states that AMP B.2.3.34, "Structures Monitoring," is an existing program with enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.S6, "Structures Monitoring."

Audit Activities. To support its audit of the program, the staff also conducted an onsite audit. On January 31 – February 1, 2023, the staff participated in an onsite audit at CPNPP to gain a general overview of current conditions of the structures compared to the provided OE, and an understanding of current conditions for: (1) water leaks in the Service Water Intake Structure (SWIS), Auxiliary Boiler Building, Emergency Diesel Building, Turbine Building, Fuel Building, Train B Switchgear area fan cooler room (room 1-105) roof penetration and others; (2) aging effects of loss of material (spalling, scaling) and cracking due to freeze-thaw at plant site; and (3) aging effect of Increase in porosity and permeability, and loss of strength due to leaching of calcium hydroxide and carbonation at the interior concrete walls below grade at plant site. While onsite, the staff engaged with the applicant staff, conducted walkdowns, and reviewed additional documentation provided by the applicant.

The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-071	Comanche Peak Nuclear Power Plant Units 1 and 2, License Renewal Structures Monitoring Aging Management Program Basis Document	Revision 1
STI-744.09	Structural Monitoring Inspection Guide	Revision 0
STA-422	Corrective Action Program	Revision 34
STA-730	Corrosion Monitoring Program	Revision 5
MSG-1006	Fabrication of Structural & Embedded Steel and Erection of Structural Steel	Revision 0
CR-2016-001562	Develop a plan to repair building roof leaks	02/18/2016
CR-2016-002175	Multiple roof leaks reported around site from heavy rain	03/08/2016
CR-2021-002670	Multiple leaks in the roof at Service Water Intake Structure	04/07/2021
CR-2018-005963	Roof plug in room 2-108F is leaking, approximately 12dpm onto 2-HV-2336B when it is raining	09/06/2018
CR-2018-006373	Observed leak from Train B Switchgear Area Fan Cooler Room (RM-1-105) roof penetration	09/24/2018
CR-2017-012537	Rainwater leaking through the room 1-108G	11/08/2017
CR-2016-001446	Long standing roof leaks in the Fuel Building that drip into the 841' elevation new fuel receipt area	02/16/2016
CR-2014-005576	Cracks in the concrete foundation at northeast corner of heater drain tank CP2-HDATDT-2 at Turbine Building elevation 803'	04/30/2014
CR-2013-007544	Degradation of the grout base and some corrosion of steel in several pipe supports in Units 1 and 2, Turbine Building basements	07/22/2013
CR-2014-011321	Roof leaks at SG-1-103, Unit 1 Train B Switchgear Room	10/14/2014
WO 4929153	Contractor to repair the switchgear roof	10/27/2014
CR-2013-007544	Degradation of the grout base and some corrosion of steel in several pipe supports in the Units 1 and 2 Turbine Building basements	07/22/2013

During the audit, the staff verified the applicant's claim that the "monitoring and trending," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding element of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements. In addition, the staff found that for the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," and "acceptance criteria" program elements, sufficient information was not available to determine whether they were consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

During the audit, the staff made the following observations:

- For the "Scope of Program" program element, the staff noted that several SCs identified in the LRA as within the scope of the AMP were not clearly identified in the scope of current procedures or as an enhancement.

- For the "Preventive Actions" program element, the staff noted that AMP's enhancement is vague, and AMP does not include preventive action of proper selection of lubricants for the structural bolting integrity.

- For the "Parameters Monitored or Inspected" and "Acceptance Criteria" program elements, the staff noted that the AMP does not include structural sealants which are in the scope of LR.

- For the "Detection of Aging Effect" program element, the staff noted that the AMP does not include the subsequent steps if groundwater leakage is identified.

- The staff noted that the Table 2 items for aging management of Group 8 foundations need to be clarified.

During the onsite audit, the staff performed walkdowns of the SWIS, Auxiliary Boiler Building, Emergency Diesel Building, Turbine Building, Fuel Building, Train B Switchgear Area Fan Cooler Room (room 1-105) roof penetration, Diesel General Building, and Fuel Building, etc. The staff made the following observations during walkdowns:

- During the walkdown of various buildings at site, the staff noted that appropriate corrective actions had been taken to address the water leaks at roofs or penetrations. The staff interviewed the applicant's staff and found that the applicant had installed new roofing for many buildings and has a plan to install new roofing for the rest of the buildings.

- During the walkdown of various buildings at site, the staff discussed with the applicant's staff that the aging effect of loss of material (spalling, scaling) and cracking due to freeze-thaw is applicable to this site. However, the staff did not identify this aging effect during the walkdown.

- During the walkdown of the SCs within the scope of LR, the staff noted the degradations observed during the walkdowns were found to be consistent with the OE for which the GALL-LR Report program was evaluated.

The staff also audited the description of the LRA Structures Monitoring program provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description of the LRA Structures Monitoring Program. The staff will consider issuing an RAI in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA AMP B.2.3.35, Inspection of Water-Control Structures Associated with Nuclear Power Plants

Summary of Information in the Application. The LRA states that AMP B.2.3.35, "Inspection of Water-Control Structures Associated with Nuclear Power Plants," is an existing program with enhancements that will be consistent with the program elements in GALL-LR Report AMP XI.S7, "Inspection of Water-Control Structures Associated with Nuclear Power Plants."

Audit Activities. To support its audit of the program, the staff also conducted an onsite audit. On January 31 – February 1, 2023, the staff participated in an onsite audit at CPNPP to gain a general overview of current conditions of the structures compared to the provided OE, and an understanding of current conditions of concrete degradation on the ceiling of the SWIS. While onsite, the staff engaged with the applicant staff, conducted walkdowns, and reviewed additional documentation and calculations provided by the applicant.

The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-072	Comanche Peak Nuclear Power Plant, Units 1 and 2, License Renewal, RG 1.127, Inspection of Water-Control Structures Associated with Nuclear Power Plants Aging Management Program Basis Document	Revision 0
STI-744.09	Structural Monitoring Inspection Guide	Revision 0
PPT-SX-7517	Safe Shutdown Impoundment	Revision 2
VDRT-5953371	2020 Safe Shutdown Impoundment (SSI) dam inspection report	09/30/2020
VDRT-6034538	NRC Dam safety inspection report-2021	03/17/2022
VDRT-6034728	2022 SSI dam inspection report	08/29/2022
VDRT-5674546	Evaluation of concrete deterioration bay 1 - 01 slab opening - elevation 796-0 Service Water Intake Structure	11/12/2018
W126-D4580	Work instruction: detecting delamination in reinforced concrete by sounding per ASTM D4580	12/15/2017
CR-2017-011512	Falling concrete from the ceiling of the Service Water Intake Structure	10/17/2017
W126-D4580	Detecting delamination in reinforced concrete by sounding per ASTM D4580	12/15/2017
CR-2017-011560	Assessment of degraded Service Water Intake Structure floor slab at elevation at Elevation 796'-0" due to concrete spalling	10/27/2017
Calculation No. CSB-057	Service Water Intake Structure – slab and beam design at elevation 796'-0"	Revision 0
CR-2014-010585	2014 SSI annual inspection recommendations for additional maintenance actions	09/30/2014

During the audit, the staff verified the applicant's claim that the "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the

corresponding elements of the GALL-LR Report AMP or will be consistent after implementation of the identified enhancements. In addition, the staff found that for the "scope of program" program element, sufficient information was not available to verify whether they were consistent with the corresponding program elements of the GALL-LR Report AMP. The staff will consider issuing RAIs in order to obtain the information necessary to verify whether these program elements are consistent with the corresponding program elements of the GALL-LR Report AMP.

During the audit, the staff made the following observations:

- For the "Scope of Program" program element, the staff noted that clarification is needed to address the inconsistency of LR scope among LRA Section B.2.3.35, Section 2.4.7 and Section 2.4.8.

- The staff noted that: (1) Table 1 item 3.5-1, 056 does not include concrete elements for foundation and interior slab; (2) Table 1 item 3.5-1, 059 does not include all the concrete components subject to aging management; and (3) the claim of applicability of Table 1 Item 3.5-1, 060 is inconsistent with ASTM C33-90.

The staff made the following observations during walkdowns:

- During the walkdown of the SWIS, the staff noted that significant OE related to falling concrete from the ceiling of SWIS had been evaluated and the concrete tested and repaired to maintain its structural integrity and intended function.

- During the walkdown of the SCs within the scope of LR, the staff noted the degradations observed during the walkdowns were found to be consistent with the OE for which the GALL-LR Report program was evaluated.

The staff also audited the description of the LRA Inspection of Water-Control Structures Associated with Nuclear Power Plants program provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description of the LRA Inspection of Water-Control Structures Associated with Nuclear Power Plants program. The staff will consider issuing an RAI in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA AMP B.2.3.36, Protective Coating Monitoring and Maintenance

Summary of Information in the Application. The LRA states that AMP B2.3.36, "Protective Coating Monitoring and Maintenance," is an existing program that, with enhancements, will be consistent with NUREG-1801, Section XI.S8, Protective Coating Monitoring and Maintenance.

Audit Activities. The table below lists the documents that were reviewed by the staff and were found relevant to the Protective Coating Monitoring and Maintenance Program. These documents were provided by the applicant and identified in the staff's search of the applicant's operating experience database. The staff will document its review of relevant OE in the SE.

Document	Title	Revision / Date
CMPK_FSAR_A111	CPNPP/FSAR	
PM 336111-WI	Containment Coatings Repairs	02/05/2020

Document	Title	Revision / Date
CR-2014-002598-SELF-ASSESSMENT	Condition Report	09/15/2014
PM 342691-GI	Containment Coatings Repairs	03/06/2013
PM 336111-GI	Containment Coatings Repairs	10/03/2021
PM 336110-WI	Containment Coatings Repairs	04/15/2019
PM 336110-GI	Containment Coatings Repairs	10/19/2020
PM 34692-GI	Containment Coatings Repairs	11/7/2021
CR-2011-010181	Condition Report	09/16/2011
CR-2013-004190	Condition Report	04/15/2013
TR-2020-001428(U2-CCMR-2RF18)	Tracking Report	02/26/2020
CR-2011-007901-SELF-ASSESSMENT	Condition Report	07/13/2021
TERPT_ER-ME-124_0_-_-	Engineering Report Evaluation of CPSES Protective Coatings	11/28/2007
TR-2020-007636(U1-CCMR-1RF21)	Tracking Report	10/17/2020
WO-3932439_1	Work Order	11/08/2014
TSMS_CPES-M-1068_2	Supplemental Record Form	04/24/2010
TPMSM_MSM-GO-0216_6_PCN_0003	Protective Coatings – Containment Procedure	Revision 6
TPSTA_STA-692_5_-_-	Maintenance Coatings Program	Revision 5
TPEPG_EPG-5.02_1_-_-	Certification and Qualification of Coating/Lining Applicators	Revision 1
TPEG_EPG-5.03_1_PCN_0001	Certification and Qualification of Personnel Performing Inspection of Lining/Coating Work	Revision 1
TPEG_EPG-5.01_2_PCN_0001	Engineering Support – Protective Coatings Program	Revision 2
PM 342691-WI	Protective Coatings Program Unit 1 Refueling Inspection	Revision 0
PM 342692-WI	Protective Coatings Program Unit 2 Refueling Inspection	Revision 2

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also verified the applicant's claim that aspects of the "monitoring and trending," program element not associated with the enhancement identified in the LRA are consistent with the corresponding program element in the GALL-LR Report AMP.

