Mr. Todd Fish
USNRC
475 Allendale Road
King of Prussia, PA 19406

May 5, 2003

Dear Mr. Fish,

Enclosed please find the corrections and enhancements to the SRO-U exam submitted on April 14, 2003. Questions included for your review are designated Record Numbers 1, 5, 11, 19, 22, 23, 32, 45, 48, 52, 64, 70, 79, 94, and 98. Also included is an updated Exam Outline Form ES-401-3, and Written Exam Quality Checklist Form ES-401-7.

1. Inserted "to 174 steps withdrawn" in stem.

5. Removed 55.43(b) reference, made question Both.

11. Changed K/A to AA2.01

19. Changed K/A to AK1.01. ***This is a 2.4 K/A, but it is a Plant Specific Priority due to Salem's past and recent history regarding Circulator, steam dump, and MS-10 operations.

22. Added 55.43(b) reference

23. Added "to verify 2A VIB has transferred to the AC LINE REGULATOR" for Distractor C, and "to verify 2A VIB has transferred to the DC POWER SUPPLY" to distractor B.

32. Changed K/A to 074 EK3.11

45. Changed to NEW question, same K/A., not SRO only.

48. Reworded question into 2 conditions, changed to BOTH, removed 55.43(b) reference

52. Deleted "Enter Tech Spec 3.0.3" from beginning of answer a.

64. Changed to NEW question. 55.43(b)7 now instead of 4

70. Capitalized REQUIRED in stem.

79. Capitalized CAN in distracters c and d.

94. Changed to BOTH from 55.43(b)

98. Changed to NEW question.

Please contact me at 1-856-339-1554 if you have any questions.

Sincerely,

Gerald S. Gauding

ES-401 **PWR SRO Examination Outline** Printed: 05/05/2003

Facility: Salem Form ES-401-3

Exam Date: 05/05/2003 **Exam Level:** SRO

Tier	Group	K/A Category Points											Point Total
		K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	
1. Emergency & Abnormal Plant Evolutions	1	5	3	4				4	5			3	24
	2	3	3	3				3	2			2	16
	3	1	0	0				0	1			1	3
	Tier Totals	9	6	7				7	8			6	43
2. Plant Systems	1	1	2	2	2	2	1	2	2	2	1	2	19
	2	1	1	2	1	2	2	1	2	1	2	2	17
	3	0	0	1	0	1	0	0	1	0	0	1	4
	Tier Totals	2	3	5	3	5	3	3	5	3	3	5	40
3. Generic Knowledge And Abilities		Cat 1			Cat 2			Cat 3			Cat 4		
		4			4			4			5		17

Note:
1. Ensure that at least two topics from every K/A category are sampled within each teir (i.e., the "Tier Totals" in each K/A category shall not be less than two).
2. Actual point totals must match those specified in the table.
3. Select topics from many systems; avoid selecting more than two or three K/A topics from a given system unless they relate to plant-specific priorities.
4. Systems/evolutions within each group are identified on the associated outline.
5. The shaded areas are not applicable to the category/tier.
6. The generic K/As in Tiers 1 and 2 shall be selected from Section 2 of the K/A Catalog, but the topics must be relevant to the applicable evolution or system.
7. On the following pages, enter the K/A numbers, a brief description of each topic, the topics' importance ratings for the RO license level, and the point totals for each system and category. K/As below 2.5 should be justified on the basis of plant-specific priorites. Enter the tier totals for each category in the table above.

PWR SRO Examination Outline

Printed: 05/05/2003

Facility: Salem

ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1** **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
001	Continuous Rod Withdrawal / 1			X				AK3.01 - Manually driving rods into position that existed before start of casualty	3.6	1
005	Inoperable/Stuck Control Rod / 1						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
011	Large Break LOCA / 3						X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
015	Reactor Coolant Pump (RCP) Malfunctions / 4			X				AK3.02 - CCW lineup and flow paths to RCP oil coolers	3.1	1
017	Reactor Coolant Pump (RCP) Malfunctions (Loss of RC Flow) / 4		X					AK2.07 - RCP seals	2.9	1
024	Emergency Boration / 1					X		AA2.04 - Availability of BWST	4.2	1
026	Loss of Component Cooling Water (CCW) / 8					X		AA2.01 - Location of a leak in the CCWS	3.5	1
029	Anticipated Transient Without Scram (ATWS) / 1				X			EA1.03 - Charging pump suction valves from VCT operating switch	3.2	1
040	Steam Line Rupture / 4	X						AK1.05 - Reactivity effects of cooldown	4.4	1

