Omaha Public Power District

Fort Calhoun Station LRA

Overview

Omaha Public Power District

Overview of Application

- Features of the SRP format (Gasper) 8:45
- FCS acronyms/terminology (Van Sant) 9:00
- FCS LRA Methodology & Results
  - Scoping, Screening and AMR (Van Sant) 9:15
  - Aging Management Programs (Henry) 9:30
  - **Break**
  - LRA Section 3 (Gasper) 10:00
  - TLAA (Van Sant) 10:30
- Positions on technical issues (Gasper) 10:35

Omaha Public Power District

Previous Applications

- Scoping, Screening and AMR results presented in six-column table
- Aging Management Programs addressed ten elements

Omaha Public Power District

Surry/North Anna LRA

Table 3.2-5 Engineered Safety Features Systems — Safety Injection

Component Group	Passive Function	Material Group	Environment	Aging Effects Requiring Management	Aging Management Activity
Accumulators (and cladding)	PB	Carbon Steel and Low-alloy Steel	(E) Air	None	None Required
			(E) Borated Water Leakage	Loss of Material	Boric Acid Corrosion Surveillance
		Stainless Steel	(I) Gas	None	None Required
			(I) Treated Water	Loss of Material	Chemistry Control Program for Primary Systems
Bolting	PB	Carbon Steel and Low-alloy Steel	(E) Air	Loss of Pre-Load[1]	ISI Program - Component and Component Support Inspections
			(E) Borated Water Leakage	Loss of Material	Boric Acid Corrosion Surveillance
					General Condition Monitoring Activities
Flow Elements	PB;RF	Stainless Steel	(E) Air	None	None Required
			(I) Treated Water	Loss of Material	Chemistry Control Program for Primary Systems
Instrument Valve Assemblies	PB	Stainless Steel	(E) Air	None	None Required
			(I) Treated Water	Loss of Material	Chemistry Control Program for Primary Systems
Pipe	PB	Stainless Steel	(E) Air	None	None Required
			(I) Treated Water	Cracking	Chemistry Control Program for Primary Systems
					ISI Program - Component and Component Support Inspections[1]
				Loss of Material	Chemistry Control Program for Primary Systems

Omaha Public Power District

Development of SRP Format

- In late 2000, NRC and NEI agreed to conduct a demonstration project implementing the SRP (NUREG-1800) and the GALL Report (NUREG-1801).
- NEI submitted SRP (Plant X) and six-column (Plant Y) demonstration LRAs.
- OPPD prepared the SRP format (Plant X) example for the demonstration project.

Omaha Public Power District

GALL Demonstration

The NRC "Lessons Learned" letter to NEI (10/3/01) stated:

"The staff prefers the "SRP-LR" format over the "Six-column" format because the review is based upon the guidance in the SRP-LR which provides consistency and an adequate depth of review."

Omaha Public Power District

GALL Demonstration

The NRC "Lessons Learned" letter to NEI (10/3/01) also stated:

"The staff indicated that the SRP-LR approach used in the Plant X demonstration provided the most consistency. The SRP-LR provides a review procedure for the reviewer to follow which helps to make a more consistent review."

Omaha Public Power District

Features of the SRP format

- Section 1 same as previous applications
- **Section 2 contains scoping results, including intended functions**
- **Section 3 shows comparison to GALL AMR results and FCS plant specific AMR results**
- Section 4 same as previous applications
- **Appendix A (SAR supplement) utilizes SRP language**
- **Appendix B shows comparison to GALL programs and FCS plant specific programs**

Omaha Public Power District

SRP Format Summary

- **Provides an LRA that can be efficiently reviewed using the guidance of the SRP and the results of the GALL report**
  - Section 2 of the LRA provides information consistent with SRP Chapter 2 review guidance
  - Section 3 and Appendices A&B provide information consistent with SRP Chapter 3 review guidance
  - Individual component aging management review results are retained by the applicant for inspection by NRC

Omaha Public Power District

FCS LRA is based on the SRP format and incorporates the GALL demonstration lessons learned

Omaha Public Power District

FCS Terminology, Scoping, Screening and Aging Management Review Methodologies and Results

Bernie Van Sant

Omaha Public Power District

FCS Terminology

- RAMS
  - FCS equipment database includes CQE and Limited-CQE designations
- CQE List
  - Identifies those SSC that are designated CQE and Limited-CQE
- USAR: Updated Safety Analysis Report
- DBD: Design Basis Document

Omaha Public Power District

FCS Terminology

- **Critical Quality Elements (CQEs) -** Those structures, systems, components or items whose satisfactory performance is required to prevent or mitigate the consequences of accidents that could cause undue risk to the health and safety of the public.
- **SSCs at FCS designated as CQE satisfy 54.4(a) Criterion 1 and therefore are in scope**

Omaha Public Power District

FCS Terminology

- **Limited Critical Quality Elements (Limited CQEs)** - Those structures, systems, components, or items whose satisfactory performance is required to prevent or mitigate the consequences of failures of those structures, systems, components, or items identified as CQE.
- **SSCs at FCS designated as Limited CQE satisfy 54.4(a) Criterion 2 and therefore are in scope**

