

CHAPTER 5

DESIGN OF STRUCTURES, SYSTEMS AND COMPONENTS

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PARAMETER SUMMARY TABLE
TYPE A VARIABLES

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
A04	<u>Stm Gen A</u>	Steam Generator Pressure	A	1	0-1200 PSIG	0-1200 PSIG	Comply	Comply	Comply	4 Channels /Steam Generator	Preferred 1E	C12	CFMS	CFMS	Indication used to determine ruptured steam generator to allow isolation following steam line break
	PT0751A														
	P/S0751A														
	PIC0751A														
	PT0751B														
	P/S0751B														
	PIC0751B														
	PT0751C														
	P/S0751C														
	PIC0751C														
	PT0751D														
	P/S0751D														
	PIC0751D														
	<u>Stm Gen B</u>														
	PT0752A														
	P/S0751A														
	PIC0752A														
	PT0752B														
	P/S0751B														
	PIC0752B														
	PT0752C														
	P/S0751C														
	PIC0752C														
	PT0752D														
	P/S0751D														
	PIC0752D														

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TYPE A VARIABLES

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
A05	LT0103 P/S0103 LI0103A LI0103B LT0102 P/S0751A LIA0102A LI0102B	Pressurizer Level	A	1	0-100% (Equivalent to top to bottom of vessel)	Top to Bottom of Vessel	Comply	Comply	Comply	2 Channels	Preferred 1E	C12 C02	CFMS	CFMS	Indication used to allow termination or throttling of SIS flows.
A06	AE2401L AIT2401L AI2401L AE2401R AIT2401R AI2401R	Containment Hydrogen Concentration	A	1	0-10 Vol% or 0-20 Vol% (switch selectable) from -2 to 60 PSIG	0-10 Vol% (capable of operating from -2 to 60 PSIG)	Comply	Comply	Comply	2 Channels	Preferred 1E	C11A	CFMS	CFMS	Indication used to determine when to initiate hydrogen recombiners

REGULATORY GUIDE 1.97 REV 3
PARAMETER SUMMARY TABLE
TYPE A VARIABLES

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
B09	LE0101A LTRI0101A LE0101B LTRI0101B	Coolant Inventory	B	1	Top of Core to Top of Vessel	Bottom of Hotleg to Top of Vessel	Comply	Comply	Comply	2 Channels	Preferred 1E	C11A	CFMS	CFMS	
B10	SMM0114 SMM0124	Degrees of Subcooling	B	2	200°F subcooling to 35°F superheat	200°F subcooling 35°F superheat	Comply	Comply	N/A	2 Channels 1E	Preferred	C12	CFMS	CFMS	See Item A01
B11		PCS Pressure (Pressurizer Pressure)	B	1		0-4000 psig									Covered by Item B07
B12	LT0383 P/S1812A LPIR0383 LT0382 P/S1805A LPIR0382	Containment Sump Water Level (Narrow Range)	B	2	0-100% (Bottom to Top of Sump)	Narrow Range (Sump)	Comply	Comply	N/A	2 Channels	Preferred 1E	C13	CFMS	CFMS	
B13	LE0446A LIT0446A LPIR0383 LE0446B LIT0446B LPIR0382	Containment Water Level (Wide Range)	B	1	0-100% (Exceeds Maximum Expected Water Level by 1.5 ft)	Wide Range (Plant Specific)	Comply	Comply	Comply	2 Channels	Preferred 1E	C13	CFMS	CFMS	
B14	-	Containment Pressure	B	1		0 - Design Pressure (PSIG)									Covered by Item C12

REGULATORY GUIDE 1.97 REV 3
PARAMETER SUMMARY TABLE
TYPE A VARIABLES

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
B15	POS0155 POS0738 POS0739 POS0767 POS0768 POS0770 POS0771 POS0910 POS0911 POS0939 POS0940 POS1001 POS1002 POS1004 POS1007 POS1036 POS1037 POS1038 POS1044 POS1045 POS1064 POS1065 POS1101 POS1102 POS1103 POS1104 POS1358 POS1501 POS1502 POS1503 POS1910 POS1911 POS2009 POS2083 POS3001 POS3002 POS3029A POS3029B POS3030A POS3030B POS1805 POS1806	Containment Isolation Valve Position	B	1	Closed - Not Closed	Closed - Not Closed	Comply	Comply	Comply	Redundant Isolation Method for Each Flow Path. Redundant Position Indication for each Valve not Provided.	1E Battery	Various	CFMS	CFMS	

