ABWR DESIGN CERTIFICATION
MEMORANDUM

ABWR SSAR/CDM CROSS REFERENCE MATERIAL

Revised March 31,1994
GE Nuclear Energy

TABLE OF CONTENTS

Introduction

As part of their review of the ABWR Design Certification application, NRC staff have requested that GE provide a cross reference between the following:

a) The plant safety analyses and other safety-related issues described in the Safety Analysis Report (SAR) and

b) The inspections, tests, analyses and acceptance criteria (ITAAC) included in the Certified Design Material (CDM) being prepared by GE for the ABWR.

This cross reference is intended to be a review aid which will assist the NRC staff in concluding that plant characteristics of particular importance to safety will be adequately confirmed by the CDM ITAAC process; i.e., the as-built facility has the characteristics which are consistent with the plant safety analyses assumptions and the resolutions of the plant safety-related issues described in the SAR.

The folowing Tables 1 through 10 provide cross references for ten safety-related areas described in the SAR. GE believes the material in this memorandum is aimed at assisting the staff review process; consequently, it is informal in that it is not intended to be part of the SSAR or Design Control Document. These cross references are consistent with ABWR SSAR Tables 14.3-1 through 14.3-10.

Table 1
Core Cooling Analysis

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
6.3.3.5	Following a LOCA the RHR System is Automatically Directed to the LPFL Mode	----	2.4.1
6.3.3.7.4	The Safety Related Systems Will Operate as Designed with the Loss of All Offsite AC Power	----	2.12.13
Table 6.3-1	Low Pressure Flooder System		
	Vessel Pressure at which Flow May Commence (MPaD -- vessel to drywell)	1.55	2.4.1
	Min. Rated Flow (m^3/hr per pump)	954	2.4.1
	at Vessel Pressure (MPaD -- vessel to drywell)	0.275	2.4.1
	Initiating Signals		
	Low Water Level	----	2.4.1
	or		
	High Drywell Pressure	----	2.4.1
	Maximum Allowable Time Delay from Low Pressure Permissive Signal to Injection Valve Fully Open (sec)	36.0	2.4.1

Table 1
Core Cooling Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 6.3-1	Reactor Core Isolation Cooling System		
	Vessel Pressure at which Flow May Commence (MPaD -- vessel to the air space of the compartment containing the water source for the pump suction)	8.12	2.4.4
	Min. Rated Flow (m^3/hr)	182	2.4.4
	at Vessel Pressures (MPaD -- vessel to the air space of the compartment containing the water source for the pump suction)	8.12 to 1.03	2.4.4
	Initiating Signals		
	Low Water Level	----	2.4.4
	or		
	High Drywell Pressure	----	2.4.4
	Maximum Allowable Time Delay from Initiating Signal to Rated Flow Available and Injection Va!ve Fully Open (sec)	29.0	2.4.4 (Design Des. Only)

Table 1
Core Cooling Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 6.3-1	High Pressure Core Flooder System		
	Vessel Pressure at which Flow May Commence (MPaD -- vessel to the air space of the compartment containing the water source for the pump suction)	8.12	2.4.2
	Minimum Rated Flows (m^3/hr per subsystem)	182 to 727	2.4.2
	at Vessel Pressures (kg/cm^2d -- vessel to the air space of the compartment containg the water source for the pump suction)	8.12 to 0.686	2.4.2
	Initiating Signals		
	Low Water Level	----	2.4.2
	or		
	High Drywell Pressure	----	2.4.2
	Maximum Allowable Time Delay from Initiating Signal to Rated Flow Available and Injection Valve Fully Open and Power Available at the Emergency Busses (sec).	16.0	2.4.2
	Maximum Emergency Diesel Generator Startup Time (sec)	20.0	2.12.13

Table 1
Core Cooling Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 6.3-1	Automatic Depressurization System		
	Total Number of Relief Valves with ADS Function	8	2.1.2
	Min. Flow Capacity (kg/hr x 10^6)	2.903	2.1.2
	at Vessel Pressure (MPaG)	7.76	2.1.2
	Initiating Signals		
	Low Water Level	----	2.1.2
	and		
	High Drywell Pressure	----	2.1.2
	or		
	High Drywell Pressure Bypass Timer Timed Out	----	2.1.2
	Time Delay (sec)	480	2.1.2
	Delay Time from All Initiating Signals Completed to the Time Valves are Open (sec)	29.0	2.1.2

Table 1
Core Cooling Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 6.3-3	The RHR Subsystems are Divisionally Separated	----	2.4.1
	The HPCF Subsystems are Divisionally Separated	----	2.4.2
	RCIC Operation Does not Required AC Power	----	2.4.4
	A Single Failure Will not Prevent the Operation of More Than One ADS Valve	----	2.1.2
Table 6.3-4	LOCA Break Sizes		
	Steamline (cm^2)	985	2.1.1
	Feedwater Line (cm^2)	839	2.1.1
	RHR Shutdown Cooling Suction Line (cm^2)	792	2.1.1
	RHR Injection Line (cm^2)	205	2.1.1
	High Pressure Core Flooder (cm^2)	92	2.1.1
	Bottom head Drain Line (cm^2)	20.3	2.1.1
Table 15.6-4	MSIV Closure Initiated by High Steam Flow	----	2.4.3
	Scram Initiated by MSIV Closure	----	2.2.7
Table 15.6-15	Scram Initiated by Low Water Level 3	----	2.2.7

Table 2
Containment Pressure/Temperature Response

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
6.2.1.1.3.3.1.1	Minimum MSIV Closing Time (sec)	3.0	2.1.2
	High Pressure Core Flooder System		
	Minimum Rated Flows (m^3/hr per subsystem)	182 to 727	2.4.2
	at Vessel Pressures (MPaD -- vessel to the air space of the compartment containg the water source for the pump suction)	8.12 to 0.686	2.4.2
	Low Pressure Flooder System		
	Vessel Pressure at which Flow May Commence (MPaD -- vessel to drywell)	1.55	2.4.1
	Min. Rated Flow (m^3/hr per pump)	954	2.4.1
	at Vessel Pressure (MPaD -- vessel to drywell)	0.275	2.4.1
	Reactor Core Isolation Cooling System		
	Min. Rated Flow (m^3/hr)	182	2.4.4
	at Vessel Pressures (MPaD -- vessel to the air space of the compartment containg the water source for the pump suction)	8.12 to 1.03	2.4.4

Table 2
Containment Pressure/Temperature Response (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
6.2.1.1.3.3.2	Maximum MSIV Closing Time (sec)	5.0	2.1.2
	Total Surface of Drywell Connecting Vents (m^2)	11.3	2.14.1
	Vacuum Breakers		
	Quantity	8	2.14.1
	Total Flow Area (m^2)	1.53	2.14.1
Table 6.2-2	Drywell		
	Leak Rate (%/Day)	0.5	2.14.1
	Wetwell		
	Leak Rate (%/Day)	0.5	2.14.1
	Min. Suppression Pool Water Volume (m^3)	3580	2.14.1
	Vent System		
	Number of Vents	30	2.14.1
	Nominal Vent Diameter (m)	0.7	2.14.1
	Total Horizontal Vent Area (m^2)	11.6	2.14.1

