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U. S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: T. R. QUAY

SUBJECT: WESTINGHOUSE RESPONSE TO RAI 630.10

Dear Mr. Quay:

Enclosed are three copies of the Westinghouse response to RAI 630.10 regarding AP600 Technical Specification deviations from NUREG-1431 based on probability risk assessment. The NRC technical staff should review this response as part of their review of the AP600 Technical Specifications. This closes DSER open item tracking system item #3054. If there are any questions regarding this transmittal, please contact Robin K. Nydes at (412) 374-4125.

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/jml

enclosure

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NRC REQUEST FOR ADDITIONAL INFORMATION



Question 630.10. Provide a list of proposed AP600 Technical Specification requirements that deviate from NUREG-1431 based either totally or partially on probabilistic risk assessment (PRA) or PRA insights.

Response: The deviations from NUREG-1431 are explained in Reference 1. There are no AP600 Technical Specifications which deviate from NUREG-1431 with the PRA as the basis.

However, selection of a standardized Completion Time or Surveillance Frequency considers available PRA results as described in Reference 2. Per NRC request, attached is a list comparing the NUREG-1431 Standardized Technical Specification (STS) completion times and surveillance frequencies to the AP600 TSs. Deviations from STS times which are less restrictive than STS times are highlighted and any PRA relationship is given in the comment column.

SSAR Revision: NONE

- References:
1. NSD-NRC-96-4833, Closing the Last DSER Open Item for AP600 SSAR Section 16.1, Technical Specifications (TS), 10/11/96.
 2. NSD-NRC-96-4699, Westinghouse AP600 Technical Specifications Approach, 5/3/96.



Westinghouse

630.10-1

AP600 LCO Equipment/Parameter	STS Surveillance Frequency	AP600 TS Surveillance Frequency	STS Completion Time for 1X inoperable	AP600 TS Completion Time for 1X inoperable	STS Completion Time for 2X inoperable (if applicable)	AP600 TS Completion Time for 2X inoperable, if applicable	Comments
3.1.1 SDM	24 h	24 h	15 m	15 m			
3.1.2 Core reactivity	31 d	31 d	72 h	7 d			Testing and maintenance of core reactivity does not affect the FRA results.
3.1.3 MTC	cycle	cycle	24 h	24 h			
3.1.4 Rod Group Alignment	12 h	12 h	1 h	1 h			
movement	92 d	92 d	1 h	1 h			
drop time	cycle	cycle	n/a	n/a			
3.1.5 Shutdown Bank Insertion Limits	12 h	12 h	1 hr	1 h			
3.1.6 Control Bank Insertion	12 h	12 h	1 h	1 h			
position	4 h	4 h	n/a	n/a			
sequence/overlap	12 h	12 h	1 h	1 h			
3.1.7 Rod Position Indication	(18 m)	24 m	8 h	8 h			
One DRPI			8 h	8 h			
position indicator			4 h	8 h			
movement				8 h			Testing and maintenance of the rod position indication does not affect the PRA results.
3.1.8 PHYSICS TESTS Exceptions							
temper.		1 h (temp/power)	15 m	15 m			
SDM	7 d	24 h	15 m	15 m			
power			immediately	immediately			
COT	12 h	72 h					PHYSICS TESTS Exceptions are not part of PRA.

