

Summary of Elicitation Results -- PWR Engineered Safety Features (Emergency Core Cooling Systems)

[illegible]

Summary of Elicitation Results -- PWR Engineered Safety Features (Emergency Core Cooling Systems) - Contd.

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 19:	SII/RHR Piping to RCS Hot Leg																
19.1	SS External Surface																
19.2	304/316 SS Piping (Stagnant)																
19.3	Type 304/316 SS HAZ (Stagnant)																
19.4	Type 308 SS Weld (Stagnant)																
19.5	Forged 304/316 Nozzles (Stagnant)																
19.6	Type 304 Socket Welds (Stagnant)																
19.7	SS External Surfaces (High T/P)																
19.8.1	Type 304 SS HAZ (High T/P)																
19.8.2	Type 316 SS HAZ (High T/P)																
19.9	Type 308 SS Weld (High T/P)																
19.10	308/309, Alloy 82/182 Dissim. Weld																
19.11	Forged 304/316 Nozzles (High T/P)																
Group 20:	RHR Pump Discharge Piping																
20.1	SS External surface																
20.2	Wrought 304/316 SS Piping																
20.3	Type 304/316 SS HAZ																
20.4	Type 308 SS Weld																
20.5	Forged 304/316 SS Nozzles																
20.6	Type 304 Socket Welds																
Group 21:	RHR Piping to RCS Cold Leg																
21.1	SS External surface																
21.2	Wrought 304/316 SS Piping																
21.3	Type 304/316 SS HAZ																
21.4	Type 308 SS Weld																
21.5	Forged 304/316 SS Nozzles																
21.6	Type 304 Socket Welds																
Group 22:	CVCS Piping to RCS Cold Leg																
22.1	SS External surface																
22.2	Wrought 304/316 SS Piping																
22.3	Type 304/316 SS HAZ																
22.4	Type 308 SS Weld																
22.5	Type 308 SS Weld (High Temp.)																
22.6	Forged 304/316 SS Nozzles																
22.7	Type 304 Socket Welds																
22.8	308/309, 82/182 Dissim. Weld																
Group 23:	Safety Injection Pump Discharge Piping																
23.1	SS External surface																
23.2	Wrought 304/316 SS Piping																
23.3	Type 304/316 SS HAZ																
23.4	Type 308 SS Weld																
23.5	Forged 304/316 SS Nozzles																
23.6	Type 304 Socket Welds																

Summary of Elicitation Results -- PWR Engineered Safety Features (Emergency Core Cooling Systems) - Contd.

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 48: Containment Penetrations for Process Piping																	
48.1	SS Type 304, LAS, CS Comp.																
48.2	Type 304 Sleeve Dissim. Weld			*													
48.3.1	Penetration Piping - Int.													*			
48.3.2	Penetration Piping - Ext.																
48.4.1	Type 304/316L Penet. Piping - Int.																
48.4.2	Type 304/316L Penet. Piping - Ext.																
48.5.1	SA106, GR.B Penet. Piping - Int.			*				X			*		*	*	*		
48.5.2	SA106, GR.B Penet. Piping - Ext.																
48.6	Penet. Piping and Dissim. Welds																
48.7	Fluid Head			*				*			*		*	*	*		
48.8	Component HAZ			*				*			*		*	*	*		
48.9	Component Welds			*				*			*		*	*	*		
48.10	Leak Chase Channel Plug																
48.11	Flanges			*				*			*		*	*	*		
48.12	Flange HAZ			*				*			*		*	*	*		
48.13	Flange Welds			*				*			*		*	*	*		
48.14	CS Bellows							*							*		

NOTES

- * Susceptibility at interface between colors with one or more scores higher than this interface.
- x Susceptibility inside color box with one or more scores higher than this color box upper interface.

Summary of Elicitation Results -- PWR Steam and Power Conversion Systems

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 24: Main Steam																	
24.1	CS/LAS External Surface																
24.2	CS Components/Weldments																
24.3	LAS Components																
Group 25: Main Feedwater System																	
25.1	CS External Surface																
25.2	I-690 Forging/Weld/ HAZ Ext.																
25.3	I-690 Forging/Weld/HAZ																
25.4	CS Components/Weld/HAZ																
Group 26: Auxiliary Feedwater System																	
26.1	CS Component/Weld/HAZ Ext.																
26.2	CS Component/Weld/HAZ																
Group 27: Steam Generator Blowdown																	
27.1	CS Component/Weld/HAZ Ext.																
27.2	CS Comp/Weld/HAZ (Sat. Water)																
27.3	CS Comp/Weld/HAZ (Demin. Water)																

NOTES

- * Susceptibility at interface between colors with one or more scores higher than this interface.
- x Susceptibility inside color box with one or more scores higher than this color box upper interface.