Table 2
Containment Pressure/Temperature Response (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 6.2.2-a	Containment Spray		
	Number of RHR Subsystems (Pump Plus Heat Exchanger)	2	2.4.1
	Wetwell Spray Flow Rate per RHR Subsystem (kg/hr x 10^5)	1.14	2.4.1
	Containment Cooling System		
	Number of RHR Subsystems (Pump Plus Heat Exchanger)	3	2.4.1
	Pump Capacity (m^3/hr per pump)	954	2.4.1
	Overall Heat Transfer Coefficient (kJ/S-^oC)	370.5	2.4.1
Table 6.3-4	LOCA Break Sizes		
	Steamline (cm^2)	985	2.1.1
	Feedwater Line (cm^2)	839	2.1.1
	RHR Shutdown Cooling Suction Line (cm^2)	792	2.1.1
	RHR Injection Line (cm^2)	205	2.1.1
	High Pressure Core Flooder (cm^2)	92	2.1.1
	Bottom head Drain Line (cm^2)	20.3	2.1.1

Table 3
Transient Analysis

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 15.0-1	Reactor Internal Recirculation Pumps		
	Number of Pumps	10	2.1.3
	Pump Trip Inertia (kg-m^2)		
	Trip Mitigation (maximum)	26.5	2.1.3
	Accident (minimum)	17.5	2.1.3
	Relief Valve (Relief Function)		
	Capacity (% NBR Steam Flow at 80.5 kg/cm^2g)	91.3	2.1.2
	Number of Valves	18	2.1.2
	Opening Time (sec) (Valve Stroke Time Only. Does not Include .1 sec Delay to Energize Solenoid)	0.15	2.1.2
	High Flux Trip Scram	----	2.2.5
	APRM Simulated Thermal Power Trip Scram	----	2.2.5
	Total Steamline Volume (m^3)	113.2	2.1.2
Table 15.0-6	FMCRD Scram Times		
	10% Rod Insertion (sec)	0.46	2.2.2
	40% Rod Insertion (sec)	1.208	2.2.2
	60% Rod Insertion (sec)	1.727	2.2.2
	100% Rod Insertion (sec)	3.719	2.2.2
15.1.1.2.2	High Simulated Thermal Power Trip Scram	----	2.2.5
Table 15.1-5	High Water Level 8 Initiates		
	Feedwater Pump Trip	----	2.2.3

Table 3
Transient Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 15.1-5	Turbine Stop Valve Position Switches Initiate		
	Reactor Scram	----	2.2.7
	Trip of 4 RIPs	----	2.2.8
Table 15.1-7	Low Water Level 2 Initiates		
	Trip of 6 RIPs	----	2.2.8
	RCIC System	----	2.4.4
	Maximum Startup Time (sec) -- (Includes 1.0 sec for instrument delay)	30	2.4.4 (Design Des. Only)
	MSIV Closure on Low Turbine Inlet Pressure	----	2.4.3
15.1.3.3.1	Maximum MSIV Closure Time (sec -- assumes 0.5 sec for instrument delay)	5.0	2.1.2
Table 15.1-9	SRNM High Neutron Flux Scram	-----	2.2.5
15.2.1.3.1	TCV Full Stroke Servo Closure (sec)	2.5	2.10.7
Table 15.2-1a	Low Water Level 3 Initiates Trip of 4 RIPs	----	2.2.8
Table 15.2-2	High Dome Pressure Initiates Trip of 4 RIPs	----	2.2.8
Table 15.2-3	T/G Load Rejection Initiates		
	Turbine Control Valve Fast Closure	----	2.10.7
	Turbine Bypass System Operation on High Pressure	----	2.10.13
	Fast Control Valve Closure Initiates		
	Scram	----	2.2.8
	Trip of 4 RIPs	----	2.2.8

Table 3
Transient Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
15.2.2.3.1	TCV Full Stroke Fast Closure (sec -- from normal operating position)	0.08	2.10.7
Table 15.2-6	Turbine Trip Initiates		
	Turbine Control Valve Fast Closure	----	2.10.7
	Turbine Bypass System Operation on High Pressure	-----	2.10.13
15.2.3.3.1	Turbine Stop Valve Full Stroke Closure (sec)	0.10	2.10.7
Table 15.2-9	MSIV Position Switches Initiate		
	Scram	----	2.2.7
15.2.4.3.1	Minimum MSIV Closure Time (sec)	3.0	2.1.2
Table 15.2-14	Low Condenser Vacuum Initiates		
	MSIV Closure	----	2.4.3
15.2.6.1.1.2	RIP M/G Set		
	Number of RIPs	6	2.2.8
	Length of Time Hold Original Speed (sec)	1.0	2.2.8
	RIP Coastdown		
	Rate (% per sec)	10	2.2.8
	Length of Time (sec)	2.0	2.2.8
	Time of RIP Trip (sec)	3.0	2.2.8
Table 15.2-17	Low Water Level 3 Initiates Reactor Scram	----	2.2.7
15.2.7.2.2	Meets Single-failure Criterion	----	2.2.7
15.2.9	RHR System has 3 Independent Divisions	----	2.4.1

Table 3
Transient Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
15.3.1.1.1	No More Than 3 RIPs on One Electrical Power Bus	----	2.2.8
15.3.1.2.2.2	Rapid Core Flow Coastdown Initiates Reactor Scram	----	2.2.5
	Mode Switch in the **Refuel** Position		
15.4.1.1.2.2	Refueling Platform Cannot Be Moved Over the Core If a Control Rod is Withdrawn and Fuel is on the Hoist	----	2.5.5
15.4.1.1.2.3	Only One or Two Control Rods Associated with the Same HCU Can Be Withdrawn	----	2.2.1
15.4.1.2.1	On Short Flux Period SRNMs Generate		
	Reactor Scram	----	2.2.5
15.4.1.2.3.2	FMCRD Withdrawal Speed (mm/sec)	30	2.2.2
15.4.2.1	At Power the ATLM of the RCIS Prevents Rod Withdrawal Based on MCPR and APLHGR Limits	----	2.2.7
15.4.4.1.1	Overcurrent Protection Logic on the Electrical Bus Which Supplies the Power to the RIPs	----	2.12.1
15.4.9.1	FMCRD Designed to Prevent Rod Ejection	----	2.2.2
15.4.10.1	FMCRD Designed to Prevent Separation of Control Blade and Drive	----	2.2.2

Table 4
Radiological Analysis

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 15.6-5	Maximum MSIV Closure Time (sec) (Assumes 0.5 sec for instrument delay.)	5.0	2.1.2
Table 15.6-8	Primary Containment Leakage Rate (% per day)	0.5	2.14.1
	MSIV Total Leakage Rate for All Lines (L/m at Standard Conditions)	66.1	2.1.2
	SGTS		
	Filter Efficiency Assumed for LOCA (%)	97	2.14.4
	Drawdown Time (min)	20	2.14.4
	Control Room		
	Recirculation Rates		
	Min. Charcoal Efficiency (%)	95	2.15.5a
Table 15.7-8	SGTS Filter Efficiency Assumed for Fuel Handling Accident (%)	99	2.14.4