PWR SRO Examination Outline

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ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1** **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
051	Loss of Condenser Vacuum / 4	X						AK1.01 - Relationship of condenser vacuum to circulating water, flow rate, and temperature	2.4*	1
055	Loss of Offsite and Onsite Power (Station Blackout) / 6			X				EK3.02 - Actions contained in EOP for loss of offsite and onsite power	4.6	1
057	Loss of Vital AC Electrical Instrument Bus / 6						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.8	1
059	Accidental Liquid Radwaste Release / 9		X					AK2.01 - Radioactive-liquid monitors	2.8	1
062	Loss of Nuclear Service Water / 4				X			AA1.07 - Flow rates to the components and systems that are serviced by the SWS; interactions among the components	3.0	1
067	Plant Fire on Site / 9					X		AA2.09 - That a failed fire alarm detector exists	2.7	1
068	Control Room Evacuation / 8				X			AA1.08 - Local boric acid flow	4.2*	1
074	Inadequate Core Cooling / 4			X				EK3.11 - Guidance contained in EOP for Inadequate Core Cooling	4.4	1
076	High Reactor Coolant Activity / 9	X						AK1.06 - Chemical shock and crud burst	2.6	1

PWR SRO Examination Outline

Printed: 05/05/2003

Facility: Salem

ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1** **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
E02	SI Termination / 3	X						EK1.2 - Normal, abnormal and emergency operating procedures associated with SI Termination	3.9	1
E04	LOCA Outside Containment / 3					X		EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations	4.3	1
E06	Degraded Core Cooling / 4					X		EA2.1 - Facility conditions and selection of appropriate procedures during abnormal and emergency operations	4.2	1
E07	Saturated Core Cooling / 4				X			EA1.3 - Desired operating results during abnormal and emergency situations	3.9	1
E09	Natural Circulation Operations / 4		X					EK2.2 - Facility's heat removal systems, including primary coolant, emergency coolant, the decay heat removal systems, and relations between the proper operation of these systems to the operation of the facility	3.9	1
E14	High Containment Pressure / 5	X						EK1.2 - Normal, abnormal and emergency operating procedures associated with High Containment Pressure	3.7	1

K/A Category Totals: 5 3 4 4 5 3 **Group Point Total:** 24

Facility: Salem

PWR SRO Examination Outline

Printed: 05/05/2003

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
008	Pressurizer (PZR) Vapor Space Accident (Relief Valve Stuck Open) / 3		X					AK2.02 - Sensors and detectors	2.7	1
009	Small Break LOCA / 3		X					EK2.03 - S/Gs	3.3*	1
022	Loss of Reactor Coolant Makeup / 2						X	2.1.33 - Ability to recognize indications for system operating parameters which are entry-level conditions for technical specifications.	4.0	1
025	Loss of Residual Heat Removal System (RHRS) / 4					X		AA2.04 - Location and isolability of leaks	3.6	1
037	Steam Generator (S/G) Tube Leak / 3			X				AK3.10 - Automatic actions associated with high radioactivity in S/G sample lines	3.7*	1
037	Steam Generator (S/G) Tube Leak / 3						X	2.1.32 - Ability to explain and apply all system limits and precautions.	3.8	1
038	Steam Generator Tube Rupture (SGTR) / 3			X				EK3.01 - Equalizing pressure on primary and secondary sides of ruptured S/G	4.3	1
054	Loss of Main Feedwater (MFW) / 4			X				AK3.03 - Manual control of AFW flow control valves	4.1	1
058	Loss of DC Power / 6					X		AA2.03 - DC loads lost; impact on to operate and monitor plant systems	3.9	1