Summary of Elicitation Results -- PWR Reactor Coolant System

[illegible]

Summary of Elicitation Results -- PWR Reactor Coolant System - Contd.

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 5:	Pressurizer Spray Piping																
5.1	SS External Surface																
5.2	Wrought SS 304/316 Piping																
5.3.1	SS 304 Piping HAZ																
5.3.2	SS 316 Piping HAZ																
5.4	Type 308 SS Weld																
5.5	Forged 304/316 SS Nozzles																
5.6	304/308/316 Socket Welds																
Group 6:	Pressurizer Surge Piping																
6.1	SS External Surface																
6.2	Wrought SS 304/316 Piping																
6.3.1	SS 304 Piping HAZ																
6.3.2	SS 316 Piping HAZ																
6.4	Type 308 SS Weld																
6.5	Forged 304/316 SS Nozzles																
6.6	304/308/316 Socket Welds																
Group 7:	Pressurizer Piping to PORVs																
7.1	SS External Surface																
7.2	SS 304/316 Piping (Stagnant)																
7.3.1	SS 304 Piping HAZ (Stagnant)																
7.3.2	SS 316 Piping HAZ (Stagnant)																
7.4	Type 308 SS Weld (Stagnant)																
7.5	Forged 304/316 Nozzles (Stagnant)																
7.6	304/308 Socket Welds (Stagnant)																
Group 8:	Pressurizer Piping to SRVs																
8.1	SS External Surface																
8.2	SS 304/316 Piping (Stagnant)																
8.3.1	SS 304 Piping HAZ (Stagnant)																
8.3.2	SS 316 Piping HAZ (Stagnant)																
8.4	Type 308 SS Weld (Stagnant)																
8.5	Forged 304/316 Nozzles (Stagnant)																
Group 9:	Reactor Coolant Pump																
9.1	SS External Surface																
9.2	304/308/316 SS Components/Welds																
9.3	High Strength Parts																
9.4	Forged 304 SS Flange																
9.5	CASS CF8 Components																
9.6	SA-540 Gr. B24 Bolts																
Group 10:	Reactor Pressure Vessel																
10.1	SS External Surface																
10.2	Shell/Plates, Forgings, Welds																
10.3	Type 308/309 SS Clad/ Welds																
10.4	308/309 Dissimilar Welds- Int.																
10.5	Forged 304/316 SS Nozzles																
10.6	SA-540 Gr B23 Closure Studs																
10.7	CASS CF8 Components																
10.8	Alloy 82/182 Dissim. Welds - Int.																
10.9	Forged Alloy 600 Nozzles																
10.10	304/308 CRDM Housing (Stagnant)																
10.11	308/309 Dissimilar Welds - Ext.																
10.12	Alloy 82/182 Dissim. Welds - Ext.																

Summary of Elicitation Results -- PWR Reactor Coolant System - Contd.

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 11: Steam Generator																	
11.1	SS External Surface						*							*	*		
11.2	Shell/Plates, Forgings	*					*							*	*		
11.3	LAS Nozzles/Welds													*	*		
11.4	308/309 SS Chaneel Head Clad				*				*								
11.5	Alloy 600 MA SG Tubes etc.																
11.6	Alloy 600 MA SG Tubes Sec. Side																
11.7	308/309 Dissimilar Welds - Int.																
11.8	Forged 316 SS Nozzles																
11.9	Alloy 600 Divider Plate																
11.10	SA-553 Gr. A Manways																
11.11	Alloy 52/82 Channel Head Clad																
11.12	Alloy 600 TT SG Tubes etc.																
11.13	Alloy 690 TT SG Tubes etc.																
11.14	Alloy 600 TT SG Tubes Sec. Side																
11.15	Alloy 690 TT SG Tubes Sec. Side																
11.16	Alloy 82/182 Dissim. Welds - Int.																
11.17	Type 308/309 Dissim. Welds - Ext.																
11.18	Alloy 82/182 Dissim. Welds - Ext.																
11.19	Alloy 690 Divider Plate																
11.20	CS Drilled Hole TSP			X													
11.21	SS Line Contact/Drilled Hole TSP			*													
11.22	Alloy 600, SA Sensitized SG Tubes																
11.23	Alloy 600, SA Sens. SG Tube Sec.																*
Group 12: Reactor Vessel Internals																	
12.1	304 SS Plates/Tubes (low fluence)																
12.2	Type 304 SS HAZ (low fluence)																
12.3	Type 308 SS Weld (low fluence)																
12.4	Type 316 CW SS Comp (low fluence)		X												*		
12.5	CASS Components														*		
12.6	Type 304 SA SS Holdown Spring														*		
12.7	High Strength Fasteners/Springs											*			*		
12.8	304 SS Plates/Tubes (high fluence)											*			*		
12.9	Type 304 SS HAZ (high fluence)														*		
12.10	308 SS Weld Metal (high fluence)														*		
12.11	316 CW SS Comp. (high fluence)														*		
12.12	High Strength Bolts (high fluence)														*		
Group 13: Stop Valve Loop Bypass Piping																	
13.1	SS External Surface																
13.2	Wrought 304/316 SS Piping														*		
13.3.1	SS 304 Piping HAZ														*		
13.3.2	SS 316 Piping HAZ														*		
13.4	Type 308 SS Weld														*		
13.5	CASS components														*		
13.6	Forged 304/316 SS Nozzles														*		

NOTES

- * Susceptibility at interface between colors with one or more scores higher than this interface.
- x Susceptibility inside color box with one or more scores higher than this color box upper interface.

