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Supporting the NRC's Update of the License Renewal Documents

"See the World of Possibilities"

PARALLAX, INC

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Parallax Services

- Parallax provides technical support services mostly to Federal agencies
- Track record of success and steady growth for over 12 years
- Female and minority owned, SBA 8(a) graduate (2002)



Qualifications

- Selected by NRC under a competitive contract award on June 25, 2004
- Key personnel with license renewal and NRC support experience



Overall Objectives

- Satisfy stakeholder interests, including the Public, Industry and NRC
- Provide quality documents that add value
- Meet published schedules



Covered Topics

- Facilitating Public Review of Proposed Changes
 - Applies to the September 30 documents
- Facilitating Use of Updated Documents
 - Applies after the Final Update



Facilitating Public Review of Proposed Changes

- Updated documents will be available on the Web with embedded hot links
- Links will facilitate:
 - Comparing old and new document text
 - Reviewing the basis for technical and other changes
 - Access to definitions of key terms



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Illustration of Links to Aid Public Review and Comment

V.A Containment Spray System (PWR)							
Item	Link	Structure and/or Component	Material	Environment	Aging Effect/ Mechanism	Aging Management Program (AMP)	Further Evaluation
E-12	<u>V.A.1-a</u> <u>V.A.1-c</u> <u>V.A.3-a</u> <u>V.A.4-a</u>	Piping, piping components, piping elements, and tanks	Stainless steel	Treated borated water > 140°F	Cracking/Stress corrosion cracking	Chapter XI.M2, "Water Chemistry," for PWR primary water in EPRI TR-105714	No
E-17	<u>V.A.6-a</u>	Heat exchanger shell side components	steel	Closed cycle cooling water	Macrofouling and Loss of material/ General, pitting and crevice corrosion	Chapter XI.M21, "Closed-Cycle Cooling Water System"	No
E-18	<u>V.A.6-a</u>	Heat exchanger shell side components including tubes	steel	Raw water	Macrofouling and Loss of material/ General, Pitting, crevice, and , microbiologically influenced corrosion and biofouling	Chapter XI.M20, "Open-Cycle Cooling Water System"	No



Facilitating Use of Updated Documents

- Data in the Updated GALL Report's tables will be available over the Web
- Web access to this data will provide stakeholders the ability to readily search, sort and display this information to suit a variety of purposes
- The following slides illustrate these ideas



Sample Web Displays

GENERIC AGING LESSONS LEARNED (GALL) REPORT

NUREG-1801 published July 2001

Select chapter(s) to review

- Chapter II, Containment Structures
- Chapter III, Structures and Component Supports
- Chapter IV, Reactor Vessel, Internals, and Reactor Coolant System
- Chapter V, Engineered Safety Features
- Chapter VI, Electrical Components
- Chapter VII, Auxiliary Systems
- Chapter VIII, Steam and Power Conversion System

Show Available Tables for the Selected GALL Chapter(s)

[Get TLA Information from the GALL](#)

[Show PWR Table 1 \(NUREG-1801 Volume 1 Roll-up TABLES\)](#)

[Show BWR Table 1 \(NUREG-1801 Volume 1 Roll-up TABLES\)](#)



Sample Web Displays (Cont'd)