Table 5
Overpressure Protection

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
5.2.2.1.4	Direct Scram Signal Generated By:		
	Position Switches on		
	MSIVs	----	2.2.7
	Turbine Stop Valves	----	2.2.7
	Pressure Swiches on		
	TCV Hydraulic Actuation System Dump Valve	----	2.2.7
Table 5.2-2	Scram Signal on		
	High Flux	----	2.2.5
	Recirculation Pump Trip on		
	High Vessel Pressure	----	2.2.8

Table 5
Overpressure Protection (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
Table 5.2-3	Safety/Relief Valve		
	Spring Set Pressure		
	2 SRVs (MPaG)	7.92	2.1.2
	Capacity per valve (kg/hr) (103% Spring Set Pressure)	395000	2.1.2
	4 SRVs (MPaG)	7.99	2.1.2
	Capacity per valve (kg/hr) (103% Spring Set Pressure)	399000	2.1.2
	4 SRVs (MPaG)	8.06	2.1.2
	Capacity per valve (kg/hr) (103% Spring Set Pressure)	402000	2.1.2
	4 SRVs (MPaG)	8.13	2.1.2
	Capacity per valve (kg/hr) (103% Spring Set Pressure)	406000	2.1.2
	4 SRVs (MPaG)	8.20	2.1.2
	Capacity per valve (kg/hr) (103% Spring Set Pressure)	409000	2.1.2
	No. of Valves	18	2.1.2
Figure 5.2-1	SRV Safety Function Opening Time (sec)	0.3	2.1.2

Table 6
Flooding Protection

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
	Reactor and Control Building Flood Protection (from External Sources)		
Table 3.4-1	All Penetrations Below Grade Watertight	----	2.15.10 2.15.12
	Pipe Penetrations Below Design Flood Level Will Be Sealed Against Hydrostatic Head Inside Tunnel or Connecting Building	----	2.15.10 2.15.12
	Watertight Doors Installed on All Access Ways Below Design Flood Level	----	2.15.10 (ECCS) 2.15.12 (RCW)
3.4.1.1.1	Min. Wall Thicknesses Below Design Flood Level (m)	.61	2.15.10 2.15.12
	Piping Tunnels Below Grade do not Penetrate Exterior Walls	----	2.15.10 2.15.12

Table 6
Flooding Protection (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
	Reactor Building Flood Protection (from Internal Sources)		
3.4.1.1.2	All Piping, Vessels and Heat Exchangers with Flooding Potential are Seismically Analyzed		
	Standby Liquid Control System	----	2.2.4
	Residual Heat Removal System	----	2.4.1
	High Pressure Core Flooder System	----	2.4.2
	Reactor Core Isolation Cooling System	----	2.4.4
	Reactor Building Cooling Water System	----	2.11.3
	HVAC Emergency Cooling Water Sys.	----	2.11.6
	Reactor Service Water System	----	2.11.9
	Fire Protection System	----	2.15.6 (Partial coverage)
	Oil Storage and Transfer System	----	2.16.2
	Main Steamlines (Inside Reactor Bldg)	----	2.1.2 2.10.1
	Feedwater LInes (Inside Reactor Bldig)	----	2.1.2 (Only to Seismic interface restraint

Table 6
Flooding Protection (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
	Reactor Building Flood Protection (from Internal Sources) -- Cont.		
	Water Sensitive Safety-Related Equipment Raised Off the Floor (mm)	200	2.15.10
	All Rooms with a Potential for Flooding Are Supplied With Floor Drains	----	2.9.1
	MSIVs Automatically Close on		
	High Temperature in Main Steamline Tunnel	----	2.4.3
3.4.1.1.2.1.1	Evaluation of Floor 100 (B3F)		
	Watertight Doors on Compartments Containing ECCS Equipment	----	2.15.10
	Watertight Doors have Open/Close Status Indicator Lights and Alarms in MCR	----	2.15.10
3.4.1.1.2.1.2	Evaluation of Floor 200 (B2F)		
	RHR Pressure Lines Inside Pipe Chases	----	2.15.10
	Minimum Floor Spread Area (m^2)	300	2.15.10
3.4.1.1.2.1.3	Evaluation of Floor 300 (B1F)		
	(No Additional Requirements)		
3.4.1.1.2.1.4	Evaluation of Floor 400 (1F)		
	RHR, HPCF and RCIC Lines in Pipe Chases	----	2.15.10
	Foam Sprinkler System in Diesel Generator Areas	----	2.15.6

Table 6
Flooding Protection (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
	Reactor Building Flood Protection (from Internal Sources) -- Cont.		
3.4.1.1.2.1.5	Evaluation of Floor 500 (2F)		
	Divisional DG Equipment Areas are Separated and Mechanically Isolated from Each Other	----	2.15.10
	FPC Pools Seismic Category I	----	2.15.10
	Steamline Tunnel Area Isolated by Sealed Doors and Firewalls	----	2.15.10
3.4.1.1.2.1.6	Evaluation of Floor 600 (3F)		
	Foam Sprinkler System in (Fuel Storage) Day Tank Areas	----	2.15.6
3.4.1.1.2.1.7	Evaluation of Floor 700 (M4F)		
	(No Additional Requirements)		
3.4.1.1.2.1.8	Evaluation of Floor 800 (4F)		
	Each RCW Surge Tank A,B & C and Its Associated Piping Is in a Separate Compartment	----	2.15.10

Table 6
Flooding Protection (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
3.4.1.1.2.2	Control Building Flood Protection (from Internal Sources)		
	No Openings into the Control Building from the Steam Tunnel	----	2.15.12
	The Steam Tunnel		
	Sealed At the Reactor Building End	----	2.15.10
	All Rooms with a Potential for Flooding Are Supplied With Floor Drains	----	2.9.1
	High Water Level Sensors in RCW/RSW Heat Exchanger Room		
	Powered by Class 1E Power Supply	----	2.15.12
	Automatically Close RSW Isolation Valves and Stop Pumps	----	2.15.12 2.11.9
	Water Tight Doors on RCW/RSW Heat Exchanger Rooms	----	2.15.12
	Redundant Mechanical Functions are Physically Separated	----	2.15.12
	Water Sensitive Safety-Related Equipment in Raised Off the Floor		
	All Floors Except Basement (mm)	200	2.15.12
3.4.1.1.2.3	Radwaste Building Flood Protection (from Internal Sources)		
	Seismic Category I Substructure	----	2.15.13

Table 6
Flooding Protection (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
3.4.1.1.2.4	Service Building Flood Protection (from Internal Sources)		
	Watertight Doors on Access Corridors	----	2.15.11 2.15.12
3.4..1.1.2.5	Turbine Building Flood Protection (from Internal Sources)		
	Normally Closed Alarmed Door in Passage From Service Building	----	2.15.11 (Doors Only)
	High Water Level in Condenser Pit Automatically Shuts Down Circulating Water System	----	2.10.23