Omaha Public Power District

FCS Terminology

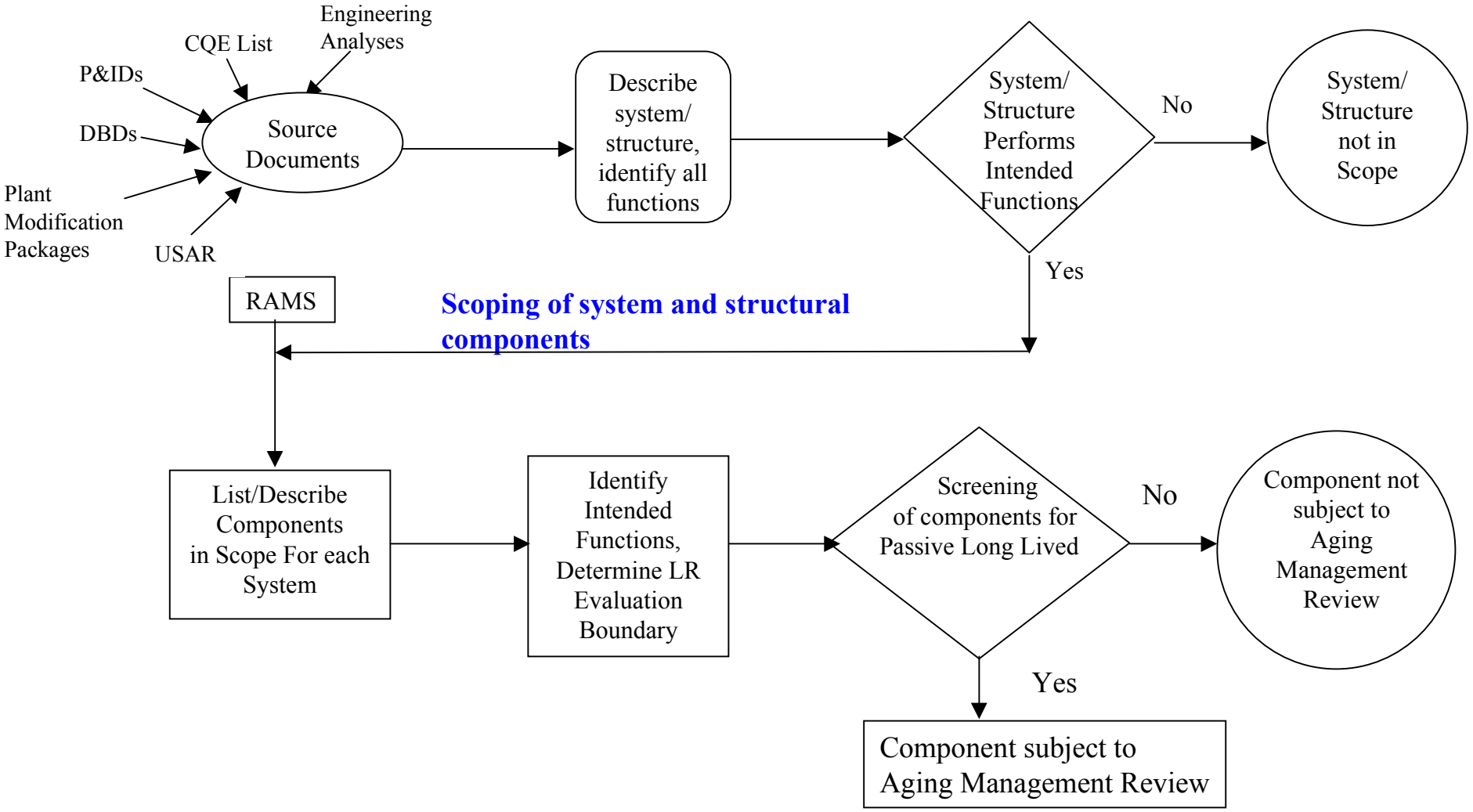
- **Non-Critical Quality Elements (Non-CQEs)** - Those structures, systems, components, or items that have no special performance or quality requirements as defined for CQE or Limited CQE.
- **Non-CQE SSCs were reviewed against Criterion 1, 2, and 3**

OPPD
Omaha Public Power District

Scoping and Screening Methodology and Results

Omaha Public Power District

Scoping of plant systems and structures



Omaha Public Power District

Scoping Results

TABLE 2.2-1
Plant Level Scoping Results

SSC	Within Scope of License Renewal?
120 VAC (2.5.10)	yes
120/208 VAC Miscellaneous Power Lighting	no
125 VDC (2.5.9)	yes
161 KV Substation Equipment	no
22 KV	no
345 KV Substation Equipment	no
4160 VAC (2.5.6)	yes

Omaha Public Power District

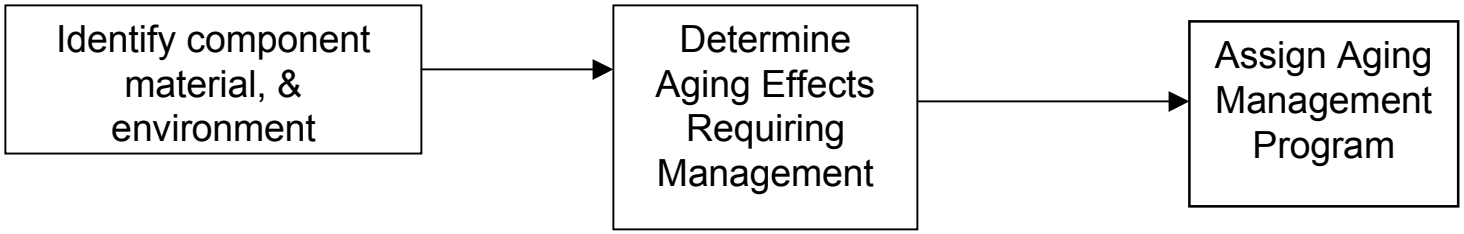
Scoping Results

TABLE 2.3.2.2-1
SPENT FUEL POOL COOLING
Component Types Subject to Aging Management
Review and Intended Functions

