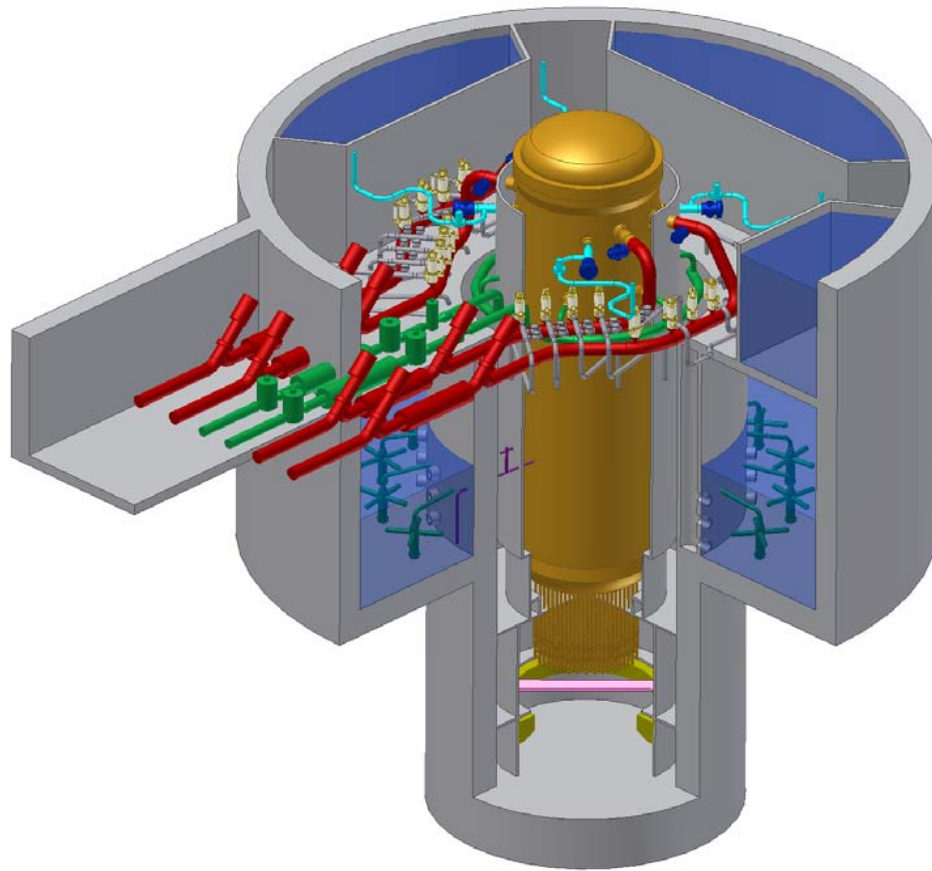


Overview Applicability of NUREG-1434 to ESBWR Technical Specifications



March 23, 2006

	BWR/6: NUREG-1434, Rev 3.1	Included	ESBWR Specification
1.0	USE AND APPLICATION		
1.1	Definitions	<input checked="" type="checkbox"/>	1.1
1.2	Logical Connectors	<input checked="" type="checkbox"/>	1.2
1.3	Completion Times	<input checked="" type="checkbox"/>	1.3
1.4	Frequency	<input checked="" type="checkbox"/>	1.4
2.0	SAFETY LIMITS (SLs)		
2.1	Safety Limits	<input checked="" type="checkbox"/>	2.1
2.2	SL Violations	<input checked="" type="checkbox"/>	2.1
3.0	LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY	<input checked="" type="checkbox"/>	3.0
3.0	SURVEILLANCE REQUIREMENT (SR) APPLICABILITY	<input checked="" type="checkbox"/>	3.0
3.1	REACTIVITY CONTROL SYSTEMS		
3.1.1	SHUTDOWN MARGIN (SDM)	<input checked="" type="checkbox"/>	3.1.1
3.1.2	Reactivity Anomalies	<input checked="" type="checkbox"/>	3.1.2
3.1.3	Control Rod OPERABILITY	<input checked="" type="checkbox"/>	3.1.3
3.1.4	Control Rod Scram Times	<input checked="" type="checkbox"/>	3.1.4
3.1.5	Control Rod Scram Accumulators	<input checked="" type="checkbox"/>	3.1.5
3.1.6	Rod Pattern Control	<input checked="" type="checkbox"/>	3.1.6
3.1.7	Standby Liquid Control (SLC) System	<input checked="" type="checkbox"/>	3.1.7
3.1.8	Scram Discharge Volume (SDV) Vent and Drain Valves		Not a design feature of the ESBWR
3.2	POWER DISTRIBUTION LIMITS		
3.2.1	AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)	<input checked="" type="checkbox"/>	3.2.1
3.2.2	MINIMUM CRITICAL POWER RATIO (MCPR)	<input checked="" type="checkbox"/>	3.2.2
3.2.3	LINEAR HEAT GENERATION RATE (LHGR) (Optional)	<input checked="" type="checkbox"/>	See 3.2.1
3.2.4	Average Power Range Monitor (APRM) Gain and Setpoints (Optional)		Optional LCO Not included in ESBWR