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3.1.9 CVS Demineralized Water Isolation Valves	n/a	1ST	n/a	72 h	n/a	8 h	
3.2.1 $F_G(Z)$							Hot channel factors are not modeled in the PRA.
$F_G^c(Z)$	31 d	31 d	15 m	1 h			
$F_G^w(Z)$	31 d	31 d	2 h	8 h			
3.2.2 F_{DH}^w	31 d	31 d	4 h	8 h			Hot channel factors are not modeled in the PRA.
3.2.3 AFD (RAOC)	7 d	7 d	30 m	1 h			Axial flux difference is not modeled in the PRA.
3.2.4 QPTR			2 h	8 h			Quadrant power tilt ratio is not modeled in the PRA.
by detectors	12 h	24 h					
by calculation	7 d	7 d					
3.2.5 OPDMS	n/a	24 (alarms op) or 12 h (inop)	n/a	1 h			
3.3.1 RTS Instrumentation							In general, for the PMS instrument channels (and cabinets), the surveillance frequencies are based on AP600 design differences, not the PRA. For example, the ESFAS logic actuation test frequency accounts for the AP600 on-line diagnostics such that the logic test is only required during each refueling, compared to the STS logic test of 31 days on a staggered test basis. Another example is that the AP600 Tech Specs require a failed channel to be placed in bypass or trip within 8 hours, compared to a 6 hour time in the STS. The AP600 design has additional channel redundancy, compared to current plants, which is accounted for in this small difference in the AOT.
3.3.2 ESFAS							The Tech Spec 3.3.1 comment applies.
3.3.3 PAM			30 d	30 d	7 d	7 d	
channel check	31 d	31 d					
channel calibration	[18 m]	24 m					

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3.3.4 Remote Shutdown Workstation channel check transfer switch channel calibration TADOT	[31 d] [18 m] [18 m] [18 m]	31 d 24 m 24 m 24 m	30 d	30 d			
3.4.1 RCS Pressure, Temp., and Flow DNB	12 h	24 h	2 h	1 h			Testing and maintenance of these RCS parameters does not affect the PRA results.
3.4.2 RCS Min. Temp. for Criticality	30 m	30 m	Immediately	Immediately			
3.4.3 RCS P/T	30 m	30 m	30 m	30 m			
3.4.4 RCS Loops MODES 1 and 2	12 h	24 h	Immediately	Immediately			Testing and maintenance of the RCPs does not affect the PRA results.
3.4.5 RCS Loops MODES 3, 4 and 5	12 h	24 h	Immediately	Immediately			Testing and maintenance of the RCPs does not affect the PRA results.
3.4.6 Pressurizer level	12 h	24 h	Immediately	Immediately			Testing and maintenance of pressurizer level does not affect the PRA results.
3.4.7 Pressurizer Safety Valves	IST	IST	15 m	1 h	Immediately	Immediately	Testing and maintenance of the pressurizer safety valves does not affect the PRA results.
3.4.8 RCS Leakage	72 h	72 h	4 h	8 h			Detection of RCS leakage during a particular time interval does not affect the PRA results.
3.4.9 RCS Minimum Flow	n/a	24 h	n/s	1 h			

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3.4.10 RCS Leakage Detection	92 d	92 d	30 d	7 d			
COT	[18 m]	2 y					
channel calibration							
channel check	12 h	24 h					Detection of RCS leakage during a particular time interval does not affect the PRA results.
3.4.11 RCS Specific Activity							
I-131	14 d	7 d	42 h	72 h			RCS activity is not modeled in the PRA.
XE-133	n/a (7 d for gross)	7 d	n/a (Immediately for gross)	Immediately			
3.4.12 ADS - Operating							
valves stroke test	n/a	IST	n/a	72 h	n/a	24 h	
4th stage MOV	n/a	24 h					
3.4.13 ADS - Shutdown, RCS Intact	n/a	3.4.12 SRS	n/a	72 h	n/a	24 h	
3.4.14 ADS - Shutdown, RCS Open	n/a	24 h	n/a	72 h	n/a	8 h	
3.4.15 LTOP							
accumulator	12 h	24 h	1 h	1 h			
vent	12 h	24 h (unlocked)					
relief valve	31 d	31 d (locked)	Mode 4 = 7 d Modes 5 & 6 = 24 h	8 h (Modes 4, 5, 6)			
pump							
setpoint	12 h	IST					
RMS suction isolation valve		24 h			Immediately		Testing and maintenance of the accumulator isolation valves and the RMS vent does not affect the PRA results.