Table 7
Fire Protection

(Reactor and Control Building)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
9A.2.4	Electrical Cable Fire-stops Have Fire Rating Equal to Rating of Barrier They Penetrate	----	2.15.10 2.15.12 (Divsional barriers only)
	Control, Power or Instrument Cables of Systems Having Similar Safety Related or Shutdown Functions are Located in Separate Fire-resistive Enclosures.	----	2.12.1
	A Minimum of Two Fire Suppresssion Means is Available to Each Fire Area	----	2.15.6
9A.4.1.1.1	Drywell Inerted During Plant Operation	----	2.14.6
	Drywell Has Primary Containment Supply/Exhaust System	----	2.15.5
9A.4.1.1.2	Wetwell Inerted During Plant Operation	----	2.14.6
	Wetwell Has Spray System	----	2.4.1
Appendix 9A	Systems Having Similar Safety Related or Shutdown Functions are Located in Separate Fire-resistive Enclosures.	----	2.15.10 2.15.12 (Divsional separation only)
	A Means of Fire Detection, Alarming and Suppression is Provided and Accessible.	----	2.15.6
	Fire Stops Are Provided for Cable Tray and Piping Penetrations Through Rated Fire Barriers	----	2.15.10 2.15.12
	Alternate Means of Access and Egress are Provided by a Separate Stair Tower, Elevator or Corridor	----	2.15.10 2.15.12

Table 8
ATWS Analysis

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
	Nominal Initial Operating Conditions		
Table 15E-2	Minimum Suppression Pool Volume (m^3)	3580	2.14.1
	Equipment Performance Characteristics		
15.8.2	Minimum SLCS Capacity (l/min)	378	2.2.4
Table 15E-3	Minimum Closure Time of MSIV (sec)	3.0	2.1.2
	Relief Valve		
	Capacity (%NBR Steam Flow at 80.5 kg/cm^2g)	91.3	2.1.2
	Number of Valves	18	2.1.2
	Opening Time (sec) (Valve stroke time only. Does not include 0.1 sec delay to energize solenoid.)	0.15	2.1.2
Table 15E-3	Reactor Core Isolation Cooling System		
	Min. Rated Flow (kg/hr)	50.4	2.4.4
	at Vessel Pressures (MPaD -- vessel to the air space of the compartment containg the water source for the pump suction)	8.12 to 1.03	2.4.4
	Initiates on Low Water Level	----	2.4.4
	Maximum Allowable Time Delay from Initiating Signal to Rated Flow Available and Injection Valve Fully Open (sec)	29.0	2.4.4

Table 8
ATWS Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
	Equipment Performance Characteristics		
	High Pressure Core Flooder System		
	Number of Subsystems	2	2.4.2
	Minimum Rated Flows (kg/sec per subsystem)	50.4 to 201.6	2.4.2
	at Vessel Pressures (MPaD -- vessel to the air space of the compartment containg the water source for the pump suction)	8.12 to 0.69	2.4.2
	Initiates on Low Water Level	----	2.4.2
	Injection Terminated on High Water Level	----	2.4.2
	Maximum Allowable Time Delay from Initiating Signal to Rated Flow Available and Injection Valve Fully Open (Does not include diesel start time and Loading sequence --sec)	20.0	2.4.2
	Nominal Recirculation Pump System Inertia (kg-m^2)	21.5	2.1.3
	Maximum Electro-Hydraulic Control Rod Insertion Time (sec)	135	2.2.2
	Total Minimum RHR Pool Cooling Capacity For 3 Subsystems (MJ/sec-^{o}C)	1.11	2.4.1
	MSIV Closure Initiated on Low Water Level	----	2.4.3
	MSIV Closure Initiated on Low Main Steamline Inlet Pressure to Turbine	----	2.4.3

Table 8
ATWS Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
	ATWS Logic and Setpoints		
15E.4	ARI and FMCRD Run-in Initiated on		
	High Dome Pressure	----	2.2.8
	or		
	Low Water Level 2	----	2.2.8
	SLCS Initiated on an ATWS Trip Signal	----	2.2.4
	ATWS Trip Signals for SLCS Initiation		
	High Dome Pressure	----	3.4
	and		
	SRNM ATWS Permissive	----	3.4
	Analytical Time Delay (miniutes)	3	3.4
	or		
	Low Water Level 2	----	3.4
	and		
	SRNM ATWS Permissive	----	3.4
	Analytical Time Delay (miniutes)	3	3.4
	or		
	Manual ARI/FMCRD Run-in Signals	----	2.2.8
	and		
	SRNM ATWS Permissive	----	2.2.8
	Analytical Time Delay (miniutes)	3	2.2.8
	RPT (RIPs not Connected to M/G Set) Initiated on		
	High Dome Pressure	----	2.2.8

Table 8
ATWS Analysis (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
	ATWS Logic and Setpoints		
15E.4	RPT (RIPs Connected to M/G Set) Initiated on		
	Low Water Level 2	----	2.2.8
	Recirculation Runback Initated on		
	Any Scram Signal	----	2.2.8
	or		
	Any ARI/FMCRD Run-in Signal	----	2.2.8
	Feedwater Runback Initiated on an ATWS Trip Signal	----	2.2.3
	ATWS Trip Signals for Feedwater Runback		
	High Dome Pressure	----	3.4
	and		
	SRNM ATWS Permissive	----	3.4
	Analytical Time Delay (minutes)	2	3.4
	ADS Inhibit -- Automatic Initiation of ADS is Inhibited Unless		
	Low Water Level 1.5	----	2.1.2
	and		
	APRM ATWS Permissive	----	2.1.2

Table 9
Generic Safety Issues

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-2	A-1: Water Hammer		
	Steam Supply System Designed to Accommodate Steam Hammer	----	3.3
	MSL Designed for Dynamic Loadings Due to Fast Closing of the Turbine Stop Valves	----	3.3
	RCIC System		
	MUWC to Keep System Filled	----	2.4.4
	HPCF System		
	MUWC to Keep System Filled	----	2.4.2
	RHR System		
	Jockey Pump to Keep System Filled	----	2.4.1
19B.2-3	A-7: MARK I Long-Term Program		
	Vacuum Breakers		
	Swing Check Type Valves	----	2.14.1
	Open Passively on Negative Differential Pressure	----	2.14.1
	Require No External Power to Actuate	----	2.14.1
	Installed Horizontally Through Pedestal Wall	----	2.14.1

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-4	A-8: MARK II Containment Pool Dynamic Loads Long-Term Program		
	(Refer to response to 19B.2-3)		
19B.2-5	A-9: ATWS		
	Alternate Rod Insertion Feature Diverse and Independent From RPS	----	2.2.8
	Electric Insertion of FMCRD Feature Diverse and Independent From RPS	----	2.2.8
	Recirculation Pump Trip on ATWS Signal	----	2.2.8
	Automatic Initiation of SLC on ATWS Signal	----	3.4
19B.2-8	A-24: Qualification of Class 1E Safety Related Equipment		
	All Class 1E Electrical Equipment is Environmentally, Dynamically and Seismically Qualified	----	Refer to 1.2(3)
19B.2.-9	A-25: Non-Safety Loads on Class 1E Power Sources		
	Non-Class 1E Loads not Connected to Class 1E Loads Except FMCRD Loads	----	2.12.1
	Class 1E Load Breakers in Division I Between Class 1E Power and Non-Class 1E FMCRD Loads	----	2.12.1