During the audit of the "operating experience" program element, the staff reviewed a search of results of the plant-specific database to identify any previously unknown or recurring aging effects. The staff will evaluate any identified plant-specific OE in the SE.

The staff also audited the description of the LRA AMP Protective Coating Monitoring and Maintenance program provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.37, Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Summary of Information in the Application. The LRA notes that AMP B.2.3.37, "Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements," is a new program that will be consistent with the program elements

in GALL-LR Report AMP XI.E1, “Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements.”

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff's audit only addressed the applicant’s basis document as well as the available current relevant maintenance procedures.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-074	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Insulation Material for Electrical Cables and Connections Not Subject To 10 CFR50.49 Environmental Qualification Requirements Aging Management Program Basis Document	Revision 1 / 06/02/2022
TR-2021-007619	Tracking Report; TCX-RCPCPX-04; REACTOR COOLANT PUMP 2-04 MOTOR	11/12/2021
TR-2021-007481	Tracking Report; CP2-MSTDFP-02; FEEDWATER PUMP TURBINE 2-B	09/13/2022
TR-2019-005926	Tracking Report; CPX-EPDPNB-30; U2 CWIS HEAT TRACE CONTROL PANEL XHT-7	07/23/2019
TR-2019-004081	Tracking Report; 1-LS-202TB; FEEDWATER HEATER 1-1A EXTRACTION STEAM DRIP POT 1-01 LEVEL SWITCH	05/14/2019
TR-2017-011889	Tracking Report; TBX-RCPCPX-04; REACTOR COOLANT PUMP 1-04 MOTOR	10/27/2017
TR-2016-009721	Tracking Report; 1-LS-3220; MAIN STEAM SUPPLY TO AUXILIARY STEAM HDR DRIP POT 1-03 LEVEL SWITCH	08/22/2019
CR-2015-010248	Op Related Condition Report: BX-FHSCFB-01	05/10/2016
CR-2015-010182	Condition Report; Containment Fan Cooler Fan 2-04 Motor	11/08/2015
CR-2014-010283	Condition Report; 2-TV-2370E-LC1; MN STM DMP TO CNDSR 2-B VLV 2370E LSC	09/23/2014
CR-2012-010360	Condition Report; 2-HV-6583-1-MO; MSL 2-02 TO MSR 2-A HTG STM EQUAL VLV MO	10/15/2012

During the audit, the staff verified the applicant’s claim that the “scope of program,” “preventive actions,” “parameters monitored or inspected,” “detection of aging effects,” “monitoring and trending,” “acceptance criteria,” and “corrective actions” program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also conducted an onsite audit where the staff interviewed the applicant’s staff and performed walkdowns of the CPNPP, Units 1 and 2. Specifically, the staff conducted onsite walkdowns of the switchyard and cable raceways and examined pictures of electrical manholes.

The staff also audited the description of the LRA Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.38, Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 EQ Requirements Used in Instrumentation Circuits

Summary of Information in the Application. The LRA notes that AMP B.2.3.38, "Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits," is a new program that will be consistent with the program elements in GALL-LR Report AMP XI.E2, "Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements used in instrumentation circuits."

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff's audit addressed only the applicant's basis document as well as the available current relevant maintenance procedures.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-075	Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits Program Basis Document	Revision 0 05/18/2022
CR-2021-006723	Condition Report; TCX-RCPCPR-01; PRESSURIZER 2-0	10/19/2021
CR-2020-004052	Condition Report; 2-N-0050B; NEUTRON FLUX MONITORING SYSTEM (GAMMAMETRICS)	06/02/2020
TR-2017-008869	Tracking Report; 1-JE-0430B; REACTOR COOLANT LOOP 1-03 N16 UPSTREAM DETECTOR 0430B	02/12/2020
CR-2017-005713	Condition Report; 2-NE-0032; (EITER-B) NIS SOURCE RANGE NEUTRON FLUX PROPORTIONAL COUNTER 2-32	05/02/2017
TR-2017-001742	Tracking Report; CWP1/19/BKR; CWISEL 795 FLOOD LIGHTING BREAKER 19	02/09/2017
CR-2016-005269	Condition Report; 1-NE-0043A; (EITER-B) NIS POWER RANGE ION CHAMBER NEUTRON DETECTOR 1-43A PROT CHAN III	05/27/2016
CR-2014-010125	Condition Report; 1-JE-0430B; REACTOR COOLANT LOOP 1-03 N16 UPSTREAM DETECTOR 0430B	01/14/2015
CR-2013-012772	X-RE-5701; AUXILIARY BUILDING VENTILATION EXHAUST RADIATION DETECTOR	08/21/2014
CR-2013-009642	Condition Report; 1-RE-2325; MAIN STEAM LINE 1-01 RADIATION DETECTOR	09/19/2013
CR-2013-005183	Condition Report; 2-RE-6293; UNIT 2 SFGD EL 831 PIPE PENET AREA HRAM RADIATION DETECTOR	05/07/2013
CR-2012-011112	Condition Report; 1-FT-0414; REACTOR COOLANT LOOP 1-01 FLOW TRANSMITTER 0414 PROT CHAN I	07/21/2014

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA Insulation Material for Electrical Cables and Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Used in Instrumentation Circuits provided in the FSAR supplement. The staff verified this description is consistent with the description provided in in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.39, Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Summary of Information in the Application. The LRA notes that AMP B.2.3.39, "Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements," is a new program that will be consistent with the program elements in the NUREG-1801, Revision 2, GALL-LR Report AMP XI.E3, "Inaccessible Power Cables Not Subject to 10 CFR 50.49."

At the time of the audit, the applicant had not yet fully developed all the documents necessary to implement this program. Therefore, the staff's audit addressed only the applicant's basis document, available procedures, and referenced documents.

Audit Activities. To support its audit of the program, the staff also conducted an onsite audit. On January 31 – February 1, 2023, the staff participated in an onsite audit at CPNPP. During the onsite audit the staff performed interviews and walkdowns of the facility. Specifically, the staff looked at a sample of in-scope cables, connections, and manholes associated with the LR and installed in adverse localized environments. The applicant was also able to provide water trend fluctuation operating experience work orders that are within the scope of the LR. Lastly, the applicant was able to further elaborate on the cable reliability program put in place as a site procedure for "Tan-Delta Cable Insulation Resistance Testing."

The table below lists the documents that were reviewed by the staff and were found relevant to the Electrical Insulation for Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements. The staff will document its review of relevant OE in the SE.

Document	Title	Revision/ Date
LUM00020-Rept-076	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program Basis Document	Revision 0
LUM00020-Rept-035	Comanche Peak Units 1&2 License Renewal Aging Management Review-Electrical & I&C Commodities	Revision 0
ABN-907	Acts of Nature	Revision 16
EPG-9.05	Cable Reliability Program	Revision 5
FDA-2004-003620-01-06	Final Design Authorization	Revision 6
TR-2016-009264	Engineering Targeted Self-Assessment on the Cable Reliability Program	2016
CR2015-004803	Assessment of deferral of PMs 349287, 349289, 349291. These PMs perform tan-delta testing of 6.9 kV power cables	2015
CR2010-011067	Evaluation of IN 2010-26; Submerged Electrical Cables	2010
CR2010-003399	Track key initiatives for the CPNPPs Cable Aging Management Program that will satisfy EPRI guidelines and INPO expectations	2010
CR2015-004409	~2gpm leak coming from conduit (C-1PA-A303)	2015
WR4160865, 4329142,4540006,4593784	Manhole inspections and pump outs	2012-2013
TR2019-000712	Project to install permanent de-watering capability in the SSW cable vaults	2019
TR2017-011708	Calibration trends of feedwater pump switches	2017

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and

trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the NUREG-1801, Revision 2 GALL-LR Report AMP.

The staff also audited the description of the LRA Section A.2.3.39, "Inaccessible Power Cables Not Subject to 10 CFR 50.49 Environmental Qualification Requirements" of Appendix A "Final Safety Analysis Report Supplement," The staff verified that the description is consistent with the descriptions provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.40, Metal Enclosed Bus

Summary of Information in the Application. The LRA notes that AMP B.2.3.40, "Metal Enclosed Bus," is a new program that will be consistent with the program elements in GALL-LR Report AMP XI.E4, "Metal Enclosed Bus."

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff's audit addressed only the information provided by the applicant, available procedures, and referenced documents.

Audit Activities. To support its audit of the program, the staff also conducted an onsite audit. On January 31 – February 1, 2023, the staff participated in an onsite audit at CPNPP. The staff interviewed the applicant's staff and performed walkdowns of the CPNPP, Units 1 and 2. Specifically, the staff observed exposed metal enclosed buses, cables, connections, and electrical manholes associated with the LRA. The staff was unable to walkdown and observe internal elements of metal enclosed buses associated with this AMP since the CPNPP, Units 1 and 2, were online and access to enclosed buses was not available. The staff did not identify any adverse or abnormal conditions with equipment associated with metal enclosed buses during the walkdowns.

The table below lists the documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision/ Date
INPO SER 5-09	6.9-kV Nonsegregated Bus Failure and Complicated Scram	November 2009
CR-2009-006813-00	Non-Segregated Bus Inspections Rev.2	May 2020
CR-2011-001512 and CR-2011-000366	Belleville washers Bulletin by Eaton	January 2011 and April 2011
AR02324951	License Renewal PSPM AMP Effectiveness Review	August 2019
LUM00020-REPT-077	Metal-Enclosed Bus Aging Management Program Basis Document	Revision 0
PROCEDURE MSE-PO-6004	Iso Phase Bus Cleaning and Inspection	Revision 3

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA Metal Enclosed Bus provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA AMP B.2.3.41, Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements

Summary of Information in the Application. The LRA notes that AMP B.2.3.41, "Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements," is a new program that will be consistent with the program elements in NUREG-1801, Revision 2, GALL-LR Report AMP XI.E6, "Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements."

At the time of the audit, the applicant had not yet fully developed the documents necessary to implement this new program, and the staff's audit addressed only the applicant's basis document, available procedures, and referenced documents.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-079	Comanche Peak Nuclear Power Plant Units 1 and 2 Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements Program Basis Document	Revision 1
CR-2012-001058	Diesel Generator 2-01 Lube Oil Heater Connection heating due to lose connection	February 2012
CR-2013-004039	Diesel engine 1-01 control panel inspection	April 2013
WO 4114469	Thermography on 480V Motor Control Center	January 2012
WO 4267793	Diesel Generator 1-01 Control Panel Inspection	January 2013

During the audit, the staff verified the applicant's claim that the "scope of program," "preventive actions," "parameters monitored or inspected," "detection of aging effects," "monitoring and trending," "acceptance criteria," and "corrective actions" program elements of the LRA AMP are consistent with the corresponding elements of the GALL-LR Report AMP.