	BWR/6: NUREG-1434, Rev 3.1	Included	ESBWR Specification
3.3	INSTRUMENTATION		
3.3.1.1	Reactor Protection System (RPS) Instrumentation	☑	3.3.1.1 thru 3.3.1.5
3.3.1.2	Source Range Monitor (SRM) Instrumentation	☑	3.3.1.6
3.3.2.1	Control Rod Block Instrumentation	☑	3.3.2.1
3.3.3.1	Post Accident Monitoring (PAM) Instrumentation	☑	3.3.3.1
3.3.3.2	Remote Shutdown System	☑	3.3.3.2
3.3.4.1	<i>End of Cycle Recirculation Pump Trip (EOC-RPT) Instrumentation</i>		<i>No recirculation pumps in ESBWR</i>
3.3.4.2	<i>Anticipated Transient Without Scram Recirculation Pump Trip (ATWS-RPT) Instrumentation</i>		<i>No recirculation pumps in ESBWR</i>
3.3.5.1	Emergency Core Cooling System (ECCS) Instrumentation	☑	3.3.5.1, 3.3.5.2, 3.3.5.3, 3.3.5.4
3.3.5.2	<i>Reactor Core Isolation Cooling (RCIC) System Instrumentation</i>		<i>No RCIC in ESBWR design</i>
3.3.6.1	Primary Containment Isolation Instrumentation	☑	3.3.6.1, 3.3.6.2, 3.3.6.3, 3.3.6.4
3.3.6.2	Secondary Containment Isolation Instrumentation	☑	(See 3.3.6.3 and 3.3.6.4)
3.3.6.3	<i>Residual Heat Removal (RHR) Containment Spray System Instrumentation</i>		<i>Non-Safety Function</i>
3.3.6.4	<i>Suppression Pool Makeup (SPMU) System Instrumentation</i>		<i>Function not in ESBWR design</i>
3.3.6.5	<i>Relief and Low-Low Set (LLS) Instrumentation</i>		<i>Function not in ESBWR design</i>
3.3.7.1	[Control Room Fresh Air (CRFA)] System Instrumentation	☑	3.3.7.1 and 3.3.7.2
3.3.8.1	Loss of Power (LOP) Instrumentation	☑	(See 3.3.1.1, 3.3.5.3/4, and 3.3.7.1/2)
3.3.8.2	Reactor Protection System (RPS) Electric Power Monitoring		<i>Function not in ESBWR design</i>
3.4	REACTOR COOLANT SYSTEM (RCS)		
3.4.1	<i>Recirculation Loops Operating</i>		<i>No recirculation pumps in ESBWR</i>
3.4.2	<i>Flow Control Valves (FCVs)</i>		<i>No recirculation pumps in ESBWR</i>
3.4.3	<i>Jet Pumps</i>		<i>No recirculation pumps in ESBWR</i>
3.4.4	Safety/Relief Valves (S/RVs)	☑	3.4.1
3.4.5	RCS Operational LEAKAGE	☑	3.4.2
3.4.6	<i>RCS Pressure Isolation Valve (PIV) Leakage</i>		<i>Not in ESBWR design</i>
3.4.7	RCS Leakage Detection Instrumentation	☑	3.3.4.1 (Instrumentation moved to 3.3)
3.4.8	RCS Specific Activity	☑	3.4.3
3.4.9	<i>Residual Heat Removal (RHR) Shutdown Cooling System - Hot Shutdown</i>		<i>Non-Safety System</i>
3.4.10	<i>Residual Heat Removal (RHR) Shutdown Cooling System - Cold Shutdown</i>		<i>Non-Safety System</i>
3.4.11	RCS Pressure and Temperature (P/T) Limits	☑	3.4.4
3.4.12	Reactor Steam Dome Pressure	☑	3.4.5