NUREG-1801 Volume 1 Roll-up Tables for PWRs

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TABLE 3.1.1 Summary of Aging Management Evaluations in Chapter IV of NUREG-1801 for Reactor Vessel, Internals, and Reactor Coolant System				
Item Number	Component	Aging Effect/Mechanism	Aging Management Programs	Further Evaluation Recommended
3.1.1-01	Reactor coolant pressure boundary components	Cumulative fatigue damage	TLAA, evaluated in accordance with 10 CFR 54.21(c)	Yes, TLAA (see Subsection 3.1.2.2.1)
3.1.1-02	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 (see Subsection 3.1.2.2.1)
3.1.1-03	BWR ONLY			
3.1.1-04	Pressure vessel ferritic materials that have a neutron fluence greater than 10^{17} n/cm ² (E>1 MeV)	Loss of fracture toughness due to neutron irradiation embrittlement	TLAA, evaluated in accordance with Appendix G of 10 CFR 50 and RG 1.99	Yes, TLAA (see Subsection 3.1.2.2.3.1)
3.1.1-05	Reactor vessel beltline shell and welds	Loss of fracture toughness due to neutron irradiation embrittlement	Reactor vessel surveillance	Yes, plant specific (see Subsection 3.1.2.2.3.2)
3.1.1-06	Westinghouse and Babcock & Wilcox (B&W) baffle/ former bolts	Loss of fracture toughness due to neutron irradiation embrittlement, and void swelling	Plant specific	Yes, plant specific (see Subsection 3.1.2.2.3.3)
3.1.1-07	Small-bore reactor coolant system and connected systems piping	Crack initiation and growth due to stress corrosion cracking (SCC), intergranular stress corrosion cracking (IGSCC), and thermal and mechanical loading	Inservice inspection; water chemistry; one-time inspection	Yes, parameters monitored/inspected and detection of aging effects are to be further evaluated (see Subsection 3.1.2.2.4.1)



Sample Web Displays (Cont'd)

GENERIC AGING LESSONS LEARNED (GALL) REPORT

NUREG-1801 Volume 2 published July 2001

Chapter V, Engineered Safety Features

Table V.A. - Containment Spray System (Pressurized Water Reactor)

27 Records Sorted by Item Number

(click on column heading to sort)

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<u>Item Number</u>	<u>Item Number Description</u>	<u>Component</u>	<u>Material</u>	<u>Environment</u>	<u>Effect / Mechanism</u>	<u>AMP</u>	<u>FER</u>
V.A.1-a	Piping, fittings and miscellaneous items	V.A.1.1, Piping and fittings up to isolation valve	Stainless steel	Chemically treated borated water at temperature < 93°C (200° F)	Crack initiation and growth / Stress corrosion cracking	Chapter XI.M2, "Water Chemistry," for PWR primary water in EPRI TR-105714	No
V.A.1-a	Piping, fittings and miscellaneous items	V.A.1.2, Flow orifice/elements	Stainless steel	Chemically treated borated water at temperature < 93°C (200° F)	Crack initiation and growth / Stress corrosion cracking	Chapter XI.M2, "Water Chemistry," for PWR primary water in EPRI TR-105714	No



Sample Web Displays (Cont'd)

GENERIC AGING LESSONS LEARNED (GALL) REPORT

NUREG-1801 Volume 2 published July 2001

GALL TLAA's Selected

237 Records Sorted by Item Number

(click on column heading to sort)

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<u>Item Number</u>	<u>Item Number Description</u>	<u>Component</u>	<u>Material</u>	<u>Environment</u>	<u>Effect / Mechanism</u>	<u>AMP</u>	<u>FER</u>
II.A1.3-b	Prestressing system	None, Tendons; anchorage components	Carbon steel	Inside or outside containment	Loss of prestress / Relaxation; shrinkage; creep; elevated temperature	Loss of tendon prestress is a time-limited aging analysis (TLAA) to be evaluated for the period of extended operation. See the Standard Review Plan, Section 4.5, "Concrete Containment Tendon Prestress" for acceptable methods for meeting the requirements of 10 CFR 54.21(c)(1)(i) and (ii). See Chapter X.S1 of this report for meeting the requirements of 10 CFR 54.21(c)(1)(iii). For periodic monitoring of prestress, see Chapter XI.S2.	Yes, TLAA
II.A3.1-b	Penetration sleeves, penetration bellows, and dissimilar metal welds	None, Penetration sleeves, penetration bellows, and dissimilar metal welds	Carbon steel, stainless steel; dissimilar metal welds	Inside or outside containment	Cumulative fatigue damage / Fatigue (only if a CLB fatigue analysis exists)	Fatigue is a time-limited aging analysis (TLAA) to be evaluated for the period of extended operation. See the Standard Review Plan, Section 4.6, "Containment Liner Plate and Penetration Fatigue Analysis" for acceptable methods for meeting the requirements of 10 CFR 54.21(c).	Yes, TLAA



Sample Web Displays (Cont'd)

- Summary:
 - Present views sorted by item number, description, component, material, environment, etc.
 - Provide groupings by programs, such as TLAA and AMPs or grouping items requiring further review
- Continuing to evaluate and identify other useful displays