TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

SALEM -

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Unit	FUN	CTIONAL UNIT	TRIP SETPOINTS	A LLOWAB LE VA LUES	
L	5.	TURBINE TRIP AND FEEDWATER ISOLATION a. Steam Generator Water Level High-High	< 67% of narrow range instrument span each steam generator	< 68% of narrow range instrument span each steam generator	
	6.	SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	Not Applicable	Not Applicable	
	7.	UNDERVOLTAGE, VITAL BUS a. Loss of Voltage	> 70% of bus voltage	<u>></u> 65% of bus voltage	
3/4 3		b. Sustained Degraded Voltage	> 91.6% of bus voltage for \leq 13 seconds	> 91% of bus voltage for ≤ 15 seconds	
-26	8.	AUXILIARY FEEDWATER a. Automatic Actuation Logic	Not Applicable	Not Applicable	
·	•	b. Manual Initiation	Not Applicable	Not Applicable	
		c. Steam Generator Water Level Low-Low	> 8.5% of narrow range instrument span each steam generator	≥ 7.5% of narrow range instrument span each steam generator	
		d. Undervoltage - RCP	> 70% RCP bus voltage	> 65% RCP bus voltage	
		e. S.I.	See 1 above (All S.I. setpoints)	·	
•		f. Emergency Trip of Steam Generator Feedwater Pumps	Not Applicable	Not Applicable	
		g. Station Blackout	See 6 and 7 above (SEC and Underv	oltage, Vital Bus)	
		8707150007 870709 PDR ADDCK 05000272 PDR PDR		· · · · · · · · · · · · · · · · · · ·	

ATTACHMENT

1 of

2)

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT

SALEM

Unit

N

3/4

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TRIP SETPOINTS

- 5. TURBINE TRIP AND FEEDWATER ISOLATION a. Steam Generator Water Level --High-High
- 6. SAFEGUAR DS EQUIPMENT CONTROL SYSTEM (SEC)
- 7. UNDERVOLTAGE, VITAL BUS a. Loss of Voltage
 - b. Sustained Degraded Voltage
- 8. AUXILIARY FEEDWATER a. Automatic Actuation Logic
 - b. Manual Initiation
 - c. Steam Generator Water Level--Low-Low
 - d. Undervoltage RCP
 - e. S.I.
 - f. Trip of Main Feedwater Pumps

 \leq 67% of narrow range instrument span each steam generator

Not Applicable

> 70% of bus voltage

> 91.6% of bus voltage for \leq 13 seconds

Not Applicable

Not Applicable

> 8.5% of narrow range instrument span each steam generator

> 70% RCP bus voltage

See 1 above (All S.I. setpoints)

Not Applicable

A LLOWABLE VALUES

 $\leq 68\%$ of narrow range instrument span each steam generator

Not Applicable

> 65% of bus voltage

> 91% of bus voltage for < 15 seconds

Not Applicable

Not Applicable

 \geq 7.5% of narrow range instrument span each steam generator

> 65% RCP bus voltage

Not Applicable

ATTACHMENT 1 (2 of 2)

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FU	NCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNE LS TO TR IP	M I N IMUM Channe Ls Operab Le	APP LICAB LE MODES	ACTION	
	Three Loops	1 T _{avg} /operating loop	1### T _{avg} in any operating loop	1 T _{avg} in any two operating loops		15	
	OR, COINCIDENT WITH		Тоор	Toops			
	Steam Line Pressure- Low				1, 2, 3###		A
	Four Loops Operating	1 pressure/ loop	1 pressure any 2 loops	1 pressure any 3 loops		14*	ATTACHMENT
	Three Loops Operating	1 pressure/ operating loop	1### pressure in any operating loop	1 pressure in any 2 operating loops		15	MENT 2
5.	TURBINE TRIP & FEEDWATER ISOLATION						(1 of
	a. Steam Generator Water level High-High	3/1oop	2/loop in any operating loop	2/loop in each operating loop	1,2,3	14*	2)
6.	SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	3	2	3	1, 2, 3, 4	13	
7.	UNDERVOLTAGE, VITAL BUS						
	a. Loss of Voltage	1/bus	2	3	1, 2, 3	14*	
	b. Sustained Degraded Voltage	3/bus	2/bus	3/bus	1, 2, 3	14*	

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FU	INCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNE LS TO TR IP	M IN IM UM Channe LS Operab Le	APPLICABLE MODES	ACTION	
	Three Loops	1 T _{avg} /operating loop	1### T _{avg} in any operating loop	1 T _{avg} in any two operating loops		15	
	OR, COINCIDENT WITH	,		·			1
	Steam Line Pressure- Low				1, 2, 3##		
	Four Loops Operating	1 pressure/ loop	1 pressure any 2 loops	1 pressure any 3 loops		14*	ATTACHMENT
	Three Loops Operating	l pressure/ operating loop	1### pressure in any operating loop	1 pressure in any 2 operating loops			IMENT 2
5.	TURBINE TRIP & FEEDWATER ISOLATION	· · · · · · · · · · · · · · · · · · ·				t C	(20
	a. Steam Generator Water level High-High	3/1oop	2/loop in any operating loop	2/loop in each operating loop	1,2,3	1/+	f 2)
6.	SAFEGUARDS EQUIPMENT CONTROL SYSTEM (SEC)	3	2	3	1, 2, 3, 4	13	
7.	UNDERVOLTAGE, VITAL BUS						
	a. Loss of Voltage	1/bus	2	3	1,2,3	14*	
	b. Sustained Degraded Voltage	3/bus	2/bus	3/bus	1,2,3	14*	