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
C01	16 Core Exit Thermocouples LIR10101A LIR10101B	Core Exit Temperature	C	1	0°F to 2300°F	200°F to 2300°F	Comply	Comply	Comply	2 Channels (8 Thermocouples per Channel)	Preferred 1E	C11A	CFMS	CFMS	
C02	None	Radioactivity Concentration or Radiation Level in Circulating Primary Coolant	C	1	-	$\frac{1}{2}$ Tech Spec Limit to 100 times Tech Spec Limit									Online Analysis capability isolated during accident. Grab sample to be used to evaluate variable
C03	None	Analysis of Primary Coolant (Gamma Spectrum)	C	3	-	10 μ Ci/ml to 10Ci/ml or TID14844 source term in coolant volume									No online system for analysis available. Grab sample to be used to evaluate variable.
C04		PCS Pressure (Pressurizer Pressure)	C	1	-	0-4000 PSIG									Covered by Item B07
C05		Containment Pressure	C	1	-	-5 PSIG to design pressure									Covered by Item C12

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PARAMETER SUMMARY TABLE
TYPE C VARIABLES

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
C12	PT1812A P/1812A LPIR0383 PT1805A P/1805A LPIR0382	Containment Pressure	C	1	-14.7 to 185.3 PSIG	-5 PSIG to 3 times Design Pressure for Concrete	Comply	Comply	Comply	2 Channels 1E	Preferred	C13	CFMS	CFMS	Design Pressure 55 PSIG
C13		Containment Effluent Radioactivity Noble Gases from Identified Release Points	C	2	-	$10^{-6}\mu\text{Ci/cc}$ to $10^{-2}\mu\text{Ci/cc}$									Covered by Item E03
C14		Effluent Radioactivity Noble Gases (From buildings or areas where penetrations and hatches are located)	C	2	-	$10^{-6}\mu\text{Ci/cc}$ to $10^{-3}\mu\text{Ci/cc}$									Covered by Item E03

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D01	FT0306 FIC0306	RHR System Flow	D	2	0-8000 GPM GPM (6000 GPM design Flow)	0-110% Design Flow	Pre-QA	Comply	N/A	N/A	Reliable Non-1E	C02	CFMS	CFMS	All components located in mild environment
D02	TT0351B TR0351 TE0351B	RHR Heat Exchanger Outlet Temperature	D	2	0°F to 400°F	40°F to 350°F	Pre-QA	Comply	N/A	N/A	Reliable Non-1E	C12	CFMS	CFMS	All components located in mild environment.
D03	LT0365 P/S0365 LIA0365 LM0365 LT0368 P/S0368 LIA0368 LM0368 LT0372 P/S0372 LIA0372 LM0372 LT0374 P/S0374 LIA0374 LM0374	Accumulator Tank Level	D	2	0-100% (Equivalent to 5% to 95% Tank Volume)	10% to 90% Volume	Pre-QA	None	N/A	N/A	Preferred 1E	C13	CFMS	CFMS	Note 1

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D04	PT0363 P/S0363 PIA0363 PT0367 P/S0367 PIA0367 PT0371 P/S0371 PIA0371 PT0369 P/S0369 PIA0369	Accumulator Tank Pressure	D	2	0 to 300 PSIG	0 to 750 PSIG	Pre-QA	None	N/A	N/A	Preferred 1E	C13	CFMS	CFMS	SI Tank Designed for 300 PSIG. Note 1
D05	VOP3041 VOP3045 VOP3049 VOP3052	Accumulator Isolation Valve Position	D	2	Closed or Open	Closed or Open	Pre-QA	None	N/A	N/A	1E Battery	C03	CFMS	CFMS	Note 2
D06	FT0212 FY0212 FIA0212 P/S0212	Boric Acid Charging Flow	D	2	0-140 GPM	0-110% Design Flow	Pre-QA	Comply	N/A	N/A	Reliable	C02 Non-1E	CFMS	CFMS	Design Flow is 132 GPM. All components located in mild environment.