PWR SRO Examination Outline Printed: 05/05/2003

Facility: Salem

ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 2** **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
060	Accidental Gaseous Radwaste Release / 9	X						AK1.02 - Biological effects on humans of the various types of radiation, exposure levels that are acceptable for personnel in a nuclear reactor power plant; the units used for radiation intensity measurements and for radiation exposure levels	3.1*	1
061	Area Radiation Monitoring (ARM) System Alarms / 7	X						AK1.01 - Detector limitations	2.9?	1
065	Loss of Instrument Air / 8				X			AA1.02 - Components served by instrument air to minimize drain on system	2.8	1
E03	LOCA Cooldown and Depressurization / 4				X			EA1.3 - Desired operating results during abnormal and emergency situations	4.1	1
E05	Loss of Secondary Heat Sink / 4				X			EA1.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	4.0	1
E11	Loss of Emergency Coolant Recirculation / 4		X					EK2.1 - Components, and functions of control and safety systems, including instrumentation, signals, interlocks, failure modes, and automatic and manual features	3.9	1
E16	High Containment Radiation / 9	X						EK1.2 - Normal, abnormal and emergency operating procedures associated with High Containment Radiation	3.2	1

K/A Category Totals: 3 3 3 3 2 2 **Group Point Total:** 16

Facility: Salem

PWR SRO Examination Outline

Printed: 05/05/2003

ES - 401

Emergency and Abnormal Plant Evolutions - Tier 1 / Group 3

Form ES-401-3

E/APE #	E/APE Name / Safety Function	K1	K2	K3	A1	A2	G	KA Topic	Imp.	Points
028	Pressurizer (PZR) Level Control Malfunction / 2	X						AK1.01 - PZR reference leak abnormalities	3.1*	1
036	Fuel Handling Incidents / 8					X		AA2.03 - Magnitude of potential radioactive release	4.2*	1
056	Loss of Offsite Power / 6						X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1

K/A Category Totals: 1 0 0 0 1 1 **Group Point Total:** 3

PWR SRO Examination Outline

Printed: 05/05/2003

Facility: Salem

ES - 401 **Plant Systems - Tier 2 / Group 1** **Form ES-401-3**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
001	Control Rod Drive System / 1		X										K2.05 - M/G sets	3.5	1
003	Reactor Coolant Pump System (RCPS) / 4									X			A3.01 - Seal injection flow	3.2	1
004	Chemical and Volume Control System (CVCS) / 1									X			A3.10 - PZR level and pressure	3.9	1
004	Chemical and Volume Control System (CVCS) / 1										X		A4.15 - Boron concentration	3.7	1
013	Engineered Safety Features Actuation System (ESFAS) / 2							X					A1.08 - Containment sump level	3.8	1
014	Rod Position Indication System (RPIS) / 1					X							K5.02 - RPIS independent of demand position	3.3	1
015	Nuclear Instrumentation System / 7											X	2.4.6 - Knowledge symptom based EOP mitigation strategies.	4.0	1
015	Nuclear Instrumentation System / 7						X						K6.04 - Bistables and logic circuits	3.2	1
026	Containment Spray System (CSS) / 5			X									K3.01 - CCS	4.1	1
056	Condensate System / 4								X				A2.04 - Loss of condensate pumps	2.8*	1

PWR SRO Examination Outline

Printed: 05/05/2003

Facility: Salem

ES - 401 **Plant Systems - Tier 2 / Group 1** **Form ES-401-3**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
059	Main Feedwater (MFW) System / 4											X	2.4.4 - Ability to recognize abnormal indications for system operating parameters which are entry-level conditions for emergency and abnormal operating procedures.	4.3	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4		X										K2.02 - AFW electric driven pumps	3.7	1
061	Auxiliary / Emergency Feedwater (AFW) System / 4					X							K5.02 - Decay heat sources and magnitude	3.6	1
063	D.C. Electrical Distribution System / 6				X								K4.01 - Manual/automatic transfers of control	3.0*	1
068	Liquid Radwaste System (LRS) / 9	X											K1.07 - Sources of liquid wastes for LRS	2.9	1
068	Liquid Radwaste System (LRS) / 9								X				A2.02 - Lack of tank recirculation prior to release	2.8*	1
071	Waste Gas Disposal System (WGDS) / 9				X								K4.05 - Point of release	3.0	1
071	Waste Gas Disposal System (WGDS) / 9							X					A1.06 - Ventilation system	2.8	1
072	Area Radiation Monitoring (ARM) System / 7			X									K3.02 - Fuel handling operations	3.5	1