Component Type	Intended Functions
Bolting	Pressure Boundary
Filter/strainer Housing	Pressure Boundary
Heat Exchanger	Heat Transfer; Pressure Boundary
Ion Exchangers	Pressure Boundary
Pipes & Fittings	Pressure Boundary
Pump Casings	Pressure Boundary
Valve Bodies	Pressure Boundary

Omaha Public Power District

Aging Management Review of Components



Omaha Public Power District

Aging Management Review of Components (On-site documentation)

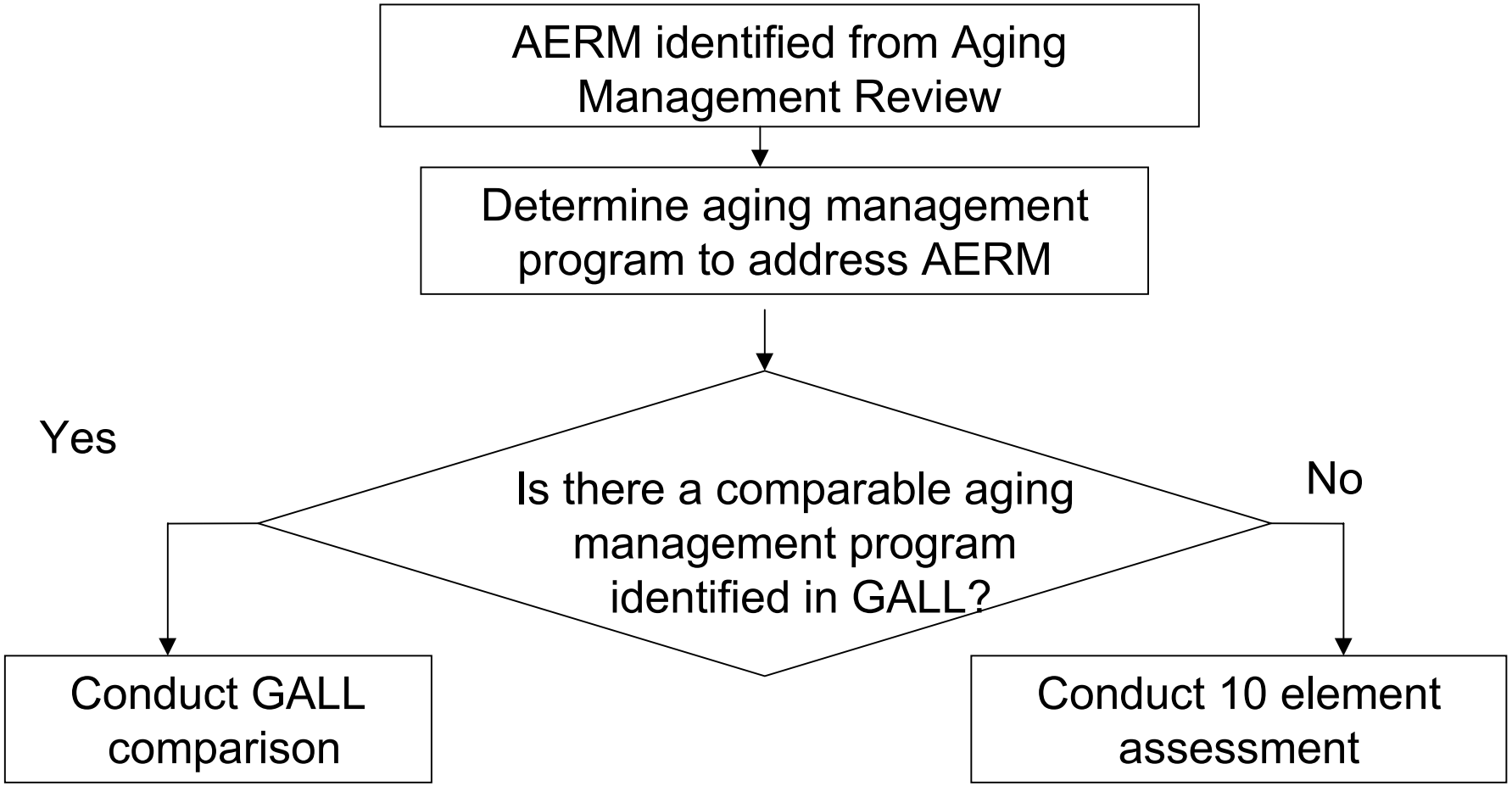
Equipment Type	Material	Internal Environment	AERM	Plant Programs
HEAT EXCHANGER - SHELL	Carbon Steel	Corrosion-Inhibited Treated Water	Loss of Material	Chemistry Program
	Carbon Steel	Corrosion-Inhibited Treated Water	Loss of Material	Cooling Water Corrosion Program
HEAT EXCHANGER - TUBE SHEET	Stainless Steel	Treated Water - Borated	Cracking	Chemistry Program
HEAT EXCHANGER - TUBES	Stainless Steel	Treated Water - Borated	Cracking	Chemistry Program
	Alloy 600	Treated Water - Borated	Cracking	Chemistry Program
	Alloy 600	Treated Water - Borated	Fatigue	Fatigue Monitoring
	Alloy 600	Treated Water - Borated	Loss of Material	Chemistry Program
ORIFICE PLATE	Stainless Steel	Treated Water - Borated	Cracking	Chemistry Program