SALEM 1 UNIT

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ATTACHMENT 3

FAILURE MODE ANALYSIS

FailureNormal Operation With Degraded GridLOCA & Degraded GridUndervoltage Relay2 out of 3 logic will be made to load bus to diesel generator. Acceptable2 out of 3 logic will be made to load bus to diesel generator. AcceptableTiming Relay FailureSame as aboveSame as aboveUndervoltage Auxilary Relay FailureSame as aboveSame as aboveUndervoltage FailureSame as aboveSame as aboveLoss of 125 Volt BatteryBus with failed battery system would maintain connection to grid. Busse without failed battery would load to diesel, Same as present design. Previously AnalyzedBus with failed battery system would maintain connected design. Previously AnalyzedLoss of Loss of Cable from Eus to S.E.C.Same as aboveSame as aboveSame as above lasy reviously AnalyzedSame as aboveSame as aboveLoss of Cable from Eus to S.E.C.Same as aboveSame as aboveS.E.C.Bus with failed cable would load to diesel. Two vital buses would be available for safe shutdown. Therefore previously analyzed.Bus with failed cable would maintain connection to grid. Other buses would load to diesel. Two Vital bus with failed 62X relay would maintain connection to grid. Other buses would load to diesel. Two Vital buses would load to diesel. Two Vital buses would be available for safe shutdown. Therefore previously analyzed.Alarm in control room. Alarm in control room. Alarm in control room. Alarm sound to diesel. Two vital buses would load to diesel. Two Vital buses would load to diesel			والمحاجب والمراجب والمحاجب والمحاجب والمحاجب والمحاج و
Relaybe made to load bus to diesel generator. Acceptablebe made to load bus to diesel generator. AcceptableTiming Relay FailureSame as aboveSame as aboveUndervoltage Auxilary Relay FailureSame as aboveSame as aboveWFA Relay FailureSame as aboveSame as aboveWFA Relay FailureSame as aboveSame as aboveUoss of 125 Volt BatteryBus with failed maintain connection to grid. Buss without failed battery would load to diesel. Same as present design. Previously AnalyzedBus with failed cable would maintain connected to grid. Other buses would load to diesel. Two vital buses would be available for safe shutdown. Therefore previously analyzed.Bus with failed cable would maintain connection to grid. Other buses would load to diesel. Two vital buses would be available for safe shutdown. Therefore previously analyzed.Bus with failed cable would maintain connection to grid. Other buses would load to diesel. Two vital buses would be available for safe shutdown. Therefore previously analyzed.Alarm in control room. Bus with failed 62X relay would maintain connection to grid. Other buses would load to diesel. Two Vital buses wou	Failure		LOCA & Degraded Grid
FailureSame as aboveSame as aboveUndervoltage Auxiliary Relay FailureSame as aboveSame as aboveHFA Relay FailureSame as aboveSame as aboveLoss of 125 VoltBus with failed battery system would maintain connection to grid. Buses without failed battery would load to diesel. Same as present design. Previously AnalyzedBus with failed cold battery would load to diesel. Same as aboveLoss of 125 Volt DC Branch CKTBus with failed cable would naintain connected to grid. Other buses would load to diesel. Two vital buses would be available for safe shutdown. Therefore previously analyzed.Bus with failed cable would maintain connection to grid.62X Defeat RelayAlarm in control room. Bus with failed 62X relay would maintain connection to grid. Other buses would load to diesel. Two vital be available for safe shutdown. Therefore previously analyzed.Alarm in control room. Bus with failed 62X relay would maintain connection to grid. Other buses would load to diesel. Two Vital buses would be available for safe shutdown. Therefore previously analyzed.Alarm in control room. Bus with failed 62X relay would maintain connection to grid. Other buses would load to diesel. Two Vital buses would be available for safe shutdown. Therefore previously analyzed.Potential TransformerSame as undervoltage relay failureSame as undervoltage relay failurePotential TransformerSame as undervoltage relay failureSame as undervoltage relay failure	-	be made to load bus to diesel generator.	be made to load bus to diesel generator.
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Transformerrelay failurerelay failurePotentialSame as undervoltageSame as undervoltageTransformerrelay failurerelay failure		Bus with failed 62X relay would maintain connection to grid. Other buses would load to diesel. Two Vital buses would be available for safe shutdown. Therefore <u>previously</u>	Bus with failed 62X relay would maintain connection to grid. Other buses would load to diesel. Two Vital buses would be available for safe shutdown. Therefore <u>previously</u>
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