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3.5.1 Accumulators			1 h	24 h		36 h to MODE 3	Testing and maintenance of these accumulator parameters does not affect the PRA results.
restore							
isolation valve	12 h	24 h					
volume	12 h	24 h		7 d		72 h	
nitrogen	12 h	24 h		7 d		72 h	
power removed	31 d	31 d					
system performance		IST					
boron	31 d	31 d	72 h	7 d		72 h	
3.5.2 CMTs - Operating	n/a		n/a		n/a		
temperature		24 h		7 d		72 h	
volume		24 h		7 d		72 h	
inlet iso MOV		24 h		24 h			
gas in vent		24 h		24 h			
boron		7 d		7 d		72 h	
outlet iso valve		IST		72 h		24 h	
system performance		IST					
3.5.3 CMT - Shutdown, RCS Intact	n/a	3.5.2 SRs	n/a		n/a		
outlet iso valve				72 h		24 h	
temperature, boron, volume				72 h			
inlet MOV				24 h			

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3.5.4 PRHR Hx - Operating	n/a		n/a		n/a		
manual iso valve		24 h		24 h		-	
inlet MOV		24 h		24 h		-	
vent gas		24 h		24 h		-	
outlet iso valves		IST		72 h		24 h	
PRHR Hx		IST					
3.5.5 PRHR Hx - Shutdown, RCS Intact	n/a	3.5.4 SRs	n/a		n/a		
outlet valve				72 h		24 h	
vent gas				24 h			
inlet valve				24 h			
manual iso valve				24 h			
3.5.6 IRWST - Operating							
volume	7 d	24 h	-	72 h			Testing and maintenance of the boron concentration, volume, and temperature of the IRWST water does not affect the PRA results. As explained in the TS BASES for 3.5.6 C.1, this AOT considers the IRWST being fully capable of performing its safety function with slight deviations in these parameters.
boron	7 d	31 d	8 h	72 h			
temperature	24 h	24 h	8 h	72 h			
iso valve		24 h		-			
valve power		31 d		-			
recirc valve position		24 h		-			
recirc iso MOV		IST		72 h			
IRWST system performance		IST		-			
IRWST iso valve		-		8 h			

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3.5.7 IRWST - Shutdown, RCS Inventory High redirc iso MOV volume, boron, temperature IRWST iso valve	n/a	3.5.6 SRs	n/a	72 h 72 h 8 h			
3.5.8 IRWST - Shutdown, RCS Inventory Low redirc iso MOV volume, boron, temperature IRWST iso valve	n/a	3.5.6 SRs	n/a	72 h 72 h 8 h			
3.6.1 Containment	10CFR50 Appendix J	Containment Leakage Rate Testing Program	1 h	1 h			
3.6.2 Containment Air Locks	10CFR50 Appendix J	Containment Leakage Rate Testing Program	24 h	24 h			
air lock door		184 d					
3.6.3 Containment Isolation Valves			4 h	72 h	1 h	1 h	Unscheduled maintenance of the containment isolation valves does not affect the PRA results.
valve position	31 d	31 d					
iso flange position	31 d	31 d					
iso time	IST	IST					
actuation	IST	IST					
3.6.4 Containment Pressure	12 h	24 h	1 h	24 h			Testing and maintenance of containment pressure does not affect the PRA results.
3.6.5 Containment Air Temperature	24 h	24 h	8 h	24 h			Testing and maintenance of containment temperature does not affect the PRA results.