OPPD
Omaha Public Power District

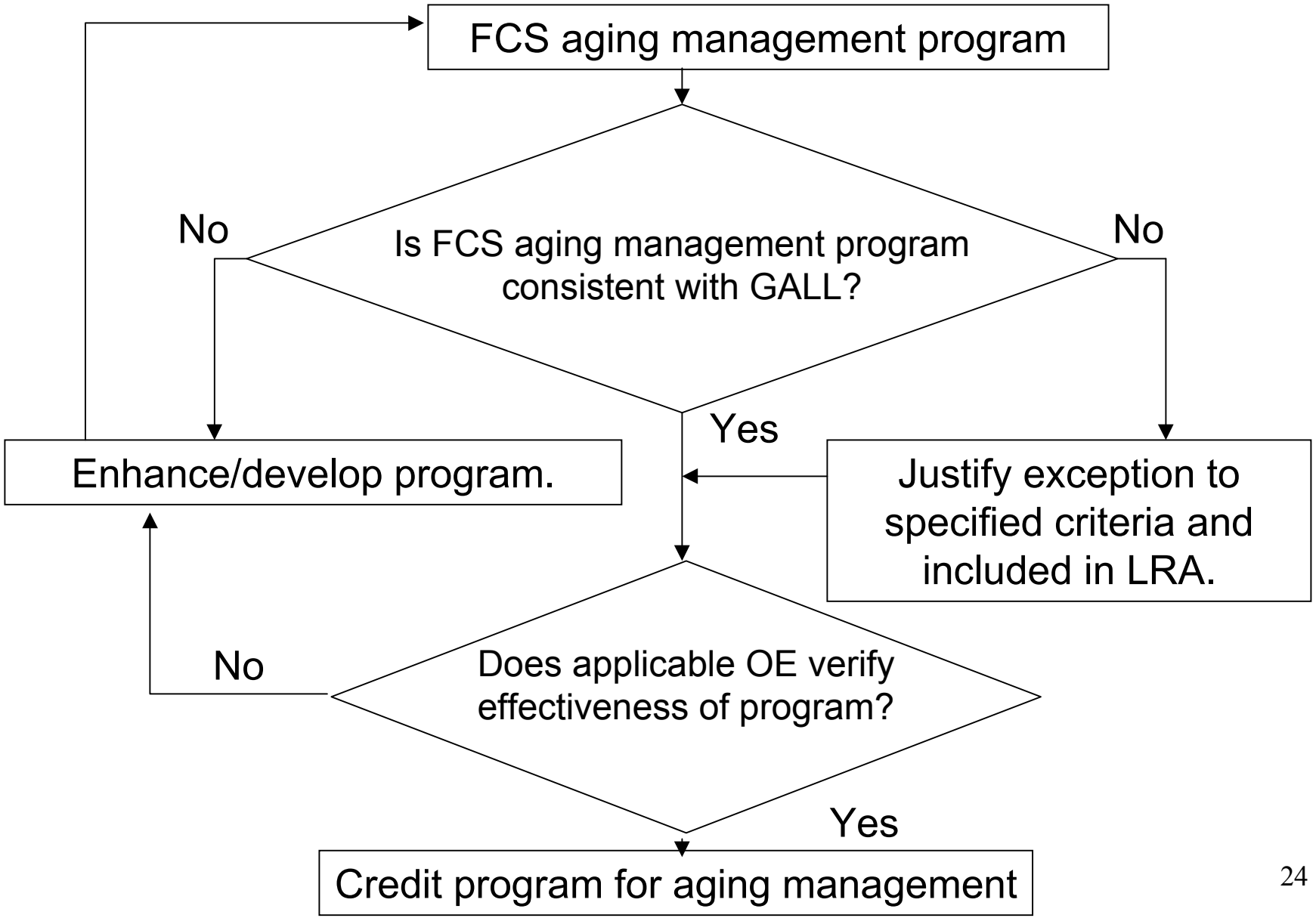
Aging Management Programs

Ken Henry

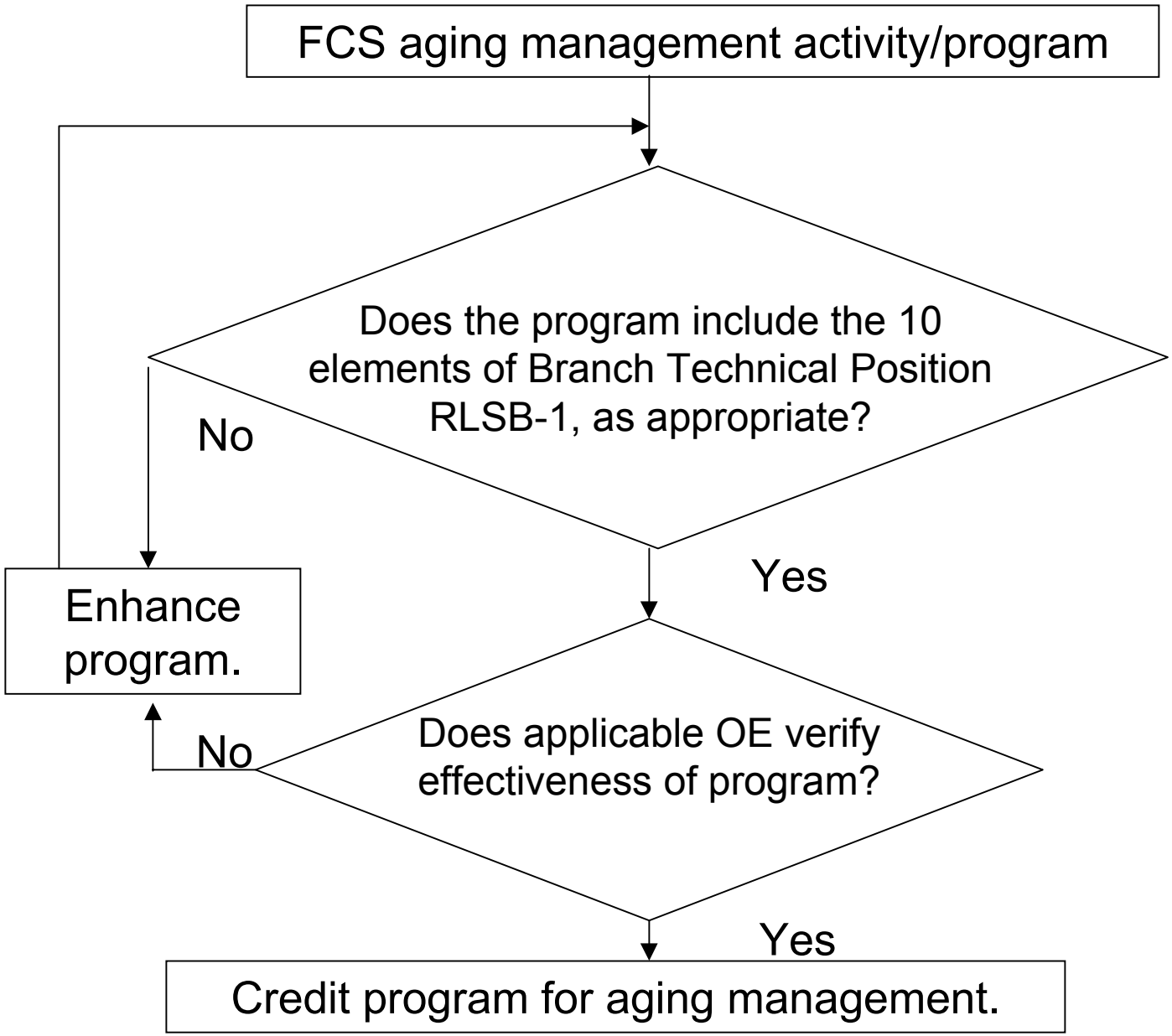
Aging Management Program Analysis



GALL Comparison



10 element assessment



Omaha Public Power District

Existing Aging Management Activities

- B.1.1 Chemistry Program
- B.1.2 Containment Inservice Inspection Program
- B.1.3 Containment Leak Rate Program
- B.1.4 Flow Accelerated Corrosion Program
- B.1.5 Inservice Inspection Program
- B.1.6 Reactor Vessel Integrity Program
- B.1.7 Steam Generator Program

OPPD
Omaha Public Power District

Enhanced Aging Management Activities

- B.2.1 Bolting Integrity Program
- B.2.2 Boric Acid Corrosion Prevention Program
- B.2.3 Cooling Water Corrosion Program
- B.2.4 Diesel Fuel Monitoring and Storage Program
- B.2.5 Fatigue Monitoring Program
- B.2.6 Fire Protection Program

Omaha Public Power District

Enhanced Aging Management Activities

- B.2.7 Overhead Load Handling Systems Inspection Program
- B.2.8 Periodic Surveillance and Preventive Maintenance Program **(site specific program)**
- B.2.9 Reactor Vessel Internals Inspection Program
- B.2.10 Structures Monitoring Program
- B.2.11 Thermal Aging Embrittlement of Cast Austenitic Stainless Steel

Omaha Public Power District

New Aging Management Activities

- B.3.1 Alloy 600 Program
- B.3.2 Buried Surfaces External Corrosion Program