Summary of Elicitation Results -- PWR Support and Auxiliary Systems

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 28: Service Water Suction Piping from Ponc																	
28.1	CS Comp/Weld/HAZ External Surface							*							*		
28.2	CS Comp/Weld/HAZ Ext. (Buried)																
28.3	CS Comp/Weld/HAZ (Pond)												*	*			
28.4	CS Comp/Weld/HAZ (Lake/Sea)												*	*			
Group 29: Service Water Pump Discharge Piping																	
29.1	CS Comp/Weld/HAZ Ext.												*	*			
29.2	CS Comp/Weld/HAZ (Pond)												*	*			
29.3	CCW HX Copper Zinc tubes						X						*	*	*		
29.4	CS CCW HX Shell and Tubesheets												*	*			
29.5	CCW HX SS tubes												*	*			
29.6	CCW HX Copper Nickel tubes												*	*			
Group 30: Service Water Piping Inside Containment																	
30.1	CS Comp/Weld/HAZ Ext.												*	*			
30.2	CS Comp/Weld/HAZ (Pond)												*	*			
Group 31: CVCS Pump Piping to Crossover Leg Injection																	
31.1	SS External Surface																
31.2	Wrought 304/316 SS Piping																
31.3	Type 304/316 Piping HAZ																
31.4	Type 308 SS Weld																
31.5	Forged 304/316 SS Components																
31.6	Type 304 SS Socket Welds																
31.7	304/316 SS Piping (High T)																
31.8	304/316 Piping HAZ (High T)																
31.9	308 SS Weld (High T)																
31.10	Forged 304/316Comp (High T)																
31.11	304 SS Socket Welds (High T)														*		
31.12	Flange Retaining Bolts								*								
Group 32: CVCS Normal Letdown Piping																	
32.1	SS External surface																
32.2	Wrought 304/316 SS Piping																
32.3	Type 304/316 SS HAZ																
32.4	Type 308 SS Weld														*		
32.5	Forged 304/316 SS Components														*		
32.6	Type 304 Socket Welds														*		
Group 33: CVCS Regenerative HX Piping to Letdown HX																	
33.1	SS External surface																
33.2	Wrought 304/316 SS Piping																
33.3	Type 304/316 SS HAZ																
33.4	Type 308 SS Weld																
33.5	Forged 304/316 SS Components																
33.6	Type 304 Socket Welds																
33.7	CS Letdown HX Shell, Nozzles												*	*			
Group 34: CVCS Letdown HX Piping to VCT																	
34.1	SS External surface																
34.2	Wrought 304/316 SS Piping																
34.3	Type 304/316 SS HAZ																
34.4	Type 308 SS Weld																
34.5	Forged 304/316 SS Components																
34.6	Type 304 Socket Welds																
34.7	SA193 Gr B16 or B7 Bolts	*						*			*				*		
34.8	Studs SA453 Gr 660							*	*		*				*		

Summary of Elicitation Results -- PWR Support and Auxiliary Systems - Contd.