The staff also audited the description of the LRA Electrical Cable Connections Not Subject to 10 CFR 50.49 Environmental Qualification Requirements provided in the FSAR supplement. The staff verified this description is consistent with the description provided in SRP-LR, Table 3.0-1.

LRA TLAA Section 4.1, Identification of Time-Limited Aging Analyses

Summary of Information in the Application. LRA Section 4.1, "Identification of Time-Limited Aging Analyses," discusses the methodology for the identifying of TLAAs in the LRA.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-080	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Time Limited Aging Analysis (TLAA) and Exemption Identification	Revision 2
LTR-SDA-II-20-19	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal – Identification of Time Limited Aging Analyses	Revision 0

LTR-SDA-II-21-12	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal – Identification of 10 CFR 50.12 Exemption Time Limited Aging Analyses	Revision 0

During the audit, the staff verified that the applicant has provided its basis and methodology for identifying TLAAs in accordance with disposition of 10 CFR 54.21(c).

During the audit, the staff made the following observations:

- The staff reviewed LUM00020-REPT-080 and LTR-SDA-II-20-19 and confirmed that CLB and design-basis documentation were searched to identify potential TLAAs. The staff noted that specific key words were used during this search that would identify potential TLAAs.

- The staff reviewed LUM00020-REPT-080 and LTR-SDA-II-20-19, and confirmed that each potential TLAA was reviewed against the six criteria of 10 CFR 54.3(a) and that those that met all six criteria were identified as TLAAs, which require evaluation for the period of extended operation.

- The staff reviewed LUM00020-REPT-080 and LTR-SDA-II-21-12, and confirmed that a search of docketed licensing correspondence, the operating license, and the FSAR identified exemptions granted pursuant to 10 CFR 50.12. Additionally, the staff noted that LUM00020-REPT-080 identifies the exemptions currently in effect that were granted pursuant to 10 CFR 50.12.

- The staff reviewed LUM00020-REPT-080 and LTR-SDA-II-21-12, and confirmed that these active exemptions were then reviewed to determine whether the exemption was based on a TLAA.

LRA TLAA Section 4.2.1, Neutron Fluence Projections

Summary of Information in the Application. LRA Section 4.2.1, “Neutron Fluence Projections,” discusses the analysis for the neutron fluence in the RPV as an input to other RPV neutron embrittlement analyses.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
WCAP-18630-NP	Comanche Peak Units 1 and 2 Time-Limited Aging Analysis on Reactor Vessel Integrity	Revision 0
LTR-SDA-21-059-NP	Comanche Peak Units 1 & 2 License Renewal: Reactor Vessel Integrity Final Safety Analysis Report (FSAR), Pressure and Temperature Limits Report (PTLR), and Technical Specifications Markups	Revision 0

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(ii). However, the staff found that sufficient information was not available to complete its review of the applicant’s basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing an RAI or using the voluntary supplement offered by the applicant during the audit.

The staff also audited the description of the LRA neutron fluence TLAA provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR was an adequate description of the LRA neutron fluence TLAA. The staff will consider issuing an RAI in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA TLAA Sections 4.2.2 – 4.2.5

Summary of Information in the Application. The staff's audit addresses the following TLAAs collectively due to their relationship in analyzing the reactor vessel neutron embrittlement:

- LRA Section 4.2.2, "Pressurized Thermal Shock," discusses the analysis for assessing the pressurized thermal shock (PTS) of the RPV as required by 10 CFR 50.61. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(ii).

- LRA Section 4.2.3, "Upper-Shelf Energy," discusses the analysis for assessing the projected reduction in the upper-shelf energy (USE) properties of RPV base metal and weld components. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(ii).

- LRA Section 4.2.4, "Adjusted Reference Temperature," discusses the analysis for assessing the use of adjusted reference temperature (ART) limits to adjust the pressure-temperature limit curves to account for irradiation effects. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(ii).

- LRA Section 4.2.5, "Pressure-Temperature (P/T) Limits Including Low Temperature Overpressure Protection (LTOP) Analysis," discusses the assessment of P/T limits and LTOP setpoints for the RPV. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(iii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
FSAR	Comanche Peak Nuclear Power Plant, Units 1 and 2 - Final Safety Analysis Report	Amendment No. 110
WCAP-18630-NP	Comanche Peak Units 1 and 2 Time Limited Aging Analysis on Reactor Vessel Integrity	Revision 0
WCAP-18607-NP	Analysis of Capsule X from the NextEra Energy Seabrook Unit 1 Reactor Vessel Radiation Surveillance Program	Revision 0
WCAP-16524-NP	Analysis of Capsule 230 degree from Arizona Public Service Company Palo Verde Unit 2 Reactor Vessel Radiation Surveillance Program	Revision 0
LTR-SDA-21-059-NP	Comanche Peak Units 1 & 2 License Renewal: Reactor Vessel Integrity Final Safety Analysis Report (FSAR), Pressure and Temperature Limits Repot (PTLR), and Technical Specification Markups	Revision 1
LD-79-036	I&E Bulletin 78-12, "Atypical Weld Material in Reactor Pressure Vessel Welds"	June 8, 1979

CE NPSD-1119	Updated Analysis For Combustion Engineering Fabricated Reactor Vessel Welds Best Estimate Copper And Nickel Content (ML15103A309)	Rev. 1

During the audit, the staff made the following observations:

- The staff verified that the material information (e.g., initial RT_{NDT}, %Cu, %Ni, initial USE, margin values) for the "Beltline" materials for Unit 1 and Unit 2 contained in LRA Tables (Unit 1 – LRA Tables 4.2.2-1, 4.2.3-1, 4.2.4-1 and 4.2.4-2; Unit 2 - Tables 4.2.2-2, 4.2.3-2, 4.2.4-3 and 4.2.4-4) are consistent with the applicant's CLB (e.g., FSAR, license amendments associated with power uprates, and Pressure-Temperature Limits Reports)

- The staff verified that the material information (e.g., initial RT_{NDT}, %Cu, %Ni, initial USE) for the "Extended Beltline" materials for Unit 1 contained in LRA Tables 4.2.2-1, 4.2.3-1, 4.2.4-1 and 4.2.4-2; were based on information from certified material test reports, fabrication records, database containing reactor vessel material information and/or the FSAR for the specific material. Additionally, based on this verification, the staff observed that the appropriate margin value consistent with Regulatory Guide (RG) 1.99, Revision 2, were applied for each Unit 1 reactor vessel material for the purposes of addressing PTS and ART.

- The staff verified that the material information (e.g., initial RT_{NDT}, %Cu, %Ni, initial USE) for the "Extended Beltline" materials for Unit 2 contained in LRA Tables 4.2.2-2, 4.2.3-2, 4.2.4-3 and 4.2.4-4 were based on information from certified material test reports, fabrication records, database containing reactor vessel material information and/or the FSAR for the specific material. Additionally, based on this verification, the staff observed that the appropriate margin value consistent with RG 1.99, Revision 2, were applied for each reactor vessel material for the purposes of addressing PTS and ART.

- The staff noted that WCAP-18630-NP, Revision 0, provides the applicant's assessment of surveillance data applicable to the reactor pressure vessels at Units 1 and 2. The staff reviewed Sections 4, "Surveillance Data," and 5, "Chemistry Factor," and Appendix B, "Comanche Peak Units 1 and 2 Surveillance Program Credibility Evaluation," and verified the following:

    - The applicant's use of applicable surveillance data is **credible** in accordance with 10 CFR 50.61 and RG 1.99, Revision 2, for the following RPV materials:

        - Unit 1
            - Lower Shell Plate R-1108-2
            - Beltline Region Weld Metal (Heat # 88112)
            - Upper Shell Longitudinal Weld Seams 101-122 A, B, and C (Heat # 4P6052)

        - Unit 2
            - Intermediate and Lower Shell Longitudinal Welds (Heat # 89833)
            - Intermediate to Lower Shell Girth Weld (Heat # 89833)
            - Upper Shell to Inter. Shell Girth Weld Seam 103-121 (Heat # 3P7317)

- The applicant's use of applicable surveillance data is **non-credible** in accordance with 10 CFR 50.61 and RG 1.99, Revision 2, for the following RPV materials:

  - Unit 2
    - Intermediate Shell Plate R-3807-2

The staff also audited the summary description provided in the FSAR supplement of the TLAAs identified in LRA Sections 4.2.2, 4.2.3, 4.2.4 and 4.2.5. The staff verified this description is consistent with the description provided in the SRP-LR.

LRA TLAA Section 4.3.1, Transient Cycle Projections for 60 Years

Summary of Information in the Application. LRA Section 4.3.1, "Transient Cycle Projections for 60 Years," discusses the 60-year transient cycle projections for ASME Code, Section III, Class 1, 2, and 3 fatigue analyses. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(ii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LTR-SDA-II-21-28	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal – 60 Year Transient Projections for Class 1 RCS and Auxiliary Systems, Class 2 Heat Exchangers, and Class 1, 2 and 3 Valves	Revision 2 08/05/2022
CN-SDA-21-012	Comanche Peak Unit 1 and Unit 2 60-Year Transient Cycle Projections	Revision 3 08/05/2022
LTR-SEE-21-31	Comanche Peak, Units 1 and 2, Transient Set and Cycles Considered in License Renewal Project	Revision 2 11/04/2021
STI-706	Station Administration Manual: Transient and Fatigue Cycle Monitoring	Revision 2 09/12/2014
STI-706.01	Station Instruction Manual: Transient and Fatigue Cycle Monitoring	Revision 0 09/23/2014
ER-ME-103	Summary Information: Thermal Monitoring Data and Evaluation	Revision 14 04/02/2018
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0 08/03/2022
CR-2012-003683	Strategic Self-Assessment of Thermal Stratification and Fatigue Cycle Monitoring	04/11/2012
CR-2015-002780	Strategic Self-Assessment of the Reactor Coolant System (RCS) Materials Management Program	03/26/2015
TR-2021-000782	Track and Document the Planning, Performance and Reporting for 2021 Self-Assessment for the Thermal Stratification Monitoring Program	02/01/2021
LTR-SDA-II-21-32-P/NP	Comanche Peak Unit 1 and 2 License Renewal: Class 2 and 3 Piping Fatigue Evaluation	Revision 2 08/10/2022

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(ii). However, the staff found that sufficient information was not available to complete its review of the applicant's basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing RAIs.

During the audit, the staff made the following observations.

- The title of LRA Table 4.3.1-3, “CPNPP 60-year Transients Normal Condition Auxiliary System Transient Events,” indicates that this table describes the transients for the auxiliary systems and their 60-year projected cycles. However, the LRA does not clearly describe differences between this table and LRA Table 4.3.1-4 that also addresses auxiliary system transients.