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D07	FT0308 P/S0751A FI-0308A FI-0308B FM0308 FT0310 P/S0751B FI0310A FI0310B FM0310 FT0312 P/S0751C FI0312A FI0312B FM0312 FT0313 P/S0751D FI0313A FI0313B FM0313	Flow in HPI System (Flow to Cold Legs)	D	2	0-250 GPM per injection line	0-110% Design Flow	Comply	Comply	N/A	N/A	Preferred 1E	C13 C33	CFMS	CFMS	Design flow is 225 GPM per injection line.
D07A	FT0316 P/S0316 FI0316A FI0316B FT0317 P/S0377 FI0317A FI0317B	Flow in HPI System (Flow to Hot Legs)	D	2	0-350 GPM per injection line	0-110% Design Flow	Comply	Comply	N/A	N/A	Preferred 1E	C13			Design flow is 300 GPM per injection line.

REGULATORY GUIDE 1.97 REV 3
PARAMETER SUMMARY TABLE
TYPE D VARIABLES

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D08	FT0307 P/S0751A FI0307A FI0307B FM0307 FT0309 P/S0751B FI0309A FI0309B FM0309 FT0311 P/S0751C FI0311A FI0311B FM0311 FT0314 P/S0751D FI0314A FI0314B FM0314	Flow in LPSI System	D	2	0-2000 GPM per injection line	0-110% Design Flow	Comply	Comply	N/A	N/A	Preferred 1E	C13	CFMS	CFMS	Design flow is 1500 GPM per injection line.
D09	LT0331 P/S0331 LIA0331 LT0332A P/S0332A LIA0332A	Refueling Water Storage Tank Level	D	2	0-100% Equivalent to Top to Bottom	Top to Bottom	Pre-QA	Comply	N/A	N/A	Preferred 1E	C13	CFMS	CFMS	All componenets located in mild environment
D10	AI2103 AI2104 AI2203 AI2204	Reactor Coolant Pump Status	D	3	0-800 Amps	Electric Current	N/A	N/A	N/A	N/A	Same Bus as Powers Pump	C12	CFMS	CFMS	

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D11	FE1039 FM1039 FI1039 FE1040 FM1040 FI1040 FE1041 FM1041 FI1041 FE1042B FM1042B FI1042B FE1043B FM1042B FI1042B	Primary System Safety Valve Positions (including PORV and Code Valves)	D	2	Closed - Not Closed	Closed - Not Closed	Comply	Comply	N/A	N/A 1E	Preferred	C11A	CFMS	CFMS	
D12		Pressurizer Level	D	1	0-100% (Essentially Top to Bottom)	Top to Bottom									Covered By Item A05
D13	EAI1211 EAI1305	Pressurizer Heater Status	D	2	0-200 Amps Current	Electric	Pre-QA	Comply	N/A	N/A	Same bus as heaters	C02	CFMS	CFMS	All components in mild environment
D14	LT0116 LIA0116	Quench Tank Level	D	3	0-100%	Top to Bottom	N/A	N/A	N/A	N/A	Reliable Non-1E	C02	CFMS	CFMS	
D15	TE0116 TIA0116	Quench Tank Temperature	D	3	0°F to 350°F	50°F to 750°F	N/A	N/A	N/A	N/A	Reliable Non-1E	C02	-	-	Note 3
D16	PT0116 PIA0116	Quench Tank Pressure	D	3	0 to 25 PSIG	0 to Design Pressure	N/A	N/A	N/A	N/A	Reliable Non-1E	C02	CFMS	CFMS	Rupture Disk at 100 PSIG.