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-10	A-31: Residual Heat Removal (RHR) Shutdown Requirements		
	RHR System Composed of 3 Electrically And Mechanically Independent Divisions	----	2.4.1
	Shutdown Cooling Can Be Manually Initiated from the Control Room	----	2.4.1
	RHR System Can Be powered from Both Offsite and Standby Emergency Electrical Power	----	2.4.1 2.12.1
19B.2-11	A-35: Adequacy of Offsite Power Systems		
	Equipment Qualified for Operation with Voltage up to 10% Less than Normal	----	2.12.1
19B.2.12	A-36: Control of Heavy Loads Near Spent Fuel		
	Equipment Handling Components Meet Single Failure Criteria	----	2.15.3
	Redundant Safety Interlocks and Limit Switches Prevent Heavy Loads Over Spent Fuel	----	2.15.3
19B.2.13	A-39: Determination of Safety Relief Valve Pool Dynamic Loads and Temperature Limits		
	Each S/RV Discharge Pipe Fitted with an X-Quencher	----	2.14.1 2.1.2 (Design Des. Only)

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-16	A-44: Station Blackout		
	Sources of Electrical Power		
	No. of Standby Turbine Generators	1	2.12.11
	No. of Emergency Diesel Generators	3	2.12.13
19B.2-17	A-47: Safety Implications of Control Systems		
	Feedwater Controller		
	Trip Feedpumps on High Water Level	----	2.2.3
	Fault Tolerant Through Redundant Micro-processors and Self Diagnostics	----	2.2.3
19B.2-18	A-48: Hydrogen Control Measures and Effects of Hydrogen Burns on Safety Equipment		
	Containment Inerted During Normal Operation	----	2.14.6
	Permanently Installed Hydrogen Recombiners	----	2.14.8
19B.2-20	B-17: Criteria for Safety-Related Operator Actions		
	RHR Heat Exchanger in LPCI Injection Loop	----	2.4.1
19B.2-22	B-55: Improved Reliability of Target Rock Safety/Relief Valves		
	ABWR Uses a Direct Acting S/RV Design	----	2.1.2 (Design Des. Only)
19B.2-23	B-56: Diesel Reliability		
	Independent Diesel Generators	3	2.12.13
	Combustion Turbine Generator	1	2.12.11

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-24	B-61: Allowable ECCS Equipment Outage Periods		
	ECCS Capable of Being Tested During Plant Operation		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
	RHR	----	2.4.1
19B.2-25	B-63: Isolation of Low Pressure Systems Connected to the Reactor Coolant Pressure Boundary		
	Boundary Valves Designed, Fabricated and Tested According to ASME B&PV Code, Section III		
		Design Des. Identifies ASME Code Class for System Components	
	RHR System	----	2.4.1
	HPCF System	----	2.4.2
	RCIC System	----	2.4.4
	CRD System	----	2.2.2
	SLC System	----	2.2.4
	CUW System	----	2.6.1
	Nuclear Boiler System	----	2.1.2
	Reactor Recirculation System	----	2.1.3

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-26	B-66: Control Room Infiltration Measurements		
	Normal AC Filtration Units		
	Number of Divisions	2	2.15.5a
	Mechanically and Electrically Separate	----	2.15.5a
	Number of Outdoor Air Intakes	2	2.15.5a
	Automatic Switch-over to Emergency Units on High Radiation in Air Intake	----	2.15.5a
	Emergency Filtration Units		
	Number of Units	2	2.15.5a
	Mechanically and Electrically Separate	----	2.15.5a
	Provisions to Detection		
	Smoke	----	2.15.5a
	Airborne Radioactive Material	----	2.3.1
	Provisions to Remove Smoke and Airborne Radioactive Material	----	2.15.5a
19B.2-27	C-1: Assurance of Continuous Long Term Capability of Hermetic Seals on Instrumentation and Electrical Equipment		
	Safety-related Electrical Equipment is Environmentally Qualified in Accordance with NRC Guidance Including NUREG-0588	----	Refer to 1.2(3)

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-28	C-10: Effective Operation of Containment Sprays in a LOCA		
	SGTS		
	Redundant	----	2.14.4
	Filters Gaseous Effluent from Primary and Secaondary Containmnent	----	2.14.4
	No. of RHR Subsystems Which Provide Containment Spray	2	2.4.1
	Sprays Manually Initiated by Operator	----	2.4.1
	Sprays Automatically Terminated When LPFL Injection Valve Opens	----	2.4.1
	High Drywell Pressure Interlock On Drywell Spray Operation	----	2.4.1
19B.2-30	15: Radiation Effects on Reactor Vessel Supports		
	Vessel Support Skirt Located Below Core Beltline	----	2.1.1
	Wide Water Flow Region Between Shroud and Vessel Wall	----	2.1.1
19B.2-32	25: Automatic Air Header Dump on BWR Scram System		
	Scram Initiated by Low Pressure in the Common Header Supplying the Charging Water to the Scram Accumulators	----	2.2.7

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-33	40: Safety Concerns Associated with Pipe Breaks in the BWR Scram System		
	Ball-check Valve in the FMCRD Flange Housing at Connection of the Insert Line with the Drive Scram Port	----	2.2.2
19B.2-35	51: Proposed Requirements for Improving the Reliability of Open Cycle Service Water Systems		
	A Closed Cooling Water System Will Be Utilized which Transfers Heat Loads Via Heat Exchanger to Service Water System	----	2.11.3
	The Safety-Related Portions of the RCW and RSW Will Operate as Designed		
	Assuming Loss of All Offsite Power	----	2.11.3 2.11.9 2.12.1
		(Based on Redundancy)	
	Assuming Any Single Failure	----	2.11.3 2.11.9

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-36	057: Effects of Fire Protection Systems Actuation on Safety-Related Equipment		
	A Means of Fire Detection is Provided	----	2.15.6
	All Rooms in the Reactor and Control Buildings with a Potential for Flooding Are Supplied With Floor Drains	----	2.9.2
	Safety-Related Equipment Raised Off the Floor	----	2.15.10
	Safety-Related Divisions		
	Number	3	2.15.10 2.15.12
	Mechanically and Electrically Independent	----	Covered by Individual Sys Entries
19B.2-37	67.3.3: Improved Accident Monitoring		
	Plant Post Accident Monitoring Variables		
	Neutron Flux	----	2.7.1
	Control Rod Position	----	2.7.1
	Boron Concentration	----	2.11.20 (Sampling Only)
	Reactor Coolant System Pressure	----	2.7.1
	Drywell Pressure	----	2.7.1
	Drywell Sump Level	----	2.7.1
	Coolant Level in Reactor	----	2.7.1
	Suppression Pool Water Level	----	2.7.1
	Containment Area Radiation	----	2.7.1
	Primary Containment Pressure	----	2.7.1
	Primary Containment Isolation Valve Position	----	2.7.1
	Coolant Gama	----	2.11.20 (Sampling Only)
	Coolant Radiation	----	2.3.1
	RHR Flow	----	2.7.1