- B.3.3 General Corrosion of External Surfaces Program **(site specific program)**
- B.3.4 Non-EQ Cable Aging Management Program **(site specific program)**
- B.3.5 One-Time Inspection Program
- B.3.6 Selective Leaching Program

Omaha Public Power District

Correlation between NUREG-1801 programs and FCS programs

NUREG-1801 ID Number	NUREG-1801 Program	FCS Program
XI.M1	ASME Section XI Inservice Inspection, Subsection IWB, IWC, IWD	Inservice Inspection Program (B.1.5)
XI.M2	Water Chemistry	Chemistry Program (B.1.1)
XI.M3	Reactor Head Closure Studs	Bolting Integrity Program (B.2.1)
XI.M10	Boric Acid Corrosion	Boric Acid Corrosion Prevention Program (B.2.2)
XI.M11	Nickel-Alloy Nozzles and Penetrations	Alloy 600 Program (B.3.1)
XI.M12	Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS)	Thermal Aging Embrittlement of Cast Austenitic Stainless Steel (CASS) (B.2.11)
XI.M13	Thermal Aging and Neutron Irradiation Embrittlement of Cast Austenitic Stainless Steel (CASS)	Reactor Vessel Internals Inspection Program (B.2.9)

Omaha Public Power District

Programs to be modified or developed in the future

GALL/SRP demonstration
Lessons Learned

- There is no guidance for how the applicant should address programs that have not been developed at the time the license renewal application is submitted where the applicant intends to develop the program at a later time to be consistent with GALL.