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 35: CVCS Mixed Bed Piping to Filter																	
35.1	SS External surface																
35.2	Wrought 304/316 SS Piping																
35.3	Type 304/316 SS HAZ																
35.4	Type 308 SS Weld																
35.5	Forged 304/316 Components																
35.6	Type 304 Socket Welds																
35.7	SA193 Gr B7 Flange Bolts	*							*						*		
35.8	CASS CF8 Components							*							X		
35.9	Dissimilar Weld Ext.																
Group 36: CVCS VCT Piping to Charging Pump Suction																	
36.1	SS External surface																
36.2	Wrought 304/316 SS Piping																
36.3	Type 304/316 SS HAZ																
36.4	Type 308 SS Weld																
36.5	Forged 304/316 SS Components																
36.6	SA193 Gr B7 Flange Bolts	*							*						*		
36.7	CASS CF8 Components							*							X		
Group 37: CVCS Charging Pump Piping to Regenerative HX																	
37.1	SS External surface																
37.2	Wrought 304/316 SS Piping																
37.3	Type 304/316 SS HAZ																
37.4	Type 308 SS Weld																
37.5	Forged 304/316 Components																
37.6	Type 304 Socket Welds																
37.7	Flange SA193 Gr B7 Bolts	*							*						*		
Group 38: CVCS Regenerative HX Piping to Cold Leg																	
38.1	SS External surface																
38.2	Wrought 304/316 SS Piping																
38.3	Type 304/316 SS HAZ																
38.4	Type 308 SS Weld														*		
38.5	Forged 304/316 Components														X		
38.6	Type 304 Socket Welds														*		
Group 39: CVCS Injection Filter Piping to RCP Seals																	
39.1	SS External surface																
39.2	Wrought 304/316 SS Piping																
39.3	Type 304/316 SS HAZ																
39.4	Type 308 SS Weld																
39.5	Forged 304/316 Components																
39.6	Type 304 Socket Welds																
39.7	Flange SA193 Gr. B16 Bolts	*							*						*		
Group 40: CVCS RCP Seal Return Piping to Filter																	
40.1	SS External surface																
40.2	Wrought 304/316 SS Piping																
40.3	Type 304/316 SS HAZ																
40.4	Type 308 SS Weld								*								
40.5	Forged 304/316 Components																
40.6	Flange SA193 Gr. B16 Bolts	*							*						*		

Summary of Elicitation Results -- PWR Support and Auxiliary Systems - Contd.

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 41: CCW Surge Tank Piping to CCW HX																	
41.1	CS/LAS External Surface																
41.2	CS/LAS Elbows																
41.3	CS/LAS Pipe Fittings																
41.4	CS/LAS Valves																
41.5	CS/LAS Piping						*								*		
41.6	LAS Flanges						*										
41.7	CS Surge Tank Components																
41.8	SA285 Surge Tank Weld																
41.9	Cast Iron CCW Pump Casing								*								
41.10	CS CCW HX Nozzles										*		*				
Group 42: CCW HX Piping to RHR HX																	
42.1	CS/LAS External Surface																
42.2	LAS Elbows			*										*			
42.3	LAS Pipe Fittings			*													
42.4	LAS Valves			*													
42.5	LAS Piping			*											*		
42.6	CS/LAS Lugs and Flanges																
Group 43: CCW Piping to Other Loads Outside Containment																	
43.1	CS/LAS External Surface																
43.2	LAS Elbows			*										*			
43.3	LAS Pipe Fittings			*													
43.4	LAS Valves			*													
43.5	LAS Piping			*										*			
43.6	CS/LAS Flanges and Lugs																
43.7	SA105, SA106 Socklets			*													
Group 44: CCW Piping to RCPs Inside Containment																	
44.1	CS/LAS External Surface																
44.2	LAS Elbows			*										*			
44.3	LAS Pipe Fittings			*													
44.4	LAS Valves			*													
44.5	LAS Piping			*											*		
44.6	LAS Flanges and Lugs																
44.7	SA105 Flexible Hose			*						*			*	*	*		
Group 45: Spent Fuel Pool Cooling Piping																	
45.1	SS or Type 304 External Surface																
45.2	SS or Type 304 Ext. (Concrete)											*					
45.3	SS or Type 304 Elbows																
45.4	SS or Type 304 Pipe Fittings																
45.5	SS or Type 304 Valves																
45.6	SS or Type 304 Piping			*													
45.7	SS or 304 Pipe Flanges and Lugs						*										
45.8	SS or Type 304 Weldolet						*										
45.9	SS SFP HX Comp. (tube side)						*										
45.10	SS SFP Pump Components																
45.11	SS SFP HX Comp. (shell side)						*								*		

Summary of Elicitation Results -- PWR Support and Auxiliary Systems - Contd.

Subgroup Description		Degradation Mechanism															
		BAC	CREEP	CREV	DEBOND	EC	FAC	FAT	FR	GALV	GC	IC	MIC	PIT	SCC	SW	WEAR
Group 46: Spent Fuel Pool Cleaning Piping																	
46.1	SS or Type 304 Ext. Surface																
46.2	SS Type 304/316 Elbows																
46.3	SS Type 304/316 Pipe Fittings																
46.4	SS Type 304/316 Valves																
46.5	SS Type 304/316 Piping																
46.6	SS Type 304/316 Flanges																
46.7	SS Type 304/316 Mixed Bed																
Group 47: Spent Fuel Pool and Fuel Racks																	
47.1	SFP Type 304 SS Components																
47.2	SFP Type 304 SS HAZ																
47.3	SFPSS Welds																
47.4	Aluminum Boral Panels																
47.5	Zr- Alloy Fuel Assembly																
47.6	SFP Floor SS Liner - Int. Surface																
47.7	SFP Floor SS Liner - Ext. Surface																

NOTES

- * Susceptibility at interface between colors with one or more scores higher than this interface.
- x Susceptibility inside color box with one or more scores higher than this color box upper interface.