K/A Category Totals: 1 2 2 2 2 1 2 2 2 1 2 **Group Point Total:** 19

PWR SRO Examination Outline

Printed: 05/05/2003

Facility: Salem

ES - 401 — **Plant Systems - Tier 2 / Group 2** — **Form ES-401-3**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
002	Reactor Coolant System (RCS) / 2			X									K3.03 - Containment	4.6	1
002	Reactor Coolant System (RCS) / 2					X							K5.13 - Causes of circulation	3.9	1
006	Emergency Core Cooling System (ECCS) / 2					X							K5.02 - Relationship between accumulator volume and pressure	2.9	1
010	Pressurizer Pressure Control System (PZR PCS) / 3											X	2.2.25 - Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
011	Pressurizer Level Control System (PZR LCS) / 2						X						K6.03 - Relationship between PZR level and PZR heater control circuit	3.3	1
011	Pressurizer Level Control System (PZR LCS) / 2								X				A2.08 - Loss of level compensation	2.8	1
012	Reactor Protection System / 7		X										K2.01 - RPS channels, components, and interconnections	3.7	1
016	Non-Nuclear Instrumentation System (NNIS) / 7	X											K1.07 - ECCS	3.7*	1
028	Hydrogen Recombiner and Purge Control System (HRPS) / 5										X		A4.03 - Location and operation of hydrogen sampling and analysis of containment atmosphere, including alarms and indications	3.3	1
029	Containment Purge System (CPS) / 8										X		A4.04 - Containment evacuation signal	3.6	1

PWR SRO Examination Outline

Printed: 05/05/2003

Facility: Salem

ES - 401 **Plant Systems - Tier 2 / Group 2** **Form ES-401-3**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
033	Spent Fuel Pool Cooling System (SFPCS) / 8							X					A1.01 - Spent fuel pool water level	3.3	1
034	Fuel Handling Equipment System (FHES) / 8								X				A2.01 - Dropped fuel element	4.4	1
035	Steam Generator System (S/GS) / 4			X									K3.02 - ECCS	4.3	1
064	Emergency Diesel Generator (ED/G) System / 6											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
064	Emergency Diesel Generator (ED/G) System / 6									X			A3.04 - Number of starts available with an air compressor	3.5	1
086	Fire Protection System (FPS) / 8						X						K6.04 - Fire, smoke, and heat detectors	2.9	1
103	Containment System / 5				X								K4.04 - Personnel access hatch and emergency access hatch	3.2	1

K/A Category Totals: 1 1 2 1 2 2 1 2 1 2 2 **Group Point Total:** 17

PWR SRO Examination Outline Printed: 05/05/2003

Facility: Salem

ES - 401 **Plant Systems - Tier 2 / Group 3** **Form ES-401-3**

Sys/Ev #	System / Evolution Name	K1	K2	K3	K4	K5	K6	A1	A2	A3	A4	G	KA Topic	Imp.	Points
005	Residual Heat Removal System (RHRS) / 4			X									K3.06 - CSS	3.2*	1
008	Component Cooling Water System (CCWS) / 8											X	2.2.22 - Knowledge of limiting conditions for operations and safety limits.	4.1	1
041	Steam Dump System (SDS) and Turbine Bypass Control / 4					X							K5.07 - Reactivity feedback effects	3.6	1
045	Main Turbine Generator (MT/G) System / 4								X				A2.17 - Malfunction of electrohydraulic control	2.9*	1
K/A Category Totals:		**0**	**0**	**1**	**0**	**1**	**0**	**0**	**1**	**0**	**0**	**1**		**Group Point Total:**	**4**

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 05/05/2003

PWR SRO Examination Outline

Form ES-401-5

Facility: Salem

Generic Category	KA	KA Topic	Imp.	Points
Conduct of Operations	2.1.10	Knowledge of conditions and limitations in the facility license.	3.9	1
	2.1.18	Ability to make accurate, clear and concise logs, records, status boards, and reports.	3.0	1
	2.1.19	Ability to use plant computer to obtain and evaluate parametric information on system or component status.	3.0	1
	2.1.20	Ability to execute procedure steps.	4.2	1
			Category Total:	**4**
Equipment Control	2.2.1	Ability to perform pre-startup procedures for the facility, including operating those controls associated with plant equipment that could affect reactivity.	3.6	1
	2.2.6	Knowledge of the process for making changes in procedures as described in the safety analysis report.	3.3	1
	2.2.21	Knowledge of pre- and post-maintenance operability requirements.	3.5	1
	2.2.25	Knowledge of bases in technical specifications for limiting conditions for operations and safety limits.	3.7	1
			Category Total:	**4**
Radiation Control	2.3.1	Knowledge of 10 CFR: 20 and related facility radiation control requirements.	3.0	1
	2.3.2	Knowledge of facility ALARA program.	2.9	1
	2.3.3	Knowledge of SRO responsibilities for auxiliary systems that are outside the control room (e.g., waste disposal and handling systems).	2.9	1
	2.3.8	Knowledge of the process for performing a planned gaseous radioactive release.	3.2	1
			Category Total:	**4**