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3.6.6 PCS - Operating	n/a		n/a				
tank temperature		24 h		24 h			
volume		24 h		24 h			
valve position		24 h					
valve actuation		IST					
air flow path		2 y		72 h		8 h	
system performance		IST					
3.6.7 PCS - Shutdown	n/a	3.6.6 SRs					
air flow path				72 h		8 h	
temp/volume				24 h			
3.6.8 Containment Perforations	7 d	7 d	Immediately	1 h			Testing and maintenance of the containment equipment hatches, airlocks, and spare penetrations does not affect the PRA results.
isolation	[18 m]	IST					
3.6.9 pH Adjustment	n/a	2 y	n/a	72 h			
3.7.1 Main Steam Safety Valves	IST	IST	4 h	8 h			Maintenance of the SG safety valves does not affect the PRA results.
3.7.2 Main Steam Isolation Valves	IST	IST					
MODE 1			[8 h]	72 h	[8 h]	8 h	
MODE 2 or 3			[8 h]	72 h	[8 h]	1 h	
3.7.3 MFW Isolation and Control Valves	IST	IST	[72 h]	72 h	[72 h]	8 h	
3.7.4 Secondary Specific Activity	31 d	31 d	Immediately	Immediately			
3.7.5 Spent Fuel Pool Level	7 d	7 d	Immediately	Immediately			

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3.7.6 Main Control Room Habitability System				7 d		8 h	
temperature		24 h		24 h			
compressed air		24 h					
isolation valves		IST					
valve position		31 d					
dampers		2 y					
pres relief valve		IST					
pres relief damper		IST					
pres reg valve		IST					
pressure		IST		24 h			
3.7.7 Startup Feedwater Isolation and Control Valves		IST	72 h	72 h	Immediately	1 h	The PRA is conservative relative to this Tech Spec.
	AFW valve position 31 d						
	AFW valve actuation [18 m]						
3.7.8 Secondary Coolant System Leakage (Draft)	n/a	72 h	n/a	4 h			
3.8.1 DC Sources - Operating			2 h	72 h			The increased completion times are based on the AP600 design feature of 4 batteries. With this special feature, with one inoperable battery, the other 3 are adequate to supply power to mitigate the events postulated for the AP600. Also, the powered equipment is fail-safe, an additional safety feature of the AP600. With respect to the PRA, the 1E batteries, inverters, and distribution systems in the 1E DC system, are modeled in the PRA with a 31 day surveillance interval, consistent with the TS.

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3.8.1 DC Sources - Operating (cont'd)							
voltage	7 d	7 d					
corrosion	92 d	92 d					
deterioration	[1 y]	1 y					
terminals	[1 y]	1 y					
resistance connection	[1 y]	1 y					
charger	[18 m]	2 y					
capacity	[18 m]	2 y					
3.8.2 DC Sources - Shutdown	3.8.1 SRs	3.8.1 SRs	immediately	immediately			The Tech Spec 3.8.1 comment applies.
3.8.3 Inverters - Operating	7 d	31 d	24 h	168 h			The Tech Spec 3.8.1 comment applies.
3.8.4 Inverters - Shutdown	7 d	31 d	immediately	immediately			The Tech Spec 3.8.1 comment applies.
3.8.5 Distribution Systems - Operating	7 d	31 d	2 h	72 h	immediately	immediately	The Tech Spec 3.8.1 comment applies.
3.8.6 Distribution Systems - Shutdown	7 d	31 d	immediately	immediately			The Tech Spec 3.8.1 comment applies.
3.8.7 Battery Cell Parameters							The PRA models are in agreement with and support the Tech Specs.
Category A	7 d	31 d	31 d (A or B)	31 d (A or B)			
Category B	92 d	92 d	Immediately (C or temperature)	Immediately (C or temperature)			
temperature	92 d	92 d	Immediately (C or temperature)	Immediately (C or temperature)			
3.9.1 Boron Concentration	72 h	7 d	immediately	immediately			Chemical analysis of the boron concentration does not affect the PRA results.
3.9.2 Unborated Water Flow Paths	31 d	7 d	immediately	immediately			Testing and maintenance of the unborated water source isolation valves does not affect the PRA results.

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3.9.3 Nuclear Instrumentation channel calibration channel check	(18 m) 12 h	24 m	Immediately	Immediately	Immediately	Immediately	Testing and maintenance of the nuclear instrumentation channels does not affect the PRA results.
		24 h					
3.9.4 Refueling Cavity Water Level	24 h	24 h	Immediately	Immediately			