Omaha Public Power District

FCS programs to be modified or developed in the future

"The Buried Surfaces External Corrosion Program will be consistent with XI.M34, *Buried Piping and Tanks Inspection*, as identified in NUREG-1801 prior to the period of extended operation."

Omaha Public Power District

AGING MANAGEMENT REVIEW RESULTS

Joe Gasper

Omaha Public Power District

GALL Reconciliation

Process to identify consistency of the FCS AMR results with and deviations from GALL Report

Omaha Public Power District

SRP summarizes aging management programs evaluated in GALL Report

Table 3.2-1. Summary of Aging Management Programs for Engineered Safety Features Evaluated in Chapter V of the GALL Report

Type	Component	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended
BWR/PWR	Closure bolting in high pressure or high temperature systems	Loss of material due to general corrosion, loss of preload due to stress relaxation, and crack initiation and growth due to cyclic loading or SCC	Bolting integrity	No

Omaha Public Power District

GALL Report Volume 1 identifies applicable Volume 2 items included in summary line

Table 2. Summary of Aging Management Programs for the Engineered Safety Features Evaluated in Chapter V of the GALL Report (continued)

Type	Component	Aging Effect/ Mechanism	Aging Management Programs	Further Evaluation Recommended	Item Number in GALL
BWR/ PWR	Closure bolting in high-pressure or high-temperature systems	Loss of material due to general corrosion; crack initiation and growth due to cyclic loading and/or SCC	Bolting integrity	No	V.E.2-a, V.E.2-b.

Omaha Public Power District

GALL Report Volume 2 identifies Aging Management Review Group evaluated in GALL Report

V **Engineered Safety Features**

E. Carbon Steel Components

Item	Structure and/or Component	Material	Environment
E.2-a E.2.1	Closure bolting In high-pressure or high-temperature systems	Carbon steel, low-alloy steel	Air, moisture, humidity, and leaking fluid

Aging Effect/ Mechanism	Aging Management Program (AMP)	Further Evaluation
Loss of material/ General corrosion	Chapter XI.M18, "Bolting Integrity"	No

Omaha Public Power District

FCS Aging Management Review Results

Equipment Type	Material	External Environment	AERM	Plant Programs
BOLTING	Carbon Steel	Plant Indoor Air	Loss of Material	Bolting Integrity Program

Compare FCS AMR results to GALL Report AMR and identify consistency with and deviations from GALL Report

V Engineered Safety Features
E. Carbon Steel Components

Item	Structure and/or Component	Material	Environment	Aging Effect/ Mechanism	Aging Management Program (AMP)	Further Evaluation
E.2-a E.2.1	Closure bolting In high-pressure or high-temperature systems	Carbon steel, low-alloy steel	Air, moisture, humidity, and leaking fluid	Loss of material/ General corrosion	Chapter XI.M18, "Bolting Integrity"	No

Equipment Type	Material	External Environment	AERM	Plant Programs
BOLTING	Carbon Steel	Plant Indoor Air	Loss of Material	Bolting Integrity Program

Three other FCS AMR results are consistent with V.E.2-a or V.E.2-b

Omaha Public Power District

Consistent with GALL

TABLE 3.2-1
SUMMARY OF AGING MANAGEMENT PROGRAMS FOR ENGINEERED SAFETY FEATURES EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR FCS LICENSE RENEWAL

Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
Closure bolting in high pressure or high temperature systems	Loss of material due to general corrosion, loss of preload due to stress relaxation, and crack initiation and growth due to cyclic loading or SCC	Bolting integrity	No	1. The aging management results are consistent with the results documented in NUREG-1801. 2. Consistent with NUREG-1801, this group includes carbon and low alloy steel in ambient air at FCS.

The aging management results are consistent with the results documented in NUREG-1801.

Omaha Public Power District

Materials and Environments

- GALL demonstration Lessons Learned
  - With the Plant X format, it is difficult to determine if all the material and environment combinations in GALL have been addressed in the sample license renewal application.
- In the FCS LRA, OPPD clearly identified the specific FCS materials and environments which are consistent with NUREG-1801.

Omaha Public Power District

GALL material and environment

TABLE 3.2-1
SUMMARY OF AGING MANAGEMENT PROGRAMS FOR ENGINEERED SAFETY FEATURES EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR FCS LICENSE RENEWAL

Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
Closure bolting in high pressure or high temperature systems	Loss of material due to general corrosion, loss of preload due to stress relaxation, and crack initiation and growth due to cyclic loading or SCC	Bolting integrity	No	1. The aging management results are consistent with the results documented in NUREG-1801. 2. Consistent with NUREG-1801, this group includes carbon and low alloy steel in ambient air at FCS.