- The title of LRA Table 4.3.1-4 is “CPNPP 60-year Projected Transient Cycles For Auxiliary System Transients and Applicable Components.” The staff noted that the following reference describes the detailed design transients associated with the piping systems listed in LRA Table 4.3.1-4 (Reference: LTR-SDA-II-21-32-P/NP, Revision 2, “Comanche Peak Unit 1 and 2 License Renewal: Class 2 and 3 Piping Fatigue Evaluation”). However, the LRA does not clearly describe whether LRA Table 4.3.1-4 includes the transient cycle projections for non-Class 1 piping systems other than the auxiliary piping systems.

The staff also audited the description of the LRA TLAA on 60-year cycle projections for Class 1, 2 and 3 components provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.3.2, ASME Section III, Class 1 Fatigue Analysis of Piping, Piping Components, and Equipment

Summary of Information in the Application. LRA Section 4.3.2, “ASME Section III, Class 1 Fatigue Analysis of Piping, Piping Components, and Equipment,” discusses the fatigue TLAA for ASME Code, Section III, Class 1 piping, components and equipment. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(iii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
CN-MRCDA-07-42	Comanche Peak Unit 1 and Unit 2 Power Uprate – Reactor Vessel Evaluation	Revision 1 08/07/2007
CN-RIDA-07-36	Comanche Peak Unit 1 and Unit 2 Reactor Internal Components Evaluation	Revision 0 2007
CN-SDA-II-19-014	Comanche Peak Units 1 and 2 Thermal Event and Fatigue Monitoring Update for 1/1/2018 to 12/31/2018	Revision 0 07/19/2019
LTR-SDA-II-21-02	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Fatigue AOR Usage and Material Inputs	Revision 5 08/20/2021
WCAP-16477-P	Addendum to Analytical Reports for the Comanche Peak Unit No. 1 Reactor Vessel (Replacement Steam Generator Project)	September 2005
CN-MRCDA-14-14	Comanche Peak Units 1 and 2 Reactor Vessel Thread Damage Evaluation	Revision 0 09/10/2014
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0 08/3/2022
CR-2012-003683	Strategic Self-Assessment of Thermal Stratification and Fatigue Cycle Monitoring	04/11/2012
CR-2015-002780	Strategic Self-Assessment of the Reactor Coolant System (RCS) Materials Management Program	03/26/2015

Document	Title	Revision / Date
TR-2021-000782	Track and Document the Planning, Performance and Reporting for 2021 Self-Assessment for the Thermal Stratification Monitoring Program	02/01/2021
CN-SDA-21-012	Comanche Peak Unit 1 and Unit 2 60-Year Transient Cycle Projections	Revision 3 08/05/2022

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(iii). However, the staff found that sufficient information was not available to complete its review of the applicant's basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing RAIs.

During the audit, the staff made the following observations.

- LRA Section 4.3.2 indicates that the reactor coolant pumps conform to the waiver of fatigue requirements of ASME Code, Section III and therefore do not require a detailed fatigue evaluation. However, the LRA does not describe specific ASME Code provisions that the applicant used in the fatigue waiver evaluation. Additionally, the Unit 1 "letdown flow shutoff with prompt return to service" transient is projected to have 60-year cycles greater than the 40-year design cycles. It is unclear to the staff whether the projected cycles greater than the 40-year design cycles do not affect the validity of the fatigue waiver evaluation.

The staff also audited the description of the LRA TLAA for ASME Code, Section III, Class 1 piping, components and equipment provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.3.3, ASME Section III, Class 2 and 3 Allowable Stress Analyses

Summary of Information in the Application. LRA Section 4.3.3, "ASME Section III, Class 2 and 3 Allowable Stress Analyses," discusses the fatigue TLAA for the allowable stress of ASME Code, Section III, Class 2 and 3 piping lines. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(iii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LTR-SDA-II-21-32-P/NP	Comanche Peak Unit 1 and 2 License Renewal: Class 2 and 3 Piping Fatigue Evaluation	Revision 2 08/10/2022
CN-SDA-21-012	Comanche Peak Unit 1 and Unit 2 60-Year Transient Cycle Projections	Revision 3 080/5/2022
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0 08/03/2022
CR-2012-003683	Strategic Self-Assessment of Thermal Stratification and Fatigue Cycle Monitoring	04/11/2012

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(iii). However, the staff found that sufficient information was not available to complete its review of the applicant's basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing RAIs.

During the audit, the staff made the following observations.

- As discussed in the audit report section for 60-year cycle projections (LRA Section 4.3.1), the title of LRA Table 4.3.1-4 is "CPNPP 60-year Projected Transient Cycles For Auxiliary System Transients and Applicable Components." The staff noted that the following reference describes the detailed design transients associated with the piping systems listed in LRA Table 4.3.1-4 (Reference: LTR-SDA-II-21-32-P/NP, Revision 2, "Comanche Peak Unit 1 and 2 License Renewal: Class 2 and 3 Piping Fatigue Evaluation"). However, the LRA does not clearly describe whether LRA Table 4.3.1-4 includes the transient cycle projections for non-Class 1 piping systems other than the auxiliary piping systems.

The staff also audited the description of the LRA TLAA for the allowable stress of ASME Code, Section III, Class 2 and 3 piping lines provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.3.4, Environmentally Assisted Fatigue

Summary of Information in the Application. LRA Section 4.3.4, "Environmentally Assisted Fatigue," discusses the EAF TLAA for ASME Code, Section III, Class 1 pressure boundary piping and components. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(iii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
WCAP-18711-P/NP	Comanche Peak Units 1 and 2 NUREG/CR-6260 Environmentally Assisted Fatigue Results in Support of First License Renewal	Revision 1 08/18/2022
LTR-SDA-II-21-30-P/NP	Comanche Peak Units 1 & 2 License Renewal: Primary Equipment and Piping Environmentally Assisted Fatigue Screening Evaluation Results	Revision 1 01/11/2022
CN-SDA-21-011	Comanche Peak Units 1 & 2 License Renewal: Primary Equipment and Piping Environmentally Assisted Fatigue Screening Evaluation Results	Revision 1 12/01/2021
CN-SDA-20-26	Comanche Peak Units 1 and Reactor Vessel Environmentally Assisted Fatigue Analysis for License Renewal	Revision 0 12/02/2020
CN-SDA-II-21-003	Assessment Record of CN-SDA-II-21-003 for CAP IR-2022-6325	08/18/2022
CN-SDA-II-21-015	Comanche Peak Units 1 & 2 License Renewal: Hot Leg Surge Nozzle Environmentally Assisted Fatigue Evaluation	Revision 0 11/03/2021
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0 08/03/2022
CR-2012-003683	Strategic Self-Assessment of Thermal Stratification and Fatigue Cycle Monitoring	04/11/2012
TR-2021-000782	Track and Document the Planning, Performance and Reporting for 2021 Self-Assessment for the Thermal Stratification Monitoring Program	02/01/2021
CN-SDA-21-012	Comanche Peak Unit 1 and Unit 2 60-Year Transient Cycle Projections	Revision 3 08/05/2022

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(iii). However, the staff found that sufficient information was not available to complete its review of the applicant's basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing RAIs.

- LRA Section 4.3.4 indicates that, in the detailed evaluation of EAF for sentinel (limiting) location identification, the applicant considered the technical rigor of different stress analysis methods and the level of conservatism associated with the stress analysis methods. The LRA explains that the results of determining the technical rigor and the associated conservatism are the stress analysis method rankings for EAF locations (also called stress basis comparison rankings). The LRA also indicates that EAF locations with the lower screening CUF_{en} values and lower rankings may be removed from the sentinel location list in comparison with the other EAF locations. However, the applicant did not clearly discuss the stress analysis method rankings and their technical bases. In addition, the staff needs clarification on whether EAF locations are removed from the sentinel location list only if both the screening CUF_{en} value and stress analysis method ranking are lower than those of a more limiting location, respectively.

- LRA Table 4.3.4-2 describes the sentinel locations of EAF for piping lines and the associated 60-year projected CUF_{en} values. The table identifies only SS as a fabrication material of piping lines and does not include carbon steel, low alloy steel or nickel-alloy. In contrast, LRA 4.3.4 indicates that the sentinel location is identified for each material type in a given transient section, which is a group of subcomponents and locations that experience the same transients. In addition, LRA Section 4.7.1 indicates that the reactor vessel nozzle welds are fabricated with nickel-alloys. It is unclear to the staff whether the limiting locations in Table 4.3.4-1 or 4.3.4-2 are bounding for the nickel-alloy weld locations of the reactor vessel nozzle in terms of CUF_{en} and environmental fatigue correction factor (F_{en}) in the EAF analysis.

- The following document indicates that there was a need to revise the CUE_{en} calculations for the accumulator nozzles based on corrections to 60-year transient cycle projections (Reference: Westinghouse CN-SDA-II-21-003-R0-ASMT-1, Assessment Record of CN-SDA-II-21-003 for CAP IR-2022-6325, 8/18/2022). The reference document indicates that the 60-year projection cycles of the following transients needed to be corrected: (1) "refueling" transient; (2) "tube leak test" transient; (3) "accumulator line refueling" transient; (4) "reactor coolant system (RCS) venting" transient; (5) "reactor vessel stud tensioning" transient; (6) "accumulator check valve test" transient. Specifically, the projected cycles of the "refueling" transient and "tube leak test" transient are used in the EAF analysis for the accumulator nozzles. However, the revised 60-year CUF_{en} value for the crotch region of the nozzle (180 degree location) in the reference, also called analysis Section Number 20, is not consistent with that listed in LRA Table 4.3.4-2.

The staff also audited the description of the LRA EAF TLAA for ASME Code, Section III, Class 1 pressure boundary piping and components provided in the FSAR supplement. The staff found that sufficient information was not available to determine whether the description provided in the FSAR supplement was an adequate description of the LRA EAF TLAA.

LRA Section 4.3.4 indicates that the EAF TLAA is dispositioned in accordance with 10 CFR 54.21(c)(1)(iii) and the aging effects of EAF will be managed by using the Fatigue Monitoring AMP and Steam Generators AMP. In contrast, the FSAR supplement cites 10 CFR 54.21(c)(1)(ii) instead of 10 CFR 54.21(c)(1)(iii) as a TLAA disposition. The staff will

consider issuing an RAI in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program description.