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D17	<u>Stm Gen A</u>	Steam Generator Level	D	1											Covered by Item A03
	LT0757A														
	PS0757A														
	LI0757A														
	LT0757B														
	PS0757B														
	LI0757B														
	<u>Stm Gen B</u>														
	LT0758A														
	PS0758A														
	LI0757A														
	LT0758B														
	PS0758B														
	LI0757B														
D18	<u>Stm Gen A</u>	Steam Generator Pressure	D	2											Covered by Item A04
	PT0751A														
	PS0751A														
	PIC0751A														
	PT0751B														
	PS0751B														
	PIC0751B														
	PT0751C														
	PS0751C														
	PIC0751C														
	PT0751D														
	PS0751D														
	PIC0751D														

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D23	FT0301 FI0301A FI0301B FT0302 FI0302A FI0302B	Containment Spray Flow	D	2	0-3000 GPM	0-110% Design Flow	Pre-QA	Comply all components mild environ- ment	N/A	2 Channels	Preferred 1E	C13 C33	CFMS	CFMS	Design Flow 2700 GPM
D24	Cooler Valve Position POS0824 POS0847 POS0861 POS0862 POS0864 POS0865 POS0873 POS0870 Cooler Fan Status 52-1208 52-1209 52-1210 Service Water Pump Status 152-103 152-204 152-205	Heat removal by Contain- ment fan heat removal system	D	2	Indicating lights	Plant Specific	Comply	Comply	N/A	N/A	Reliable 1E	C08	CFMS	CFMS	Status deter- mined by confirming cooler valves aligned, fans running and service water available. Only cooler inlet and out- let valves located in a harsh environment.

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D31	CCW Pump Current AI-0941 AI-0942 AI-0943	Component Cooling Water Flow to ESF System	D	2	Indicating Lights	0-110" Design Flow	Comply	Comply	N/A	N/A	Reliable 1E	C08	-	-	Note 9
	CCW Pump Discharge Pressure PT-0918 PIA-0918 CCW Surge Tk Level LT-0920 LIA-0920 SDC Hx Out Temp TE-0912 TI-0912 TE-0913 TI-0913							PT-0918 TE-0912 TE-0913 in harsh environment							
D32	LT1012 LIA1012 LT1014 LIA1014 LT1016 LIA1016 LT1018 LIA1018	High Level Radioactive Liquid Tank Level	D	3	0-100% (Equivalent to Top to Bottom	Top to Bottom	N/A	N/A	N/A	N/A	Reliable Non-1E	CFMS	CFMS	CFMS	

ITEM	TAG NO	VARIABLE			INSTRUMENT RANGE		QA REQUIREMENT	ENVIRONMENTAL QUALIFICATION	SEISMIC QUALIFICATION	REDUNDANCE	POWER SUPPLY	DISPLAY LOCATION			COMMENTS
		DESCRIPTION	TYPE	CATEGORY	EXISTING	REQUIRED						CR	TSC	EOF	
D35A		Power supplies status of standby power	D	2		Plant Specific	Pre-QA	Comply	N/A	N/A	From Bus being monitored	Various Locations	-	-	All components located in mild environment
		<u>Startup Xfmr Status</u>									Power to alarm from 1E Battery bus				
	EVI-0003	1-2 Volts			0-3 KV										
	EAI-0001X	1-2 Amps-X			0-3 KAMP										
	EAI-0001Y	1-2 Amps-Y			0-3 KAMP										
	EAI-0001Z	1-2 Amps-Z			0-3 KAMP										
		<u>2400 Volt 1E Bus Status</u>													
	EVI-0001	1-D Volts		1-C	Volts			0-3 KV							
	EVI-0002	1-C Amps			0-2 KAMP			0-2 KAMP							
	EAI-0003	1-D Amps			0-5 MW										
	EAI-0004	1-C Power			0-5 MW										
	EWI-0007	1-D Power													
	EWI-0009														
		<u>Diesel Gen Status</u>													
	EVI-1107	1-1 Volt			0-3 KV										
	EVI-1107L	1-1 Volt			0-3 KV										
	EVI-1213	1-2 Volt			0-3 KV										
	EVI-1213L	1-2 Volt			0-3 KV										
	EWI-1107	1-1 Power			0-3 MW										
	EWI-1107L	1-1 Power			0-3 MW										
	EWI-1213	1-2 Power			0-3 MW										
	EWI-1213L	1-2 Power			0-3 MW										
	SPI-1107	1-1 Frequency			55-65 Hz										
	SPI-1107L	1-1 Frequency			55-65 Hz										
	SPI-1213	1-2 Frequency			55-65 Hz										
	SPI-1213L	1-2 Frequency			55-65 Hz										

If the emergency generators fail to start, the Plant auxiliaries can be fed via the main transformer in a backfeed mode. Refer to Subsection 8.6.2 for the details of controls switching required.