Generic Knowledge and Abilities Outline (Tier 3)

Printed: 05/05/2003

PWR SRO Examination Outline

Form ES-401-5

Facility: Salem

Generic Category	KA	KA Topic	Imp.	Points
Emergency Procedures/Plan	2.4.8	Knowledge of how the event-based emergency/abnormal operating procedures are used in conjunction with the symptom-based EOPs.	3.7	1
	2.4.12	Knowledge of general operating crew responsibilities during emergency operations.	3.9	1
	2.4.25	Knowledge of fire protection procedures.	3.4	1
	2.4.27	Knowledge of fire in the plant procedure.	3.5	1
	2.4.28	Knowledge of procedures relating to emergency response to sabotage.	3.3	1

Category Total: 5

Generic Total: 17

PWR SRO Examination Outline

Printed: 05/05/2003

Facility: Salem

ES - 401 **Emergency and Abnormal Plant Evolutions - Tier 1 / Group 1** **Form ES-401-3**

E/APE #	E/APE Name / Safety Function	KA	KA Topic	Comment
051	Loss of Condenser Vacuum / 4	AK1.01	Relationship of condenser vacuum to circulating water, flow rate, and temperature	This is a 2.4 K/A, but is a Plant Specific Priority due to the numerous past occurences of challenges to plant operation from circulator operation/non-operation, the effects on condensor vacuum and the operation of the steam dumps.

ATTACHMENT 2
(Page 1 of 1)

BORATED WATER SOURCES DATA MODES 1-4

Parameter	Data	Acceptance Criteria	Test Results		Date
			SAT	UNSAT	
RWST Level 2LT960 ___ 2LT961 ___ 2LT962 ___ 2LT963 ___	_____ft	364,500 to 400,000 gals (≥40.5 ft ≤41.9 ft) (Note 2)			
RWST Temp	_____°F T0650A	≥35°F			
RWST Conc	_____ppm	≥2,300 and ≤2,500 ppm			
21 BAST Vol AND/OR 22 BAST Vol	_____% (2LI106) _____% (2LI102)	IAW Tech Spec 3.1.2.6.a and 3.1.2.6.b Figure 3.1-2 (Note 1)			
21 BAST Temp AND/OR 22 BAST Temp	_____°F (2TI107) _____°F (2TI103)	≥63°F			
21 BAST Conc AND/OR 22 BAST Conc	_____ppm (21 BAST) _____ppm (22 BAST)	Tech Spec 3.1.2.6.a and 3.1.2.6.b Figure 3.1-2 (Note 1)			

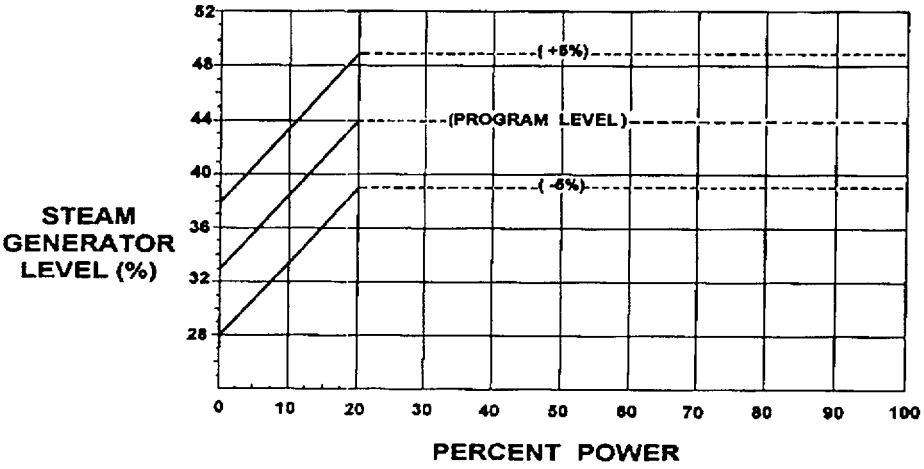
(1) If one BAST is the borated water source, then level and concentration requirements must be maintained in acceptable operation region of figure 3.1-2.
If two BASTs are the borated water source, then combine volumes are used to satisfy Tech Spec 3.1.2.6.a.