LRA TLAA Section 4.3.5, Reactor Vessel Internals Fatigue Analyses

Summary of Information in the Application. LRA Section 4.3.5, "Reactor Vessel Internals Fatigue Analyses," discusses the fatigue TLAA for reactor vessel internals. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(iii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
CN-MRCDA-07-42	Comanche Peak Unit 1 and Unit 2 Power Uprate – Reactor Vessel Evaluation	Revision 1 08/07/2007
CN-RIDA-07-36	Comanche Peak Unit 1 and Unit 2 Reactor Internal Components Evaluation	Revision 0 2007
WCAP-16840-P/NP	Comanche Peak Nuclear Power Plant Stretch Power Uprate Licensing Report	Revision 0 August 2007
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0 8/3/2022
CR-2012-003683	Strategic Self-Assessment of Thermal Stratification and Fatigue Cycle Monitoring	04/11/2012
TR-2021-000782	Track and Document the Planning, Performance and Reporting for 2021 Self-Assessment for the Thermal Stratification Monitoring Program	02/01/2021

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(iii). However, the staff found that sufficient information was not available to complete its review of the applicant's basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing RAIs.

- LRA Section 4.3.5 indicates that the following reference includes the most recent fatigue evaluations in the CPNPP CLB for reactor vessel internals (Reference: WCAP-16840-NP, Comanche Peak Nuclear Power Plant Stretch Power Uprate Licensing Report, Rev. 0). The staff noted a potential inconsistency in the design transients between LRA Table 4.3.1-2 and WCAP-16840-NP, Table 2.2.6-1. Specifically, LRA Table 4.3.1-2 includes the "bypass line tempering valve" transient, which is only applicable to CPNPP Unit 2 and has 20 design cycles. However, this transient is not included in WCAP-16840-NP, Table 2.2.6-1. In addition, WCAP-16840-NP, Table 2.2.6-1 includes the "split flow bypass valve" transient, which is only applicable to CPNPP Unit 2 and has 40 design cycles. However, this transient is not included in LRA Table 4.3.1-2.

The staff also audited the description of the LRA fatigue TLAA for reactor vessel internals provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.3.6, High-Energy Line Break

Summary of Information in the Application. LRA Section 4.3.6, "High-Energy Line Break," discusses the HELB TLAA for high-energy piping lines. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(iii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LTR-SDA-II-21-42-P	Comanche Peak Unit 1 and 2 License Renewal: ASME Code Class 1 Piping High Energy Line Break (HELB) TLAA Evaluation	Revision 1 12/05/2022
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0 08/03/2022
CR-2012-003683	Strategic Self-Assessment of Thermal Stratification and Fatigue Cycle Monitoring	04/11/2012
TR-2021-000782	Track and Document the Planning, Performance and Reporting for 2021 Self-Assessment for the Thermal Stratification Monitoring Program	02/01/2021

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(iii). However, the staff found that sufficient information was not available to complete its review of the applicant's basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing RAIs.

- LRA Section 4.3.6 indicates that the time-limited portion of the HELB analysis is related to the screening criterion of a CUF value 0.1 for break location postulation. In comparison, FSAR, Section 3.6B.2 describes the CLB screening criteria that are used to determine the intermediate locations of postulated breaks for the HELB analyses. Specifically, FSAR Section 3.6B2.1.2 indicates that the CUF value of 0.1 is included in the screening criteria for HELB location postulation for ASME Code, Section III, Class 1 piping. FSAR Section 3.6.B2.1.2 also indicates that the postulation of HELB locations for ASME Code non-Class 1 piping is, in part, based on the allowable stress range for expansion stress (S_A), consistent with Branch Technical Position MEB 3-1 (ML052340555). S_A may need to be adjusted by a stress range reduction factor that is determined by the number of thermal cycles, as addressed in the implicit fatigue analysis in LRA Section 4.3.3. However, LRA Section 4.3.6 does not clearly discuss whether the HELB location postulation for ASME Code non-Class 1 piping, which involves S_A, is a basis for identifying the HELB analysis as a TLAA. In addition, LRA Section 4.3.6 does not address whether additional break locations and their effects will be evaluated in the HELB analyses as part of corrective actions under the Fatigue Monitoring AMP if new additional piping break locations are identified based on (1) the CUF threshold of 0.1 or (2) the reduction in S_A.

The staff also audited the description of the LRA HELB TLAA for high-energy piping lines provided in the FSAR supplement. The staff also audited the description of the LRA HELB TLAA for high-energy lines provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.4, Environmental Qualification of Electrical Equipment

Summary of Information in the Application. LRA Section 4.4, "Environmental Qualification of Electrical Equipment," discusses the thermal, radiation, and cyclical aging analyses for the plant electrical and I&C components. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(iii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title/Description	Revision / Date
LUM00020-REPT-038	Comanche Peak Nuclear Power Plant Units 1 and 2 - License Renewal Environmental Qualification of Electric Components - Aging Management Program Basis Document	Revision 0
LUM00020-REPT-081	Comanche Peak Nuclear Power Plant Units 1 and 2 - License Renewal Time-Limited Aging Analysis - Environmental Qualification of Electrical Equipment	Revision 1
DBD-EE-031	Comanche Peak Nuclear Power Plant Units 1 and 2 – Design-Basis Document - Environmental Qualification of Safety-Related Electrical Equipment	Revision 9
TR-2018-000995	Tracking Report - Track Items Associated with the 2018 EQ Excellence Plan	Created: 02/05/2018
TR-2020-001719	Tracking Report - Review EPRI Technical Report 'A Review of Equipment Aging Theory and Technology: Revision 1 of NP-1558' (Product ID 3002018283) for incorporation into the EQ program	Closed: 10/18/2020

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(iii).

The staff also audited the description of the LRA Environmental Qualification of Electric Components provided in the FSAR supplement. The staff verified that the description is consistent with the acceptance criteria provided in SRP-LR Section 4.4.3.2.

LRA TLAA Section 4.6, Containment Liner Plate, Metal Containments, and Penetrations Fatigue Analyses

Summary of Information in the Application. LRA Sections 4.6.1 "Containment Liner Plate" and 4.6.2, "Containment Penetrations," discuss the fatigue analyses for the containment liner plate and hot process piping penetrations (i.e., main steam, feedwater, and steam generator blow down penetrations), respectively. The applicant dispositioned these TLAAs in accordance with 10 CFR 54.21(c)(1)(i).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-0082	Time Limited Aging Analysis – Containment Liner Plate and Penetrations Fatigue, Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal	Revision 1 05/20/2022
Calculation 16345/6-CS(B)-028	Reactor Containment Building Liner Analysis Units 1 and 2	Revision 1 02/21/1989
Calculation 16345-CS(B)-015	Analysis of Sleeved Containment Penetrations	Revision 6 02/28/2007
LTR-SDA-II-21-28	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal – 60 Year Transient Projections for Class 1 RCS and Auxiliary Systems, Class 2 Heat Exchangers, and Class 1, 2 and 3 Valves	Revision 1 01/26/2022

Document	Title	Revision / Date
DBD-CS-074	Comanche Peak Steam Electric Station Units 1 & 2, Design-Basis Document, Containment Liner and Penetrations	Revision 8 02/05/2008

During the audit of the TLAAs, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i). However, the staff found that sufficient information was not available, due to lack of clarity, to complete its review of the applicant's basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing RAIs or use a voluntary LRA supplement offered by the applicant during the audit.

During the audit, the staff made the following observations:

- The staff reviewed Section 3.1 of LUM00020-REPT-0082, Revision 1, and pages 51, 67-68, 81-83 of Calculation 16345/6-CS(B)-028, Revision 1, and verified that the six fatigue waiver conditions of the ASME Code, Section III, Division 1, Subsection NB-3222.4(d) E were documented and satisfied for the carbon steel containment liner plate in accordance with NE-3131(d) and NB-3222.4.

- The staff reviewed Section 3.2 of LUM00020-REPT-0082, Revision 1, and pages 51, 59.4 thru 59.9 of Calculation 16345-CS(B)-015, Revision 6, and verified that the six fatigue waiver conditions of the ASME Code, Section III, Division 1, Subsection NB-3222.4(d) E were documented and satisfied for the carbon steel containment process piping hot penetrations (main steam, feedwater, steam generator blowdown penetrations) in accordance with NE-3131(d) and NB-3222.4.

- The staff noted that there was a lack of clarity in LRA Sections 4.6.1 and 4.6.2 and their FSAR supplements regarding the material based on which the fatigue waiver analyses were performed and how it was bounding or representative of the other materials of the containment liner (including anchors and integral attachments) and containment penetrations.

- The staff also noted that the FSAR supplement in LRA Section A.3.5.1 did not describe the cycles considered for all the transients that were used in the fatigue waiver analysis of the containment liner plate.

The staff also audited the descriptions of the LRA TLAAs for Containment Liner Plate Fatigue and Containment Penetrations Fatigue provided in the FSAR supplement in LRA Section A.3.5.1 and LRA Section A.3.5.2, respectively. The staff found that sufficient clarity of information was not available to determine whether the description provided in the FSAR supplement was an adequate description of the LRA TLAAs "Containment Liner Plate Fatigue" and "Containment Penetrations Fatigue." The staff will consider issuing RAIs or use a voluntary supplement offered by the applicant during the audit in order to obtain the information necessary to verify the sufficiency of the FSAR supplement program descriptions.

LRA TLAA Section 4.7.1, Leak-Before-Break

Summary of Information in the Application: LRA Section 4.7.1 "Leak-Before-Break" describes the Comanche Peak TLAA on the leak-before-break (LBB) evaluation for the RCS piping. CPNPP dispositioned the TLAA with 10 CFR 54.21(c)(1)(ii) for the reactor coolant primary loop

piping and dispositioned the TLAA with 10 CFR 54.21(c)(1)(i) for accumulator injection lines, residual heat removal (RHR) lines, and pressurizer surge lines.

Audit Activities: In addition to the OE documentation contained in the LRA and ePortal, the staff conducted additional searches of the applicant's CAP database, using keywords: "leak-before-break," "rupture," "crack," "leak rate," "leaks in RCS primary piping," "through wall leaks in RCS primary piping."

The table below lists the documents that were reviewed by the staff and were found to be relevant to TLAA Section 4.7.1, "Leak-Before-Break." These documents were identified in the staff's search of the CPNPP operating experience database. During the audit of the "operating experience" program element, the staff's independent database search did not identify any OE that would indicate the LBB analysis may not be adequate to manage the aging effects. The staff will document its review of relevant OE in the SE.