	BWR/6: NUREG-1434, Rev 3.1	Included	ESBWR Specification
3.5	EMERGENCY CORE COOLING SYSTEMS (ECCS) AND REACTOR CORE ISOLATION COOLING (RCIC) SYSTEM		
3.5.1	ECCS - Operating	<input checked="" type="checkbox"/>	3.5.1 (ADS), 3.5.2 (GDCS), and 3.5.4 (ICS)
3.5.2	ECCS - Shutdown	<input checked="" type="checkbox"/>	3.5.3 (GDCS) and 3.5.5 (ICS)
3.5.3	RCIC System		No RCIC in ESBWR design
3.6	CONTAINMENT SYSTEMS		
3.6.1.1	Primary Containment	<input checked="" type="checkbox"/>	3.6.1.1
3.6.1.2	Primary Containment Air Locks	<input checked="" type="checkbox"/>	3.6.1.2
3.6.1.3	Primary Containment Isolation Valves (PCIVs)	<input checked="" type="checkbox"/>	3.6.1.3
3.6.1.4	Primary Containment Pressure	<input checked="" type="checkbox"/>	3.6.1.4
3.6.1.5	Primary Containment Air Temperature	<input checked="" type="checkbox"/>	3.6.1.5
3.6.1.6	Low-Low Set (LLS) Valves		LLS not in ESBWR design
3.6.1.7	Residual Heat Removal (RHR) Containment Spray System		Non-Safety System
BWR/4 3.6.1.7	{{ Reactor Building-to-Suppression Chamber Vacuum Breakers }}		Not in ESBWR design
BWR/4 3.6.1.8	{{ Suppression Chamber-to-Drywell Vacuum Breakers }}	<input checked="" type="checkbox"/>	3.6.1.6
		<input checked="" type="checkbox"/>	3.6.1.7, PCCS
3.6.1.8	Penetration Valve Leakage Control System (PVLCS)		Not in ESBWR design
3.6.1.9	Main Steam Isolation Valve (MSIV) Leakage Control System (LCS)		Not in ESBWR design
3.6.2.1	Suppression Pool Average Temperature	<input checked="" type="checkbox"/>	3.3.2.1
3.6.2.2	Suppression Pool Water Level	<input checked="" type="checkbox"/>	3.3.2.2
3.6.2.3	Residual Heat Removal (RHR) Suppression Pool Cooling		Non-Safety System
3.6.2.4	Suppression Pool Makeup (SPMU) System		Not in ESBWR design
BWR/4 3.6.2.5	{{ Drywell-to-Suppression Chamber Differential Pressure }}		Not in ESBWR design
3.6.3.1	Primary Containment and Drywell Hydrogen Ignitors		Not in ESBWR design
3.6.3.2	Drywell Purge System		
BWR/4 3.6.3.2	{{ Primary Containment Oxygen Concentration }}		
BWR/4 3.6.3.3	{{ Containment Atmosphere Dilution (CAD) System }}		

	BWR/6: NUREG-1434, Rev 3.1	Included	ESBWR Specification
3.6.4.1	Secondary Containment	<input checked="" type="checkbox"/>	3.6.3
3.6.4.2	Secondary Containment Isolation Valves (SCIVs)	<input checked="" type="checkbox"/>	See 3.6.3
3.6.4.3	<i>Standby Gas Treatment (SGT) System</i>		<i>Not ESBWR design (Normal HVAC Non-Safety)</i>
3.6.5.1	<i>Drywell</i>		<i>Not ESBWR design</i>
3.6.5.2	<i>Drywell Air Lock</i>		<i>Not ESBWR design</i>
3.6.5.3	<i>Drywell Isolation Valves</i>		<i>Not ESBWR design</i>
3.6.5.4	<i>Drywell Pressure</i>		<i>Not ESBWR design</i>
3.6.5.5	<i>Drywell Air Temperature</i>		<i>Not ESBWR design</i>
3.6.5.6	<i>Drywell Vacuum Relief System</i>		<i>Not ESBWR design</i>
3.7	PLANT SYSTEMS		
3.7.1	[Standby Service Water (SSW)] System and [Ultimate Heat Sink (UHS)]	<input checked="" type="checkbox"/>	3.7.5, IC/PCC Pools
3.7.2	<i>High Pressure Core Spray (HMCS) Service Water System (STS)</i>		<i>Not ESBWR design</i>
3.7.3	Control Room Fresh Air (CRFA)] System	<input checked="" type="checkbox"/>	3.7.1, EBAS -- passive equivalent
3.7.4	<i>[Control Room Air Conditioning (AC)] System</i>		<i>Non-Safety System</i>
3.7.5	Main Condenser Off gas	<input checked="" type="checkbox"/>	3.7.2
3.7.6	Main Turbine Bypass System	<input checked="" type="checkbox"/>	3.7.3
3.7.7	Fuel Pool Water Level	<input checked="" type="checkbox"/>	3.7.4
3.8	ELECTRICAL POWER SYSTEMS		
3.8.1	<i>AC Sources - Operating</i>		<i>Non-Safety System</i>
3.8.2	<i>AC Sources - Shutdown</i>		<i>Non-Safety System</i>
3.8.3	<i>Diesel Fuel Oil, Lube Oil, and Starting Air</i>		<i>Non-Safety System</i>
3.8.4	DC Sources - Operating	<input checked="" type="checkbox"/>	3.8.1 (24 hr) and 3.8.2 (72 hr)
3.8.5	DC Sources - Shutdown	<input checked="" type="checkbox"/>	3.8.3
3.8.6	Battery Parameters	<input checked="" type="checkbox"/>	3.8.4
3.8.7	Inverters - Operating	<input checked="" type="checkbox"/>	3.8.5
3.8.8	Inverters - Shutdown	<input checked="" type="checkbox"/>	3.8.6
3.8.9	Distribution Systems - Operating	<input checked="" type="checkbox"/>	3.8.7
3.8.10	Distribution Systems - Shutdown	<input checked="" type="checkbox"/>	3.8.8