(2) Refer to S2.OP-TM.ZZ-0002(Q), Tank Capacity Data.

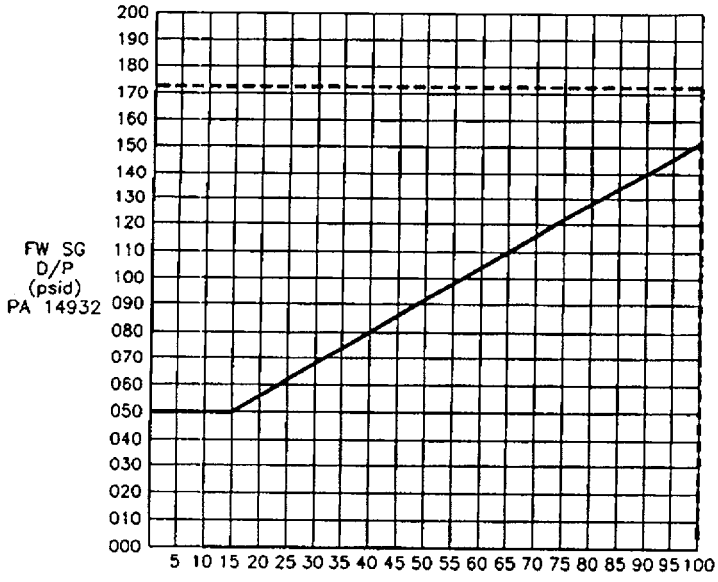
ATTACHMENT 2
(Page 1 of 3)