Document	Title	Revision / Date
NUREG-0797, Supplement 23	Safety Evaluation Report related to the operation of Comanche Peak Steam Electric Station, Units 1 and 2	Revision 0, February 1990
NUREG-0797, Supplement 26	Safety Evaluation Report related to the operation of Comanche Peak Steam Electric Station, Unit 2	Revision 0, February 1993
CPNPP LRA	Comanche Peak Nuclear Power Plant License Renewal Application	Revision 0, October 2022
WCAP-10527	Technical Justification for Eliminating Large Primary Loop Pipe Rupture as the Structural Design-Basis for the Comanche Peaks Units 1 and 2	Revision 0, April 1984
WCAP-13167	Technical Justification for Eliminating 10 Inch Accumulator Lines Rupture as the Structural Design-Basis for the Comanche Peak Nuclear Plant Unit 2	Revision 0, January 1992
WCAP-13165	Technical Justification for Eliminating Residual Heat Removal Lines Rupture as the Structural Design-Basis for Comanche Peak Nuclear Power Plant Units2	Revision 0, December 1991
WCAP-12258 Supplement 2	Evaluation of Thermal Stratification for Comanche Peak Unit 1 Residual Heat Removal Lines	Revision 0, August 1989
WCAP-12248 Supplement 3	A Supplementary Assessment of Leak-Before-Break for the Pressurizer Surge Line of Comanche Peak Unit 1	Revision 0, June 1990
WCAP-13100	Technical Justification for Eliminating Pressurizer Surge Line Rupture from the Structural Design-Basis for Comanche Peak Unit 2	Revision 0, December 1991
WCAP-10527	Technical Justification for Eliminating Large Primary Loop Pipe Rupture as the Structural Design-Basis for the Comanche Peaks Units 1 and 2 for License Renewal Program (60 years) PROPRIETARY	Revision 3, January 2023
NUREG-0800, Section 3.6.3	Leak-Before-Break Evaluation Procedures	Revision 1, March 2007

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(ii) for the reactor coolant primary loop piping for the period of extended operation. The staff also verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i) for the accumulator injection lines, RHR lines, and pressurizer surge lines piping for the period of extended operation. The staff found that sufficient information was available to complete its review of the applicant's basis for its TLAA disposition. If further information is needed to complete the staff's SE input, the staff will consider issuing RAIs.

The staff also audited the description of the LRA LBB TLAA provided in the FSAR supplement. The staff verified that this description is consistent with the information provided in the FSAR supplement of the LRA LBB TLAA. If further information is needed to complete the staff's SE input, the staff will consider issuing RAIs.

LRA TLAA Section 4.7.2, Reactor Coolant Pump Casings ASME Code Case N-481

Summary of Information in the Application. LRA Section 4.7.2, "Reactor Coolant Pump Casings ASME Code Case N-481," discusses the analysis for the acceptability of applying code case N-481, "Alternatives Examination Requirements for Cast Austenetic Pump Casings" to the reactor coolant pump casings at Comanche Peak. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(i)..

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LTR-SDA-20-093-P Westinghouse Letter Report	Comanche Peak Units 1 and 2 Reactor Coolant Pump Casings ASME Code Case N-481 Analysis for 60-year License Renewal	Revision 0 04/14/2021
ASME Code Case N-481	Alternative Examination Requirements for Cast Austenitic Pump Casings, Section XI, Division 1	03/28/2004
WCAP-13045	Compliance to ASME Code Case N-481 of the Primary Loop Pump Casings of Westinghouse Type Nuclear Steam Supply Systems	Revision 0 August 1991
PWROG-17033-NP-A	Update for Subsequent License Renewal: WCAP-13045, "Compliance to ASME Code Case N-481 of the Primary Loop Pump Casings of Westinghouse Type Nuclear Steam Supply Systems"	Revision 1 November 2019
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0 08/03/2022

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports the disposition of 10 CFR 54.21(c)(1)(i).

The staff also audited the description of the LRA reactor coolant pump code case N-481 provided in the FSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

LRA TLAA Section 4.7.3, Reactor Coolant Pump Flywheel Fatigue Crack Growth Analysis, Audit Report Input

Summary of Information in the Application. LRA Section 4.7.3, "Reactor Coolant Pump Flywheel Fatigue Crack Growth Analysis," discusses the analysis underlying the 20-year inspection interval for the reactor coolant pump flywheel. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(i).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
N/A	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Application	October 2022
N/A	Comanche Peak Nuclear Power Plant, Unit No. 1 Facility Operating License, Appendix A – Technical Specifications	April 1990
N/A	Comanche Peak Nuclear Power Plant, Unit No. 2 Facility Operating License, Appendix A – Technical Specifications	April 1993
N/A	Comanche Peak Nuclear Power Plant Final Safety Analysis Report	September 2020

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i). However, the staff found that sufficient information was not available to complete its review of the applicant's basis for its TLAA disposition. In order to obtain the necessary information, the staff will consider issuing an RCI. During the audit, the staff made the following observations:

- The applicant's LRA, FSAR, and Technical Specifications consistently communicated the applicant's basis for the 20-year inspection interval for the reactor coolant pump flywheel.

- The applicant's LRA did not explicitly address the conditions listed in the staff's SE for Topical Report PWROG-17011, Revision 2 (ML19198A056).

- The applicant's staff responded to the NRC staff's breakout questions, clarifying that Comanche Peak's reactor coolant pump flywheels are bounded by conditions in the staff's SE referenced in item 2.

- The NRC staff communicated to the applicant's staff that an RCI would be issued to confirm on the docket that the actual number of start/stop cycles for the reactor coolant pump flywheels are bounded by that assumed in the analysis.

The staff also audited the description of the LRA reactor coolant pump flywheel fatigue crack growth analysis TLAA provided in the FSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

LRA TLAA Section 4.7.4, Crane Load Cycle Limit

Summary of Information in the Application. The LRA Section 4.7.4, "Crane Load Cycle Limit" discusses the analyses for the Auxiliary Filter Hoist, Containment Access Rotating Platform Hoist, Containment Fuel Handling Bridge Crane, Containment Polar Crane, Containment Telescopic Jib Crane, Drumming Storage Area Crane, Fuel Building Overhead Crane, Fuel Handling Bridge Crane, Refueling Machine, Safety Chiller Hoist, SWIS Crane and Vertical Cask Transporter. The applicant dispositioned the TLAAs in accordance with 10 CFR 54.21(c)(1)(i).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
DBD-ME-006	Control of Heavy Loads at Nuclear Plants	Revision 40
LUM00020-REPT-083	TLAA – Fatigue of Cranes (Crane Cycle Limits)	Revision 3
LUM00020-REPT-050	Comanche Peak Nuclear Power Plant Units 1and 2 License Renewal Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems Aging Management Program Basis Document	Revision 1
LUM00020-REPT-080	Comanche Peak Units 1 and 2 License Renewal Time Limited Aging Analysis (TLAA) and Exemption Identification	Revision 2
LUM00020-LRPI-006	Comanche Peak Nuclear Plant License Renewal Project Instruction, Time Limited Aging Analyses Identification and Exemption	Revision 0
LUM00020-REPT-033	Comanche Peak Nuclear Plant License Renewal Screening and Aging Management Review Report for the Structural Commodities	Revision 0
FDA-2019-000039-02	Replace entire trolley, bridge motors and brakes and entire control system as part of a comprehensive upgrade of Fuel Building Overhead Crane (FBOC) components	Revision 0
CPNPP FSAR	CPNPP Final Safety Analysis Report (FSAR): Table 17A-1, Table 8.3-11	Amendment 111
CP-0041A-005	Containment Fuel Handling Bridge Crane	Revision 2
NUREG-0554	Single-Failure Proof Cranes for Nuclear Power Plants	May 1979
NUREG-0612	Control of Heavy Loads at Nuclear Power Plants	July 1980
CMAA, Specification, No.70	Specification for Electric Overhead Travelling Cranes	1975
NUREG-0554	Single-Failure Proof Cranes for Nuclear Power Plants	May 1979
NUREG-0612	Control of Heavy Loads at Nuclear Power Plants	July 1980
ASME NUM-1	Rules for Construction of Cranes, Monorails, and Hoists (With ridge or Trolley or Hoist of the Underhung Type)	2016
ASME NOG-1	Rules for Construction of Overhead and Gantry Cranes (Top Running Bridge, Multiple Girder)	2015
ASME B30.2	Overhead and Gantry Cranes (Top Running Bridge, Single or Multiple Girder, Top Running Trolley Hoist)	2005

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i).

The staff also audited the description of the LRA provided in the FSAR supplement in Section A.3.6.4., “Crane Load Cycle Limits TLAA.” The staff verified this description is consistent with the description provided in the SRP-LRfor TLAAs.

LRA TLAA Section 4.7.5, Spent Fuel Pool Metal Corrosion Allowance

Summary of Information in the Application. LRA Section 4.7.5, “Spent Fuel Pool Metal Corrosion Allowance,” discusses the Spent Fuel Pool metal corrosion allowance to ensure that minimum wall thickness requirements are maintained through the life of the component. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(i).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-084	CPNPP UNITS 1 and 2 License Renewal Plant Specific TLAA Evaluation	Revision 2

FSAR	Section 9.1.3.2.1, “Component Description”	Amendment 110
NUREG-0797	Safety Evaluation Report to the operations of the Comanche Peak Electric Station, Units 1 and 2, DOCKET No’s 50-455 and 50-446	July 1981

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i).

The staff also audited the description of the LRA TLAA for Spent Fuel Pool Metal Corrosion Allowance provided in the FSAR supplement in LRA Appendix A.3.6.5, “Spent Fuel Pool Metal Corrosion Allowance.” The staff found that this description provided in FSAR supplement provides adequate description of the LRA TLAA “Spent Fuel Pool Metal Corrosion Allowance.”

LRA TLAA Section 4.7.6, Protective Coatings

Summary of Information in the Application. LRA Section 4.7.6, “Protective Coatings,” discusses the analysis for the ability of the qualified coatings in containment to resist environmental radiation for the life of the plant. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(i).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-CALC-001-Rev1.pdf	Comanche Peak Total for Containment Coatings in Steam Generator Compartments and Surroundings During an Unpressurized Loss of Coolant Accident	Revision 1
TERPT_ER-ME-124-0_-_-.pdf	Evaluation of CPNPP Protective Coatings	Revision 0

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i).

The staff also audited the description of the Protective Coating TLAA in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.7.7, Steam Generator Tubes Metal Corrosion Allowance

Summary of Information in the Application. LRA Section 4.7.7, “Steam Generator Tubes Metal Corrosion Allowance,” discusses the analysis for the corrosion allowance for steam generator tube wall thickness for Unit 2. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(i).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
Westinghouse LTR-CECO-21-076	Comanche Peak Unit 2 License Renewal Application Assessment of Steam Generator Tubes Metal Corrosion Allowance	Revision 1

TR-2021-002734	Tracking Report (Identified error in FSAR Section 5.4.2B.5.4 related to primary side corrosion rate of steam generator tubing)	04/21/2021
ENERCON LUM00020-REPT-084	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Plant Specific TLAA Evaluation	Revision 2
Comanche Peak Updated Final Safety Analysis Report	Section 5.4.2B.5.4 “Allowable Tube Wall Thinning Under Accident Conditions”	Certified FSAR Amendment 111, 02/01/2022

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i).

The staff also audited the description of the LRA Steam Generator Tubes Metal Corrosion Allowance provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.7.8, Steam Generator Flow-Induced Vibration and Tube Wear Evaluations

Summary of Information in the Application. LRA Section 4.7.8, “Steam Generator Flow Induced Vibration and Tube Wear Evaluation,” describes the analysis for steam generator (SG) tube wear from vibration resulting from the thermal hydraulic conditions within the Unit 1 and Unit 2 SGs. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(i) for the Unit 1 SGs and 10 CFR 54.21(c)(1)(ii) for the Unit 2 SGs.