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-37	67.3.3: Improved Accident Monitoring (Cont.)		
	Plant Post Accident Monitoring Variables		
	HPCF Flow	----	2.7.1
	RHR Heat Exchanger Outlet Temp	----	2.4.1
	RCIC Flow	----	2.7.1
	SLC Pressure	----	2.7.1
	SLCS Storage Tank Level	----	2.7.1
	SRV Position	----	2.7.1
	Feedwater Flow	----	2.2.3
	Standby Energy Status	----	2.7.1
	Suppression Pool Water Temp	----	2.7.1
	Drywell Air Temperature	----	2.7.1
	Drywell/Containment Hydrogen Concentration	----	2.7.1
	Drywell/Containment Oxygen Concentration	----	2.7.1
	Primary Containment Air Temp	----	2.7.1
	Secondary Containment Airspace (effluent) Radiation Noble Gas	----	2.3.1
	Containment Effluent Radioactivity - Noble Gas	----	2.11.20 (Sampling Only)
	Condensate Storage Tank Level	----	2.7.1
	Cooling Water Temperature to ESF System Components	----	2.11.3
	Cooling Water Flow to ESF System Components	----	2.11.3
	Emergency Ventilation Damper Position	----	2.15.5
	Service Area Radiation Exposure Rate	----	2.3.2
	Purge Flows - Noble Gases and Vent Flow Rate	----	2.3.1
	Identified Release points - Particulates and Halogens	----	2.3.1
	Airborn Radio Halogens and Particulars	----	2.3.1

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-38	75: Generic Implications of ATWS Events at Salem Nuclear Plant		
	Separate Scram Groups	4	2.2.7
	Solid State Load Drivers Per Scram Group	8	3.4
	Contactors for Manual Scram Per Scram Group	2	3.4
19B.2-40	83: Control Room Habitability		
	Control Room HVAC Filtration System	----	Refer to 19B.2-26
	Control Room Designed to Withstand Effects of Natural Phenomena	----	2.15.12
	Fire Alarm System Provided	----	2.15.6
	Fire Hoses and Portable Fire Extinquishers Available	----	2.15.6
19B.2-42	87: Failure of HPCI Steam Line Without Isolation		
	Opening and/or Closing of Installed MOVs Used for Isolation of CUW and RCIC Will be Conducted Under Peroperational Differentail Pressure, Fluid Flow and Temperature Conditions	----	2.4.4 2.6.1
	Flow Restrictor in CUW Main Suction LIne	----	2.6.1
	Bottom Head Drainline Tees into CUW Suction Line at an Elevation Above TAF	----	2.6.1

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-44	103: Design For Probable Maximum Precipitation		
	Design Maximum Rainfall Rate (cm/hr)	49.3	5.0 (Site Parameters)
	Design Maximum Short Term Rate (cm/5 min)	15.7	5.0 (Site Parameters)
19B.2-45	105: Interfacing System LOCA at BWRs		
	Design Pressure of Some Low Pressure Components Upgraded to 2.82 MPaG	(Design Description Only)	
	RHR System	----	2.4.1
	HPCF System	----	2.4.2
	RCIC System	----	2.4.4
	CRD System	----	2.2.2
	SLC System	----	2.2.4
	CUW System	----	2.6.1
19B.2-48	118: Tendon Anchorage Failure		
	Primary Containment Structure is of a Reinforced Concrete Design	----	2.14.1
19B.2-49	120: On-Line Testability of Protection Systems		
	Manual and Automatic Testability of RPS, LDIS and ECCS Initiation Logic During Reactor Operation	----	3.4

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-50	121: Hydrogen Control for Large, Dry PWR Containment		
	(Not Applicable to BWRs and Pressure Suppression Containment)		
	Containment Inerted During Normal Operation	----	2.14.6
19B.2-52	128: Electrical Power Reliability		
	Four Separate and Independent Class 1E dc Divisions	----	2.12.2
	No Power Supplied to Non-Class 1E Loads	----	2.12.1
19B.2-53	142: Leakage Through Electrical Isolators in Instrument Circuits		
	Fiber Optic Isolation Devices Used for Electrical Isolation of Logic Level and Analog Signals	----	3.4
19B.2-54	143: Availability of Chilled Water Systems and Room Cooling		
	Safety-Related HECW System Provides Chilled Water to Main Control Room Air Conditioning, DG zone Coolers and Control Building Essential Electrical Equipment	----	2.11.6
	Essential Equipment HVAC System Provides Controlled Temperature Environment for Safety-Related Equipment Under Accident Conditions	----	2.15.5

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2-57	153: Loss of Essential Service Water in Light-Water Reactors		
	RSW Divsions		
	Total Number	3	2.11.9
	Physically and Electrically Separate	----	2.11.9
	RCW Heat Exchangers per Divsion	3	2.11.3
19B.2.59	A-17: Systems Interaction in Nuclear Power Plants		
	Redundant Safety-Related Equipment and Systems Divisionally Separated	----	Covered by Multiple Sys. Entries
	Redundant Electrical Power Systems Divisionally Separated	----	Covered by Multiple Sys. Entries
	Divisions Designed Against Intra-Divisional Flooding	----	2.15.10 2.15.12
19B.2.60	A-29: Nuclear power Plant Design for the Reduction of Vulnerability to Industrial Sabotage		
	Redundant Safety-Related Equipment and Systems Divisionally Separated	----	Covered by Multiple Sys. Entries
	Redundant Electrical Power Systems Divisionally Separated	----	Covered by Multiple Sys. Entries
	Controlled Access to Safety-Related Areas	----	2.16.3 (Design Des. Only)

Table 9
Generic Safety Issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2.61.1	C-8: Main Steam Line Leakage Control System		
	Main Steamlines and All Branch Lines are Designed to Withstand SSE	----	2.1.2 2.10.1
	Non-Safety Main Steam and Bypass Lines at the Turbine Designed to Maintain Structural Integrity Following SSE	----	2.10.1
	Condenser Anchorage Designed to Survive SSE	----	2.10.21
19B.2.62	029: Bolting Degradation or Failure in Nuclear Power Plants		
	RCPB Component Fabricated, Tested and Installed in Accordance with ASME Code, Sections III and XI	----	2.1.1 (Design Des. Only)
19B.2.63	82: Beyond Design Basis Accidents in Spent Fuel Pools		
	Spent Fuel Pool		
	Seismic Category 1	----	2.15.10
	Low Water Level Alarm	----	2.6.2 (Level Indication only)
	Over-FLow Weirs to Skimmer	----	2.6.2
	Check Valve in Discharge Line	----	2.6.2