2. Consistent with NUREG-1801, this group includes carbon and low alloy steel in ambient air at FCS.

Omaha Public Power District

Further evaluation required

TABLE 3.1-1 (CONTINUED)
SUMMARY OF AGING MANAGEMENT PROGRAMS FOR REACTOR VESSEL, INTERNALS, AND REACTOR COOLANT SYSTEM EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR FCS LICENSE RENEWAL

Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
Steam generator shell assembly	Loss of material due to pitting and crevice corrosion	Inservice inspection; water chemistry	Yes, detection of aging effects is to be further evaluated	1. The FCS aging management review results are consistent with those reviewed and approved in NUREG-1801. 2. This aging effect is managed by the Inservice Inspection Program (B.1.5), the Chemistry Program (B.1.1) and the Steam Generator Program (B.1.7). The Steam Generator Program includes methods to detect general, crevice and pitting corrosion discussed in NUREG-1801, Volume 2, IV.D1.1-c. These programs are described in Appendix B of this application. 3. Consistent with NUREG-1801, this group includes carbon steel in deoxygenated treated water at FCS.

This aging effect is managed by the Inservice Inspection Program (B.1.5), the Chemistry Program (B.1.1) and the Steam Generator Program (B.1.7). The Steam Generator Program includes methods to detect general, crevice and pitting corrosion discussed in NUREG-1801, Volume 2, IV.D1.1-c. These programs are described in Appendix B of this application.

Omaha Public Power District

Plant specific program

TABLE 3.2-1
SUMMARY OF AGING MANAGEMENT PROGRAMS FOR ENGINEERED SAFETY FEATURES EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR FCS LICENSE RENEWAL

Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
Components in containment spray (PWR only), standby gas treatment (BWR only), containment isolation, and emergency core cooling systems	Loss of material due to pitting and crevice corrosion	Plant specific	Yes, plant specific	1. The FCS aging management review results are consistent with those reviewed and approved in NUREG-1801. 2. The Chemistry Program (B.1.1) supplemented by the One Time Inspection Program (B.3.5) manages the aging effects of these components. These programs are described in Appendix B of this application. 3. Consistent with NUREG-1801, this group only includes stainless steel in oxygenated treated water for components in containment isolation at FCS.

The Chemistry Program (B.1.1) supplemented by the One Time Inspection Program (B.3.5) manages the aging effects of these components. These programs are described in Appendix B of this application.

Omaha Public Power District

Site Specific Components

GALL demonstration Lessons Learned

– There is a need for the applicant to reference a program evaluated in the GALL report for a component, not covered by the GALL report, if it involves similar intended function, environment, material, aging effect, system, and ASME Code Class (if applicable) with another component.

Omaha Public Power District

Site Specific Components

The FCS LRA references a program evaluated in NUREG-1801 for a component not covered by NUREG-1801, only if it involves an intended function, environment, material, aging effect, system, and ASME Code Class (if applicable) similar to a component included in NUREG-1801.

FCS specific components in same system

TABLE 3.3-1 (CONTINUED)
SUMMARY OF AGING MANAGEMENT PROGRAMS FOR AUXILIARY SYSTEMS
EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR FCS LICENSE RENEWAL

Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
Spent fuel storage racks and valves in spent fuel pool cooling and cleanup	Crack initiation and growth due to stress corrosion cracking	Water chemistry	No	1. The aging management results are consistent with those reviewed and approved in NUREG-1801. 2. Consistent with NUREG-1801, this group includes stainless steel in borated treated water at FCS. 3. In addition to the components in NUREG-1801 this group includes fuel tilting machine, fuel transfer tube, fuel transfer conveyor, fuel transfer carrier box and miscellaneous fuel handling equipment at FCS.

In addition to the components in NUREG-1801 this group includes fuel tilting machine, fuel transfer tube, fuel transfer conveyor, fuel transfer carrier box and miscellaneous fuel handling equipment at FCS.

FCS specific components in different system groups

TABLE 3.2-1
SUMMARY OF AGING MANAGEMENT PROGRAMS FOR ENGINEERED SAFETY FEATURES EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR FCS LICENSE RENEWAL

Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
Pumps, valves, piping, and fittings in containment spray and emergency core cooling systems	Crack initiation and growth due to SCC	Water chemistry	No	1. The aging management results are consistent with the results documented in NUREG-1801. 2. Consistent with NUREG-1801, this group includes stainless steel and stainless steel clad carbon steel in chemically treated borated water at FCS. 3. In addition to the components in NUREG- 1801, this group includes the safety injection tanks (accumulators), flow element and orifice bodies, orifice plate, and heat exchangers in the Engineered Safety Features System at FCS. 4. In addition to the components in NUREG-1801, this group includes pipes, fittings, valve bodies, filter casings, pump casings, ion exchangers and heat exchangers in the Spent Fuel Cooling System, which is one of the Auxiliary Systems at FCS.

In addition to the components in NUREG-1801, this group includes pipes, fittings, valve bodies, filter casings, pump casings, ion exchangers and heat exchangers in the Spent Fuel Cooling System, which is one of the Auxiliary Systems at FCS.

Omaha Public Power District

Site Specific Materials

- GALL demonstration Lessons Learned
  - It is the applicant's responsibility to provide the basis for the determinations on materials and aging effects that are not addressed in GALL and justify them in the application.

Omaha Public Power District

Site Specific Materials

The FCS LRA references a program evaluated in NUREG-1801 for a material, not covered by NUREG-1801, only if it involves the same environment, same aging effect and same aging management program as the material(s) included in NUREG 1801.