Operation After Loss of Coolant Accident - The emergency generators are required to supply power only if the offsite power source fails. At this time, the automatic features will govern and DBA sequencers will sequentially load the diesels.

Operations During or After Fire Accident - The 1-1 emergency diesel generator has three remote/local isolation switches (one for output breaker and two for diesel/generator) to allow control in the event of fire in the control room, cable spreading room, auxiliary building corridor 590' level, or engineering safeguards panel room. These switches are intended to ensure operability of safe shutdown equipment per 10 CFR 50.48 and 10 CFR 50, Appendix R. Operability of 1-2 emergency diesel generator after a fire could be restored by operation of slide links in control circuitry. Operation of these slide links is not required, however, by the Appendix R, Safe Shutdown Analysis. Operation of these switches/slide links is governed by Off Normal Procedure 25.2. Reference FSAR Section 7.4 for critical fire areas.

Testing - Automatic start and load sequencing of the emergency generators are tested as part of the safety injection testing. For details see Subsection 7.3.5. The emergency generators' start-up may be manually tested at any time to verify required voltage and frequency are obtained within acceptable limits and time. To verify load acceptance by the generator, the emergency generator breaker is closed manually and the engine loaded onto the 2,400 volt bus for parallel operation with the onsite or offsite power source. Refer to Technical Specifications for further details.

8.4.1.3 Design Analysis

The emergency generators have been selected to have sufficient capacity to supply the minimum necessary engineered safeguards loads with only one generator operating. In addition, each generator has enough reserve capacity to start and carry the largest single engineered safeguards device that may be loaded on the bus by a control circuit malfunction.

The emergency generators are designed to reach rated speed and voltage and to be ready for loading within 10 seconds after the receipt of a start signal and be capable of loading and carrying required safety-related loads within the times established for sequential loading (see Tables 8-6 and 8-7).

To assure reliability, each emergency generator has two independent start circuits on separate dc sources and two separate air starting motors. The start signal is initiated by two separate sources. Physical separation is maintained between the two emergency generator units and their associated controls.

Each emergency generator and diesel engine is provided with several alarms, interlocks and trips. Each engine may be started and placed in service locally or from the control room. The generators may be synchronized from the control room so that they can be paralleled with the system for loading tests. Each diesel is located in a separate room as is shown on Figure 1-3. Each room has separate access doors.

Local alarms (engine trouble) at each diesel are:

- Prelube Oil Pump Failure
- Low Lube Oil Pressure Trip
- Lube Oil Temperature High
- Lube Oil Temperature Low
- Lube Oil Filter Differential Pressure High
- Jacket Water Temperature High
- Jacket Water Expansion Tank Low Level
- Service Water Low Pressure
- Overspeed/Underspeed Trip
- Low Starting Air Pressure
- Engine Overcrank Trip

Remote alarms at the control room for engine trouble are segregated between disabling and nondisabling conditions as follows:

- Troubling/nondisabling:

- Local engine trouble (see above)

- Start signal blocked:

- Loss of dc control
- Engine overcrank trip
- Overspeed/underspeed trip
- Low lube oil pressure trip
- Control switch not in automatic

In addition, a trip of the diesel generator breakers by anything other than a manual trip is annunciated separately in the control room as is low level in the main fuel oil storage tank, day tank hi-lo level, and generator overload. The diesel generator breakers will be opened should there be an overload, or generator differential relay operation, or should the diesel shut down. Additionally, a short duration trip signal is provided to the diesel generator breakers whenever a signal is initiated to automatically fast transfer the normal source of power to the start-up transformer. This trip signal places a diesel generator paralleled with the onsite or offsite source in a standby condition ready to energize the bus and sequence loads in the event the fast transfer to the alternate source is unsuccessful.