Table 10
TMI issues

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19A.2.17	I.D.3 Safety System Status Monitoring		
	Automatic Indication of Bypassed and Inoperable Status of Safety Systems	----	3.4
19B.2.65	I.D.5(2) Plant Status and Post-Accident Monitoring		
	Post-Accident Information Available to the Operator is in Compliance with RG 1.97	----	Refer to II.F.1
19B.2.66	I.D.5(3) On-Line Reactor Surveillance System		
	ABWR Design Incorporates a Reactor Vessel Loose Parts Monitoring System	----	2.8.4
1A.2.5	II.B.1 Reactor Coolant System Vents		
	Steam-Driven RCIC	1	2.4.4
	Power-Operated Relief Valves		
	Number	18	2.1.2
	Dual Position Indication		
	Position Sensors	----	2.1.2
	SRV Discharge Temperature Elements	----	2.1.2
	Remotely Operable from the Control Room	----	2.1.2

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.6	II.B.2 Plant Shielding to Provide Access to Vital Areas and Protect Safety Equipment for Post-Accident Operation		
	Vital Areas as per NUREG-0737 Accessible Post-LOCA		
	Continuous Occupancy	----	3.2
	Non-Continuous Occupancy	----	3.2
1A.2.7	II.B.3 Post-Accident Sampling		
	Able to Obtain Samples Under Accident Conditions	----	2.11.20
19A.2.21	II.B.8 Rulemaking Proceeding on Degraded Core Accidents		
	Inerted Primary Containment	----	2.14.6
	Permanently-Installed Recombiners	----	2.14.8
1A.2.9	II.D.1 Testing Requirements		
	SRVs Qualified for Steam Discharge	----	2.1.2
	Redundant Logic to Respond to High Water Level Conditions	----	3.4
	RHR Shutdown Cooling Systems		
	Number	3	2.4.1
	Separate Vessel Penetration and Suction Lines	----	2.4.1

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.10	II.D.3 Relief and Safety Valve Position Indication		
	Dual Position Indication		
	Position Sensors	----	2.1.2
	SRV Discharge Temperature Elements	----	2.1.2
1A.2.13	II.E.4.1 Decated Penetrations		
	Recombiners in Secondary Containment		
	Number	2	2.14.8
	Permanently Installed	----	2.14.8
1A.2.14	II.E.4.2 Isolation Dependability		
	Diverse Containment Isolation Signals	----	2.4.3
	Non-Essential Systems		
	Automatically Isolated On Containment Isolation Signal	----	2.4.3
	Redundant Isolation Valves	----	2.14.1
	Resetting Isolation Signal Does Not Automatically Reopen Isolation Valves	----	2.4.3
	Containment Purge and Vent Valves		
	Close on Isolation Signals	----	2.4.3
	Fail Closed	----	2.14.6
	Close on High Radiation	----	2.4.3

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19A.2.27	II.E.4.4 Purging		
	Drywell Has Primary Containment Supply/Exhaust System	----	2.15.5
1A.2.15	II.F.1 Additional Accident Monitoring Instrumentation		
	Plant Post Acc'dent Monitoring Variables		
	Neutron Flux	----	2.7.1
	Control Rod Position	----	2.7.1
	Boron Concentration	----	2.11.20 (Sampling Only)
	Reactor Coolant System Pressure	----	2.7.1
	Drywell Pressure	----	2.7.1
	Drywell Sump Level	----	2.7.1
	Coolant Level in Reactor	----	2.7.1
	Suppression Pool Water Level	----	2.7.1
	Containment Area Radiation	----	2.7.1
	Primary Containment Pressure	----	2.7.1
	Primary Containment Isolation Valve Position	----	2.7.1
	Coolant Gama	----	2.11.20 (Sampling Only)
	Coolant Radiation	----	2.3.1
	RHR Flow	----	2.7.1
	HPCF Flow	----	2.7.1
	RHR Heat Exchanger Outlet Temp	----	2.4.1
	RCIC Flow	----	2.7.1
	SLC Pressure	----	2.7.1
	SLCS Storage Tank Level	----	2.7.1
	SRV Position	----	2.7.1
	Feedwater Flow	----	2.2.3
	Standby Energy Status	----	2.7.1
	Suppression Pool Water Temp	----	2.7.1
	Drywell Air Temperature	----	2.7.1
	Drywell/Containment Hydrogen Concentration	----	2.7.1
	Drywell/Containment Oxygen Concentration	----	2.7.1
	Primary Containment Air Temp	----	2.7.1

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.15	II.F.1 Additional Accident Monitoring Instrumentation (Cont.)		
	Plant Post Accident Monitoring Variables		
	Secondary Containment Airspace (effluent) Radiation Noble Gas	----	2.3.1
	Containment Effluent Radioactivity - Noble Gas	----	2.11.20 (Sampling Only)
	Condensate Storage Tank Level	----	2.7.1
	Cooling Water Temperature to ESF System Components	----	2.11.3
	Cooling Water Flow to ESF System Components	----	2.11.3
	Service Area Radiation Exposure Rate	----	2.3.2
	Purge Flows - Noble Gases and Vent Flow Rate	----	2.3.1
	Identified Release points - Particulates and Halogens	----	2.3.1
	Airborn Radio Halogens and Particulars	----	2.3.1
1A.2.16	II.F.2 Identification of and Recovery from Conditions Leading to Inadequate Core Cooling		
	Reactor Wide Range Water Level		
	Number of Divisions	4	2.1.2
	Number of Sensors per Division	2	2.1.2
	Number of Sets of Sensing Lines per Division	1	2.1.2
	Trip Logic per Set of Sensors	2 / 4	3.4
	Number of Sets of Sensors	2	3.4

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.17	II.F.3 Instrumentation for Monitoring Accident Conditions	----	Refer to 1A.2.15
1A.2.18	II.K.1(5) Safety-Related Valve Position Description	----	(Covered by Individual Safety System ITAACs)
1A.2.20	Describe Automatic and Manual Actions for Proper Functioning of Auxiliary Heat Removal Systems when FW System not Operable		
	Reactor Scram on Low Water Level	----	2.2.7
	RCIC System		
	Initiates on Low Water Level	----	2.4.4
	Terminates Injection on High Water Level	----	2.4.4
	Restarts on Low Water Level	----	2.4.4
	RPV Pressure Controlled by		
	Main Turbine Bypass Valves	----	2.10.13
	Safety Relief Valves	----	2.1.2
	Discharge to Suppression Pool	----	2.1.2
	RHR Systems has Manual Pool Cooling Mode	----	2.4.1
	HPCF Systems		
	Initiates on Low Water Level	----	2.4.2
	ADS		
	Initiates on Low Water Level	----	2.1.2
	RHR - LPFL Mode		
	Initiates on Low Water Level	----	2.4.1