	BWR/6: NUREG-1434, Rev 3.1	Included	ESBWR Specification
3.9	REFUELING OPERATIONS		
3.9.1	Refueling Equipment Interlocks	<input checked="" type="checkbox"/>	3.9.1
3.9.2	Refuel Position One-Rod-Out Interlock	<input checked="" type="checkbox"/>	3.9.2
3.9.3	Control Rod Position	<input checked="" type="checkbox"/>	3.9.3
3.9.4	Control Rod Position Indication	<input checked="" type="checkbox"/>	3.9.4
3.9.5	Control Rod OPERABILITY - Refueling	<input checked="" type="checkbox"/>	3.9.5
3.9.6	[Reactor Pressure Vessel (RPT)] Water Level[- Irradiated Fuel]	<input checked="" type="checkbox"/>	3.9.6
[3.9.7	[Reactor Pressure Vessel (RPT)] Water Level - New Fuel or Control Rods		Optional Spec not adopted for ESBWR
3.9.8	Residual Heat Removal (RHR) - High Water Level		Non-Safety System
3.9.9	Residual Heat Removal (RHR) - Low Water Level		Non-Safety System
		<input checked="" type="checkbox"/>	3.9.7, Decay Time
3.10	SPECIAL OPERATIONS		
3.10.1	In service Leak and Hydrostatic Testing Operation	<input checked="" type="checkbox"/>	3.10.1
3.10.2	Reactor Mode Switch Interlock Testing	<input checked="" type="checkbox"/>	3.10.2
3.10.3	Single Control Rod Withdrawal - Hot Shutdown	<input checked="" type="checkbox"/>	3.10.3
3.10.4	Single Control Rod Withdrawal - Cold Shutdown	<input checked="" type="checkbox"/>	3.10.4
3.10.5	Single Control Rod Drive (C.D.) Removal - Refueling	<input checked="" type="checkbox"/>	3.10.5
3.10.6	Multiple Control Rod Withdrawal - Refueling	<input checked="" type="checkbox"/>	3.10.6
3.10.7	Control Rod Testing - Operating	<input checked="" type="checkbox"/>	3.10.7
3.10.8	SHUTDOWN MARGIN (SDM) Test - Refueling	<input checked="" type="checkbox"/>	3.10.8
3.10.9	Recirculation Loops - Testing		No recirculation pumps in ESBWR
3.10.10	Training Startups		Optional LCO not adopted
4.0	DESIGN FEATURES		
4.1	Site Location	<input checked="" type="checkbox"/>	4.1
4.2	Reactor Core	<input checked="" type="checkbox"/>	4.2
4.3	Fuel Storage	<input checked="" type="checkbox"/>	4.3

	BWR/6: NUREG-1434, Rev 3.1	Included	ESBWR Specification
5.0	ADMINISTRATIVE CONTROLS		
5.1	Responsibility	<input checked="" type="checkbox"/>	5.1
5.2	Organization	<input checked="" type="checkbox"/>	5.2
5.3	Unit Staff Qualifications	<input checked="" type="checkbox"/>	5.3
5.4	Procedures	<input checked="" type="checkbox"/>	5.4
5.5	Programs and Manuals	<input checked="" type="checkbox"/>	5.5
5.6	Reporting Requirements	<input checked="" type="checkbox"/>	5.6
5.7	High Radiation Area	<input checked="" type="checkbox"/>	5.7