

15.1S Transient and Accident Classification

As specified by Regulatory Guide 1.206 the design differences from the certified design that could impact the STP 3 & 4 safety analysis must be identified. Two departures have the potential to impact the transient and accident analyses. These are the departures associated with the SRV relief analytical limits and the response time assumed in the transient analysis.

STD DEP T1 2.1-1 (Table 15.1S-1)

STD DEP T1 3.4-1 (Table 15.1S-2)

15.1S.1 SRV Relief Analytical Limits

STD DEP T1 2.1-1

As shown in Table 15.1S-1, the analytical limits applied to STP 3 & 4 for the safety relief valve (SRV) relief mode are slightly lower than used in the analysis for the DCD. Therefore, the existing DCD analysis is bounding, no new analysis is required, and no further review of this change is necessary.

15.1S.2 Response Time

STD DEP T1 3.4-1

As shown in Table 15.1S-2, the instrument response times, a combination of the transmitter and logic response times, need to be revised to reflect the capabilities of the hardware that will be used in STP 3 & 4. These changes reflect the actual tested performance of the hardware. The ABWR DCD analysis was performed using the REDY code, which has been shown to be conservative by more than 30 psi and 0.075 %CPR when compared to ODYN predictions. The impact of the changes in response times are less than the conservatism in the REDY code. Therefore, the existing DCD safety analysis is bounding, no new analysis is required, and no further review of the changes is necessary.

Table 15.1S-1 Nuclear Boiler Safety Relief Valve Analytic Limits

	DCD	ABWR
Quantity of SRVs	Relief Mode Analytical Limit	Relief Mode Analytical Limit
1	7.89 MPaG (1,145 psig)	7.81 MPaG (1,133 psig)
1	7.96 MPaG (1,155 psig)	7.88 MPaG (1,143 psig)
4	8.03 MPaG (1,165 psig)	7.95 MPaG (1,153 psig)
4	8.10 MPaG (1,175 psig)	8.02 MPaG (1,163 psig)
4	8.17 MPaG (1,185 psig)	8.09 MPaG (1,173 psig)
4	8.24 MPaG (1,195 psig)	8.16 MPaG (1,183 psig)

Table 15.1S-2 Instrument Response Time

	Design Function	DCD Response Time (sec)	ABWR Response Time (sec)
Scram Reactor			
	Reactor Water Level Trip (Level 3 only)	1.05	0.85
	Reactor Vessel High Pressure Trip	0.55	0.70
	MSIV Closure Trip	0.06	0.10
	Turbine Stop Valve Closure Trip	0.06	0.10
	Turbine Control Valve Fast Closure Trip	0.08	0.12
	Core Flow Rapid Coastdown Trip		
	Core Flow Measurement	1.00	1.00
	NMS Logic Delay Time	0.10	0 (below)
	RPS Logic Delay Time	0.05	0.09
	Total	1.15	1.09
Power-Actuated Safety Relief Function			
	Response Time	0.45	0.7
Recirculation Pump Trip (RPT)			
	Response time for vessel dome pressure sensors	0.30	0.70
MSIV Isolation			
	From detection of L1.5 water level to start of MSIV closure	1.20	1.0
	From detection of turbine inlet pressure to start of MSIV closure	1.0	0.7