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.21	II.K1(23) Describe Uses and Types of RV Level Indication for Automatic and Manual Initiation of Safety Systems		
	Shutdown Water-Level Measurement		
	Range		
	Top of RPV	----	2.1.2
	Bottom of Dryer Skirt	----	2.1.2
	Narrow Water-Level Measurement		
	Range		
	Above Main Steam Outlet Nozzle	----	2.1.2
	Bottom of Dryer Skirt	----	2.1.2
	Low Water Level 3 Automatic Initiation		
	Reactor Scram	----	2.2.7
	RHR Shutdown Cooling Isolation	----	2.4.3
	Containment Isolation	----	2.4.3
	Wide Water-Level Measurement		
	Range		
	Above Main Steam Outlet Nozzle	----	2.1.2
	Top of Active Fuel	----	2.1.2
	Low Water Level 2 Automatic Initiation		
	RCIC	----	2.4.4
	CUW Isolation	----	2.4.3
	Low Water Level 1.5 Automatic Initiation		
	HPCF	----	2.4.2
	MSIV Closure	----	2.4.3
	Drywell Cooling System Isolation	----	2.4.3
	Low Water Level 1 Automatic Initiation		
	ADS	----	2.1.2
	RHR-LPFL	----	2.4.1
	Fuel-Zone Water-Level Measurement Range		
	Above Main Steam Outlet Nozzle	----	2.1.2
	Above RIP Deck	----	2.1.2

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.22	II.K.3(13) Separation of HPCS and RCIC System Initiaion Levels		
	RCIC System Initiates on Low Water Level	----	2.4.4
	Terminates Injection on High Water Level	----	2.4.4
	Restarts on Low Water Level	----	2.4.4
	HPCF System Initiates on Low Water Level	----	2.4.2
	Terminates Injection on High Water Level	----	2.4.2
	Restarts on Low Water Level	----	2.4.2
1A.2.23	II.K.3(15) Modify Break Detection Logic to Prevent Spurious Isolation of HPCI and RCIC Systems		
	RCIC has a Bypass Start System	----	2.4.4
1A.2.24	II.K.3(16) Reduction of Challenges and Failures of Safety Relief Valves - Feasibility Study and System Modification		
	Elimination of Pilot Operated Relief Valves	----	2.1.2 (Design Des. Only)
	Redundant Solid State Logic	----	3.4
	Pressure Relief Mode Operation is Direct Opening Against Spring Force	----	2.1.2 (Design Des. Only)

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.26	II.K.3(18) Modification of ADS Logic-Feasibility Study and Modification for Increased Diversity of Some Event Sequences		
	High Drywell Pressure Bypass Timer (minutes)	8	2.1.2
	Initiates on Low Water Level	----	2.1.2
1A.2.28	II.K.3(22) Automatic Switchover of RCIC System Suction - Verify Procedures and Modify Design		
	RCIC Automtically Swtiches Pump Suction Source From CSP toSuppression Pool	----	2.4.4
	Switchover Signals		
	Low CSP Water Level	----	2.4.4
	or		
	High Suppression Pool Level	----	2.4.4
1A.2.29	II.K.3(24) Confirm Adequacy of Space Cooling Study for HPCI and RCIC Systems		
	Individual Room Safety Grade Cooling Units		
	RCIC	----	2.15.5c
	HPCF	----	2.15.5c
	Separate Essential Electrical Power Supples		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
1A.2.30	II.K.3(25) Effect of Loss of AC Power on Pump Seals		
	RCW and RSW Pumps Automatically Loaded to D / Gs Following LOPP	----	2.11.3 2.11.9 2.12.13

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
19B.2.21	II.K.3(27) Provide Common Reference Level for Vessel Instrumentation		
	For ABWR the Common Reference for the Reactor Vessel Water Level is at the Top of the Active Fuel	----	2.1.2 (Design Des. Only)
1A.2.31	II.K.3(28) Study and Verify Qualification of Accumulators on ADS Valves		
	Accumulator Sized to Provide One ADS Actuation with Drywell at Design Pressure	----	2.1.2
	Seismic Category I Pneumatic Piping within Primary Containment	----	2.11.13
1A.2.33.3	II.K.3(46) Response to List of Concerns from ACRS Consultant		
	High Pressure Injection ECCS		
	RCIC	1	2.4.4
	HPCF	2	2.4.2
	Automatic Depressurization on Low Vessel Water Level	----	2.1.2
	ECCS Injection Directly into Vessel		
	HPCF	2	2.4.2
	RHR-LPFL	2	2.4.1
	ECCS Injection Into Feedwater Lines		
	RCIC	1	2.4.4
	RHR-LPFL	1	2.4.1
	ECCS Injection Lines Maintained Filled with Water		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
	RHR-LPFL	----	2.4.1

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.33.3	II.K.3(46) Response to List of Concerns from ACRS Consultant (Cont.)		
	High Pressure ECCS Designed to Take Suction from Suppression Pool		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
	High Pressure ECCS have a Designed Test Mode which Takes Suction from and Discharges to the Suppression Pool		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
	High Pressure ECCS have a Designed Low Flow Bypass Mode which Dicharges to the Suppression Pool		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
	RCIC and HPCF Do not Share Any Common Suction Piping with RHR		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
	ECCS Have Minimum Flow Protection for All Operating Modes		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
	RHR	----	2.4.1

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.33.3	II.K.3(46) Response to List of Concerns from ACRS Consultant (Cont.)		
	Number of RCW Divisions	3	2.11.3
	Individual ECCS Pumps Can be Isolated Without Affecting Other ECCS Pumps		
	RCIC	----	2.4.4
	HPCF	----	2.4.2
	RHR	----	2.4.1
	ABWR has Water Level Measurement Directly on the Vessel	----	2.1.2
	Containment Sprays are Manually Initiated	----	2.4.1
	Essential Equipment Inside the Containment is Qualified for Harsh Environment	----	2.14.1
	ADS Automatically Depressurizes the Vessel on Low Water Level	----	2.1.2
	ABWR has Manual Vessel Depressurization Capability	----	2.1.2

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.34	III.D.1.1(1) Review Information Submitted by Licensee Pertainiing to Reducing Leakage from Operating Systems		
	Inboard and Outboard Isolation Valves on All Lines Which Penetrate Primary Containment	----	(Covered by Individual System Entries)
	ABWR has a Leak Detection and Isolation System	----	2.4.3
	MSIV Closure on:		
	High Temperature in Steam Tunnel	----	2.4.3
	High Temperature in Turbine Building	----	2.4.3
	High Radiation in HVAC Air Exhaust Results In:		
	Closure of HVAC Air Ducts to Reactor Building	----	2.4.3
	Closure of Containment Purge and Vent Lines	----	2.4.3
	Activation of Standby Gas Treatment System	----	2.4.3

Table 10
TMI issues (Cont.)

SSAR Entry	Parameter	SSAR Value	Verifying ITAAC
1A.2.36	III.D.3.4 Control Room Habitability		
	HVAC System		
	Redundant Safety Grade Systems with Outdoor Air Intakes	----	2.15.5c
	Able to Maintain 3.2 mm WG Positive Pressure in Habitable Control Room	----	2.15.5c
	Radiation and Smoke Sensors in Intake Lines to Isolate Outdoor Air Intake	----	2.15.5c
	Habitable Control Room Shielding		
	Min. Thickness of Concrete Between Habitable Control Room Area and Steam Lines (meters)	1.6	2.15.12
	Control Room Constructed Below Grade Level	----	2.15.12