Audit Activities. The table below lists the document that was reviewed by the staff and was found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
Westinghouse LTR-CECO-20-082-P	Comanche Peak Units 1 and 2 License Renewal Application Assessment of Steam Generator Flow Induced Vibration and Tube Wear Evaluations and Steam Generator U-Bend Tube Vibration and Fatigue Assessment	Revision 1

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i) for Unit 1 and 10 CFR 54.21(c)(1)(ii) for Unit 2. The staff also audited the description of the LRA Steam Generator Flow-Induced Vibration and Tube Wear Evaluations provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.7.9, Steam Generator U-Bend Tube Vibration and Fatigue Assessment

Summary of Information in the Application. LRA Section 4.7.9, “Steam Generator U-Bend Tube Vibration and Fatigue Assessment,” discusses the analysis of the steam generator tubes for vibration and high cycle fatigue. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(i) by demonstrating that the U-Bend tube vibration and fatigue are either not applicable (Unit 1) or the current fatigue assessment adequately considers the period of extended operation (Unit 2).

Audit Activities. The table below lists the document that was reviewed by the staff and was found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
Westinghouse LTR-CECO-20-082-P	Comanche Peak Units 1 and 2 License Renewal Application Assessment of Steam Generator Flow Induced Vibration and Tube Wear Evaluations and Steam Generator U-Bend Tube Vibration and Fatigue Assessment	Revision 1

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i).

The staff also audited the description of the LRA Steam Generator U-Bend Tube Vibration and Fatigue Assessment provided in the FSAR supplement. The staff verified this description is consistent with the guidance provided in the SRP-LR.

LRA TLAA Section 4.7.10, Flaw Tolerance Evaluation for Susceptible Reactor Coolant Loop Cast Austenitic Stainless Steel Piping Components

Summary of Information in the Application. LRA Section 4.7.10, "Flaw Tolerance Evaluation for Susceptible Reactor Coolant Loop Cast Austenitic Stainless Steel Piping Components," discusses the flaw tolerance evaluation for the susceptible CASS components at CPNPP. It also states that the flaw tolerance evaluation was performed to demonstrate that even with thermal aging, the susceptible CASS components are flaw tolerant for 60 years of service. The applicant dispositioned this TLAA in accordance with 10 CFR 54.21(c)(1)(i).

Audit Activities. In addition to the OE documentation contained in the LRA and ePortal, the staff conducted additional searches of the applicant's CAP database, using alternate keywords.

The table below lists documents that were reviewed by the staff and were found relevant to the TLAA. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LTR-SDA-20-087-NP	Flaw Tolerance Evaluation for Susceptible Reactor Coolant Loop Cast Austenitic Stainless Steel Piping Components in Comanche Peak Units 1 and 2 for 60 Year License Renewal	Revision 0 September 24, 2021
TBX-TCX-IPA-AMP-XI.M12	Comanche Peak Units 1 and 2 License Renewal, Thermal Aging Embrittlement of CASS Program Basis Document	Revision 1 January 3, 2023
CR2012-002117	Strategic Self-Assessment of the RCS Materials Management System	Revision 1
WCAP-10528-NP	Technical Justification for Eliminating Large Primary Loop Pipe Rupture as the Structural Design-Basis for Comanche Peak Units 1 and 2 for the License Renewal Program (60 years)	Revision 3

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(i). The staff also audited the description of the LRA TLAA for the subject components provided in the FSAR supplement. The staff verified this description is consistent with the description provided in the SRP-LR.

LRA TLAA Section 4.7.11, Safe Shutdown Impoundment Sedimentation

Summary of Information in the Application. LRA Section 4.7.11, "Safe Shutdown Impoundment Sedimentation," discusses the sediment reduction in the Service Water Intake Channel for the Safe Shutdown Impoundment (SSI) that was required by the Technical Requirement Manual to maintain adequate cooling capacity for the plant. The applicant dispositioned the TLAA in accordance with 10 CFR 54.21(c)(1)(iii).

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the program. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-084	CPNPP UNITS 1 and 2 License Renewal Plant Specific TLAA Evaluation	Revision 2
FSAR	Subsections 2.5.6.2.2 Safe Shutdown Impoundment Dam (SSI Dam), 2.4.8.2.2, "Safe Shutdown Impoundment (SSI)," 2.4.11.6, "Heat Sink Dependability Requirements," 9.2.5.2, "System Description," and 9.2.5.3, "Safety Evaluation"	Amendment Nos. 104 110 110 111 111
Technical Specification	LCO 3.7.9, "The Safe Shutdown impoundment {SSI) shall be OPERABLE"	Amendment No. 156

During the audit of the TLAA, the staff verified that the applicant has provided its basis that supports its disposition of 10 CFR 54.21(c)(1)(iii).

The staff also audited the description of the LRA TLAA for Safe Shutdown Impoundment Sedimentation provided in the FSAR supplement in LRA Appendix A.3.6.11, "Safe Shutdown Impoundment Sedimentation." The staff found that this description provided in FSAR supplement provides adequate description of the LRA TLAA "Safe Shutdown Impoundment Sedimentation."

AMR Items Not Associated with an AMP

LRA AMR Further Evaluation (FE) Sections 3.2.2.2.3.2, 3.2.2.2.6, 3.3.2.2.3, 3.3.2.2.5, 3.4.2.2.2, and 3.4.2.2.3

Summary of Information in the Application. The LRA addresses further evaluation of cracking due to stress corrosion cracking, and loss of material due to pitting or crevice corrosion, of SS in the Engineered Safety Features, Auxiliary, and Steam and Power Conversion Systems. The LRA sections for these further evaluation discussions are: 3.2.2.2.3.2, 3.2.2.2.6, 3.3.2.2.3, 3.3.2.2.5, 3.4.2.2.2, and 3.4.2.2.3.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the LRA further evaluation sections listed above. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-017	License Renewal Screening and Aging Management Review Report for the Compressed Air and Gas Systems	Revision 0
LUM00020-REPT-010	License Renewal Screening and Aging Management Review Report for the Containment Spray System	Revision 1

LUM00020-REPT-036	Mechanical Aging Management Review Further Evaluation and Summary	Revision 0

LRA AMR FE Section 3.6.2.2.2, Reduced Insulation Resistance due to Presence of Any Salt Deposits and Surface Contamination, and Loss of Material due to Mechanical Wear Caused by Wind Blowing on Transmission Conductors

Summary of Information in the Application. During the audit, the staff reviewed plant documentation associated with the AMR discussed in LRA Section 3.6.2.2.2 and the following:

- LRA Table 3.6-1, "Summary of Aging Management Evaluations for Electrical Commodities," Item Number 3.6-1, 002 - High-voltage insulators composed of porcelain; malleable iron; aluminum; galvanized steel; cement exposed to air – outdoor

- LRA Table 3.6-1, Item Number 3.6-1, 003 - High-voltage insulators composed of porcelain; malleable iron; aluminum; galvanized steel; cement exposed to air – outdoor

The LRA states that high-voltage (HV) insulators are subject to AMR if they are necessary for restoration of offsite power following a station blackout (SBO) event. The HV insulators evaluated for Comanche Peak LR are those used to support uninsulated, HV electrical components such as transmission conductors. The LRA notes that based on the type of HV insulators, the plant-specific configuration of the conductors connected to the insulators, and environmental conditions at the plant the type of aging mechanisms identified in the GALL-LR Report are not applicable to the HV insulators at CPNPP, Units 1 and 2. The applicant considers current inspection process as adequate.

Audit Activities. To support its audit of the program, the staff also conducted an onsite audit. On January 31 – February 1, 2023, the staff participated in an onsite audit at CPNPP where the staff interviewed the applicant's staff and performed walkdowns of the CPNPP, Units 1 and 2. Specifically, the staff observed HV insulators associated with the LRA. The staff did not identify any adverse or abnormal conditions with HV insulators during the walkdowns. During the onsite audit, the applicant confirmed that the type of aging parameters, for HV insulators, identified in the GALL-LR Report had not been experienced at the CPNPP, Units 1 and 2, and therefore had not developed a program for LR.

The table below lists documents that were reviewed by the staff and were found relevant to the LRA further evaluation section listed above. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-003	Comanche Peak Nuclear Power Plant Units 1 and 2 License Renewal Operating Experience Review	Revision 0
LUM00020-REPT-034	Comanche Peak Units 1 and 2 License Renewal Screening – Electrical, Instrumentation & Controls	Revision 1
LUM00020-REPT-035	Comanche Peak Units 1 and 2 License Renewal Aging Management Review – Electrical and I&C Commodities	Revision 1
AR 1866053	Chipped and cracked insulators and epoxy repaired sections falling off. The cause is mostly old age of the insulators and improper repairs. This also applies to the following ARs: 1866231, 2086837, 2266011	04/20/2013

During the audit, the staff made the following observations:

- The CPNPP, Units 1 and 2, switchyard has both porcelain and polymer type of HV insulators. The LRA did not identify any adverse events documented via the CAP. In report # LUM00020-REPT-035, the applicant stated that visual inspections of the switchyard are performed on an annual basis. These inspections include a ground-based inspection (using binoculars) of polymer dead-end HV insulators for loose hardware, corrosion, damaged insulators, and indications of corona on polymer composite dead ends. These inspections also include an inspection for bird nests at the base of under hung insulators. Any anomalies discovered during these routine inspections would warrant their replacement in a timely manner. The staff notes that the applicant concluded that the periodic inspections and the absence of plant-specific OE verifies that this aging effect is not significant for polymer HV insulators associated with the offsite power system required for recovery from an SBO event and no updates to existing maintenance programs or plant licensing documents is required.

LRA AMR FE Section 3.6.2.2.3, Loss of Material Due to Wind-Induced Abrasion, Loss of Conductor Strength Due to Corrosion, and Increased Resistance of Connection Due to Oxidation or Loss of Preload for Transmission Conductors, Switchyard Bus, and Connections

Summary of Information in the Application. During the audit, the staff reviewed plant documentation associated with the AMR discussed in LRA Section 3.6.2.2.3 and the following:

- LRA Table 3.6-1, "Summary of Aging Management Evaluations for Electrical Commodities," Item Number Table 3.6-1, 004 – Transmission conductors composed of aluminum; steel exposed to air – outdoor

- LRA Table 3.6.1, Item Number 3.6-1, 005 – Transmission connectors composed of aluminum; steel exposed to air – outdoor

- LRA Table 3.6.1, Item Number 3.6-1, 006 – Switchyard bus and connections composed of aluminum; copper; bronze; stainless steel; galvanized steel exposed to air – outdoor

- LRA Table 3.6.1, Item Number 3.6-1, 007 – Transmission conductors composed of aluminum; steel exposed to air – outdoor

- LRA Table 3.6.1, Item Number 3.6-1, 020 – Transmission conductors composed of aluminum exposed to air – outdoor

The LRA states that transmission conductors are subject to AMR if they are necessary for restoration of offsite power following a SBO event. At Comanche Peak, a common overhead transmission line from the 138 kilo Volt (kV) switchyard to startup transformer XST1 and alternate startup transformer XST1A coupled with a common overhead line from the 345kV switchyard to startup transformer XST2 and alternate startup transformer XST2A support SBO recovery paths.