Omaha Public Power District

FCS specific materials

TABLE 3.2-1
SUMMARY OF AGING MANAGEMENT PROGRAMS FOR ENGINEERED SAFETY FEATURES EVALUATED IN NUREG-1801 THAT ARE RELIED ON FOR FCS LICENSE RENEWAL

Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended	Discussion
Carbon steel components	Loss of material due to boric acid corrosion	Boric acid corrosion	No	1. The aging management results are consistent with the results documented in NUREG-1801 2. Consistent with NUREG-1801, this group includes carbon and low alloy steel at FCS. 3. In addition to the materials discussed in NUREG-1801, this group includes cast iron and galvanized carbon steel at FCS.

In addition to the materials discussed in NUREG-1801, this group includes cast iron and galvanized carbon steel at FCS.

Omaha Public Power District

FCS AMR results not evaluated in GALL

- FCS AMR results not evaluated in NUREG-1801 are discussed in Tables 3.x-2.
  - the aging mechanisms are identified for the applicable AERMs

Omaha Public Power District

FCS AMR results not evaluated in GALL

TABLE 3.2-2
FCS ENGINEERED SAFETY FEATURES COMPONENT TYPES SUBJECT TO AGING MANAGEMENT REVIEW NOT EVALUATED IN NUREG-1801

Component Types	Material	Environment	AERMs	Program/Activity
Heat Exchanger - Tubes	Alloy 600	Treated Water - Borated	Loss of Material Crevice corrosion in the presence of sufficient levels of oxygen, halogens, sulfates, or copper	Chemistry Program(B.1.1)

Crevice corrosion in the presence of sufficient levels of oxygen, halogens, sulfates, or copper

Omaha Public Power District

Operating Experience

- GALL demonstration Lessons Learned
  - The GALL report is based on industry operating experience prior to June, 2001.
- Industry operating experience issued after the publication of NUREG-1801 is addressed by a review of operating experience issued during 2001.

Omaha Public Power District

Uncommon Components

- GALL demonstration Lessons Learned
  - Additional description of uncommon components not addressed in the GALL report should be included in the license renewal application to facilitate staff review of the aging management program.
- Inclusion of the text searchable FCS USAR with the LRA should allow reviewers to obtain additional information on “uncommon components.”

OPPD
Omaha Public Power District

Time Limited Aging Analyses

Bernie Van Sant

Omaha Public Power District

Time Limited Aging Analyses

Documents reviewed for FCS TLAA

- Statements of Consideration (SOC) for 10 CFR 54
- NUREG-1800
- NEI 95-10
- Industry license renewal applications
- FCS CLB (including licensing documents and the USAR)
- Design Basis Documents

Omaha Public Power District

TLAA Applicable to FCS

TLAA Category	Analysis	54.21(c)(1)	Resolution Description	LRA Section
Reactor Vessel Neutron Embrittlement	Pressure/Temperatures (P/T) Curves	(*ii*)	The analyses will be projected to the end of the period of extended operation.	4.2.1
	Low Temperature Overpressure Protection (LTOP) PORV Set points	(*ii*)	The analyses will be projected to the end of the period of extended operation.	4.2.2
	Pressurized Thermal Shock (PTS)	(*ii*)	The analyses have been projected to the end of the period of extended operation.	4.2.3
	Reactor Vessel Upper Shelf Energy	(*ii*)	The analyses will be projected to the end of the period of extended operation.	4.2.4
Metal Fatigue	ASME III, Class 1 (vessels) RCS Piping	*(iii)*	The effects of aging on the intended function(s) will be adequately managed for the period of extended operation.	4.3.1
	Pressurizer Surge Line Thermal Stratification	*(iii)*	The effects of aging on the intended function(s) will be adequately managed for the period of extended operation.	4.3.2
	Fatigue of Class II and III Components (excluding NSSS Sampling)	*(i)*	The analyses remain valid for the period of extended operation.	4.3.3
	NSSS Sampling	*(iii)*	The effects of aging on the intended function(s) will be adequately managed for the period of extended operation.	4.3.3

Omaha Public Power District

TLAA Applicable to FCS

TLAA Category	Analysis	54.21(c)(1)	Resolution Description	LRA Section
Environmental Qualification	EQ of Electrical Equipment	***(iii)***	The effects of aging on the intended function(s) will be adequately managed for the period of extended operation.	4.4
Concrete Containment Pre-Stress	Containment Tendon Pre-stress	***(iii)***	The effects of aging on the intended function(s) will be adequately managed for the period of extended operation.	4.5
Containment Liner	Containment Liner Plate and Penetration Sleeve Fatigue	***(ii)***	The analyses will be projected to the end of the period of extended operation	4.6
Other TLAAs	Reactor Coolant Pump Flywheel Fatigue	***(i)***	The analyses remain valid for the period of extended operation.	4.7.1
	Leak Before Break (LBB) and Thermal Aging of Cast Austenitic Stainless Steel	***(ii)***	The analyses will be projected to the end of the period of extended operation	4.7.2
	High Energy Line Break	***(i)***	The analyses remain valid for the period of extended operation.	4.7.3

OPPD
Omaha Public Power District

Current Technical Issues

Positions in FCS LRA

Omaha Public Power District

Current Technical Issues

- Concrete Aging
  - ISI and Structures Monitoring are credited as AMPs
  - Commitment to ground water monitoring
- II/I
  - All components whose failure could cause a failure of CQE equipment are classified as Limited-CQE and are included in scope
- SBO
- Fire Protection

OPPD
Omaha Public Power District

Questions