Audit Activities. To support its audit of the program, the staff also conducted an onsite audit. On January 31 – February 1, 2023, the staff participated in an onsite audit at CPNPP where the staff interviewed the applicant's staff and performed walkdowns of the CPNPP, Units 1 and 2.

Specifically, the staff observed transmission conductors, switchyard bus, and connections associated with the LRA. The staff did not identify any adverse or abnormal conditions with these items during the walkdowns.

The table below lists documents that were reviewed by the staff and were found relevant to the LRA further evaluation section listed above. The staff will document its review of this information in the SE.

Document	Title	Revision / Date
LUM00020-REPT-003	CPNPP Units 1 and 2 License Renewal Operating Experience Review	Revision 0
LUM00020-REPT-034	Comanche Peak Units 1 and 2 License Renewal Screening – Electrical, Instrumentation & Controls	Revision 1
LUM00020-REPT-035	Comanche Peak Units 1 and 2 License Renewal Aging Management Review – Electrical and I&C Commodities	Revision 1

During the audit, the staff made the following observations:

- The overhead conductors at CPNPP, Units 1 and 2, are Aluminum Conductors that are Steel Reinforced similar to those that have been evaluated for degradation due to environmental factors by Ontario Hydro and accepted by the NRC staff. The LRA did not identify any adverse events documented via the CAP. In report # LUM00020-REPT-003, the applicant stated that keyword searches of the LR related OE report did not find any instances where transmission conductor and connections have experienced the types of aging effects/mechanisms applicable to the overhead conductors.

LRA AMR FE Section 3.6.2.3, AMR Results Not Consistent With or Not Addressed in the GALL Report - Fuse Holders (Not Part of Active Equipment): Metallic Clamps

Summary of Information in the Application. During the audit, the staff reviewed plant documentation associated with the AMR discussed in LRA Section 3.6.2.3 pertaining to fuses and fuse holders and the following:

- LRA Table 3.6-1, “Summary of Aging Management Evaluations for Electrical Commodities,” Item Number 3.6-1, 016 – Fuse holders (not part of active equipment): metallic clamps composed of various metals used for electrical connections exposed to air – indoor, uncontrolled

- LRA Table 3.6.1, Item Number 3.6-1, 017 – Fuse holders (not part of active equipment): metallic clamps composed of various metals used for electrical connections exposed to air – indoor, controlled or uncontrolled

- LRA Table 3.6-1, Item Number 3.6-1, 021 – Fuse holders (not part of active equipment): insulation material, Metal enclosed bus: external surface of enclosure assemblies composed of insulation material: bakelite; phenolic melamine or ceramic; molded polycarbonate; other, galvanized steel; aluminum, Steel exposed to Air – indoor, controlled or uncontrolled

LRA Section 3.6.2.3 states that CPNPP performed an evaluation of fuse holders at CPNPP to determine the population of fuse holders that were not located in active devices for an AMR. The applicant eliminated fuses in the EQ program, spare fuses, and fuses located in active

devices such as switchgear, power, supplies, power inverters, battery chargers, and circuit boards. The LRA also states that fuse holders that were inside panels, racks, and termination cabinets were also considered to be part of active equipment consistent with the guidance provided in ISG-5 and were eliminated from the AMR. The LRA further states that the applicant's screening process determined that CPNPP has no fuses supporting a system intended function that are not part of an active equipment such as switchgear, power supplies, power inverters, battery chargers, load centers, and circuit boards. In the LRA, the applicant concluded that fuses and fuse holders are considered piece parts of the active equipment, and therefore, the fuse holders (metallic clamps) are not subject to AMR. LRA Section 2.5.1.3, "Elimination of Electrical and I&C Commodity Groups Not Applicable to CPNPP," included a similar conclusion.

Audit Activities. The table below lists documents that were reviewed by the staff and were found relevant to the LRA further evaluation sections listed above. The staff will document its review of this information in the SE.

Document	Title/Description	Revision / Date
LUM00020-REPT-034	Comanche Peak Units 1 and 2 License Renewal Screening – Electrical, Instrumentation & Controls	Revision 1
LUM00020-REPT-035	Comanche Peak Units 1 and 2 License Renewal Aging Management Review – Electrical and I&C Commodities	Revision 1

During the audit, the staff made the following observations:

- The staff's audit addressed only the applicant's assessment for panels, racks, and termination cabinets as active equipment and the location of Class 1E fuses associated with LR.

- The CPNPP FSAR, Section 8.3.1.2.1, "Compliance," page 8.3-40, described Class 1E fuses that protect isolation devices through which conductors are routed to terminal blocks within Class 1E electronics boxes.

- Based on the guidance in ISG-5, panels, racks, and termination cabinets would be considered active components if they include active electrical/electronic components. The applicant did not list racks and termination cabinets as electrical and I&C component commodity group in the LRA, Table 2.5-1, "Electrical and I&C Component Commodity Groups Installed at CPNPP." During the audit, the applicant clarified that the panels, racks, and termination cabinets include active components; the panels and termination cabinets are included in the distribution panels listed in Table 2.5-1; and the racks are instrument racks (structural element) that support instruments, indicators, or elements, which are listed in Table 2.5-1. The applicant noted that it will supplement the LRA with information that clarifies the screening of the panels, racks, and termination cabinets.

- Based on the description of the Class 1E fuses on page 8.3-40 of the FSAR, it was not clear to the staff if the Class 1E fuses are inside an active electrical equipment/enclosure/electronic box or in a passive enclosure. During the audit, the applicant clarified that the above-mentioned Class 1E fuses in the FSAR are inside the

electronic boxes that contained active electrical components, and therefore, they are screened out of AMR.

3. Supplements to the LRA

By letters dated April 6, 2023 (ML23096A302) and April 24, 2023 (ML23114A377), Vistra OpCo voluntarily submitted two supplements to the LRA resulting from discussions held during the audit.

4. Audit Questions Provided to Vistra OpCo

Over the course of the audit, the NRC staff provided audit questions to Vistra OpCo to facilitate the audit discussions (ML23172A147).

Subject Area	Meeting Date
Onsite Audit	1/30/23 – 2/1/23
Breakout Session: PWR Vessel Internals AMP	2/28/23 3/6/23
Breakout Session: RCP Flywheel TLAA	3/2/23
Breakout Session: Fatigue Monitoring AMP	3/2/23 3/13/23 3/14/23
Breakout Session: Reactor Head Closure Stud Bolting AMP	3/6/23 3/13/23
Breakout Session: RPV Embrittlement TLAAs	3/6/23
Breakout Session: Fire Protection Scoping and Screening	3/7/23
Breakout Session: Aboveground Metallic Tanks and External Surfaces Monitoring of Mechanical Components AMPs	3/7/23
Breakout Session: Inspection of Overhead Heavy Load and Light Load (Related to Refueling) Handling Systems AMP and Crane Load Cycle Limits TLAA	3/7/23
Breakout Session: Reactor Surveillance AMP	3/8/23 3/21/23
Breakout Session: Leak-Before-Break TLAA	3/8/23
Breakout Session: Flow-Accelerated Corrosion AMP	3/9/23
Breakout Session: Boric Acid Corrosion AMP	3/9/23
Breakout Session: Metal Fatigue TLAAs	3/9/23
Breakout Session: Thermal Aging Embrittlement of Cast Austenitic Stainless Steel AMP	3/13/23
Breakout Session: Buried and Underground Piping and Tanks AMP	3/13/23
Breakout Session: EQ of Electric Components AMP	3/14/23
Breakout Session: Structural Scoping and Screening and ASME Section XI, Subsection IWL AMP	3/14/23
Breakout Session: Containment Liner Plate and Containment Penetrations TLAAs	3/14/23
Breakout Session: Neutron Fluence Projections TLAA	3/15/23
Breakout Session: Bolting Integrity and Masonry Wall AMPs	3/15/23
Breakout Session: ASME Section XI, Subsection IWE and 10 CFR Part 50 Appendix J AMPs	3/15/23
Breakout Session: Cracking of Nickel-Alloy Components and Loss of Material Due to Boric Acid-Induced Corrosion in RCPB Components	3/16/23
Breakout Session: ASME Section XI, Subsection IWF AMP	3/16/23
Breakout Session: Fire Water System AMP	3/16/23
Breakout Session: Structures Monitoring AMP	3/16/23

Subject Area	Meeting Date
Onsite Scoping and Screening Audit	3/20/23 – 3/22/23
Breakout Session: Flux Thimble Tube AMP	3/21/23
Breakout Session: Identification of Structures and Components Subject to AMR	3/23/23 3/29/23
Breakout Session: Open-Cycle Cooling Water AMP	3/23/23
Breakout Session: One-Time Inspection of ASME Code Class 1 Small-Bore Piping AMP	3/23/23
Breakout Session: Steam Generators AMP	3/23/23
Breakout Session: Fire Protection AMP	3/27/23
Breakout Session: Aluminum AMR	3/27/23
Breakout Session: Internal Coatings/Linings for In-Scope Piping, Piping Components, Heat Exchangers, and Tanks AMP	3/27/23
Breakout Session: Closed Treated Water System AMP	3/28/23
Breakout Session: Fuel Oil Chemistry AMP	3/28/23
Breakout Session: Selective Leaching AMP	3/29/23
Breakout Session: Water Chemistry AMP and Stainless Steel AMR	3/29/23
Breakout Session: Inspection of Internal Surfaces in Miscellaneous Piping and Ducting Components AMP	3/29/23

5. Applicant Personnel Contacted During the Audit

Name	Affiliation
Todd Evans	Luminant
Amit Kalia	Luminant
Taylor Smith	Luminant
Nicholas Boehmisch	Luminant
Thomas Crippes	Luminant
Michael Fraley	Luminant
Ramiz Gilada	Luminant
Thomas Hughes	Luminant
Dino Scorziello	Luminant
Gary Adkins	Enercon
Andrew Arend	Enercon
Spencer Feuerstein	Enercon
Jeff Gromatzky	Enercon
James Hamlen	Enercon
Michael Hernandez	Enercon
Kenneth Putnam	Enercon
Laura Swenzinski	Enercon
Guy Wilkerson	Enercon
Dodge Williams	Enercon
Leo Zimmerman	Enercon
Allison Hoke	Enercon
Tristen Hunnewell	Enercon
Mitch McFarland	Enercon
Andrew Hawk	Westinghouse
Greg Imbrogno	Westinghouse
Susan Jaques	Westinghouse
Brett Lynch	Westinghouse
Tim Nowicki	Westinghouse

6. Exit Meeting

An exit meeting was held with the applicant on May 18, 2023, to discuss the results of the regulatory audit. The staff is considering the issuance of RAIs and RCIs to support the completion of the staff's LRA review.