PROGRAMS

1.0 STEAM GENERATOR LEVEL PROGRAM:



2.0 STEAM GENERATOR FEEDWATER - ΔP VS %STEAM FLOW:

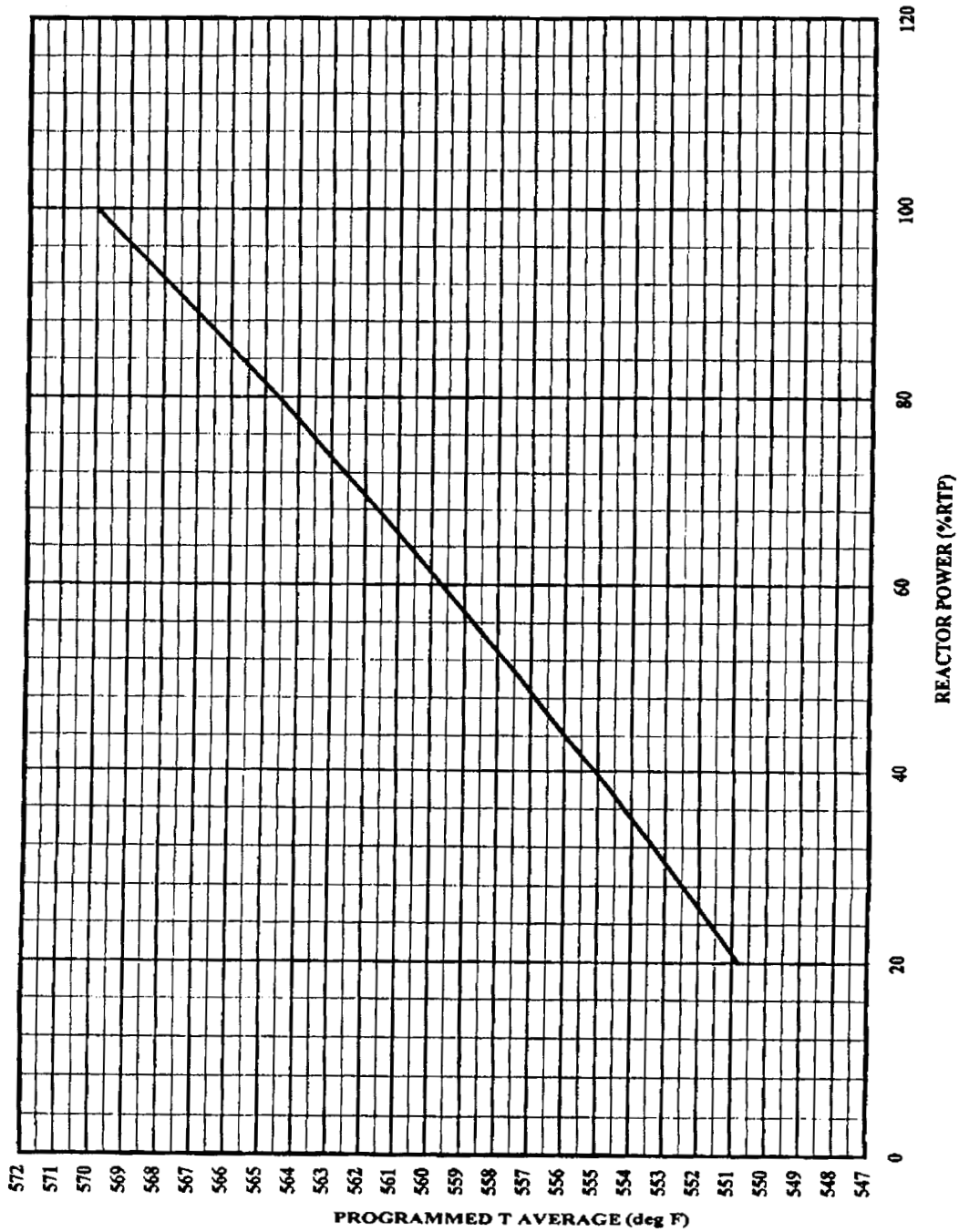


(Use any Channel I or II % Steam Flow Indicator for any Steam Generator)

ATTACHMENT 2
(Page 2 of 3)

PROGRAMS

3.0 **T_{AVG} PROGRAM VS % REACTOR POWER:**



ATTACHMENT 2
(Page 3 of 3)

PROGRAMS

4.0 MAXIMUM RX POWER LEVEL WITH EQUIPMENT OUT OF SERVICE

Equipment in Service		Maximum Reactor % Power	Reduction Rate
Cond Pumps	Htr Drn Pmps		
3	2	100	≤5%/minute on loss of CN or HTR DRN PMP(s)
3	1	90	
3	0	85	
2	3	85	
2	2	80	
2	1	75	
2	0	65	
1	0	30	

REACTIVITY CONTROL SYSTEMS

BORATED WATER SOURCES - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.2.6 As a minimum, the following borated water source(s) shall be OPERABLE as required by Specifications 3.1.2.1 and 3.1.2.2:

a. A boric acid storage system with:
   1. A contained volume of borated water in accordance with figure 3.1-2,
   2. A Boron concentration in accordance with Figure 3.1-2, and
   3. A minimum solution temperature of 63°F.

b. The refueling water storage tank with:
   1. A contained volume of between 364,500 and 400,000 gallons of water,
   2. A boron concentration of between 2,300 and 2,500 ppm, and
   3. A minimum solution temperature of 35°F.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With the boric acid storage system inoperable and being used as one of the above required borated water sources, restore the storage system to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and borated to a SHUTDOWN MARGIN equivalent to at least 1% delta k/k at 200°F; restore the boric acid storage system to OPERABLE status within the next 7 days or be in COLD SHUTDOWN within the next 30 hours.

b. With the refueling water storage tank inoperable, restore the tank to OPERABLE status within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.1.2.6 Each borated water source shall be demonstrated OPERABLE:

a. For the boric acid storage system, when it is the source of borated water at least once per 7 days by:
   1. Verifying the boron concentration in each water source.
   2. Verifying the water level of each water source, and
   3. Verifying the boric acid storage system solution temperature.

b. For the refueling water storage tank by:
   1. Verifying the boron concentration at least once per 7 days,
   2. Verifying the borated water volume at least once per 7 days, and
   3. Verifying the solution temperature at least once per 24 hour when the outside air temperature is less than 35°F.

BORIC ACID TANK CONTENTS

BASED ON RWST CONCENTRATION

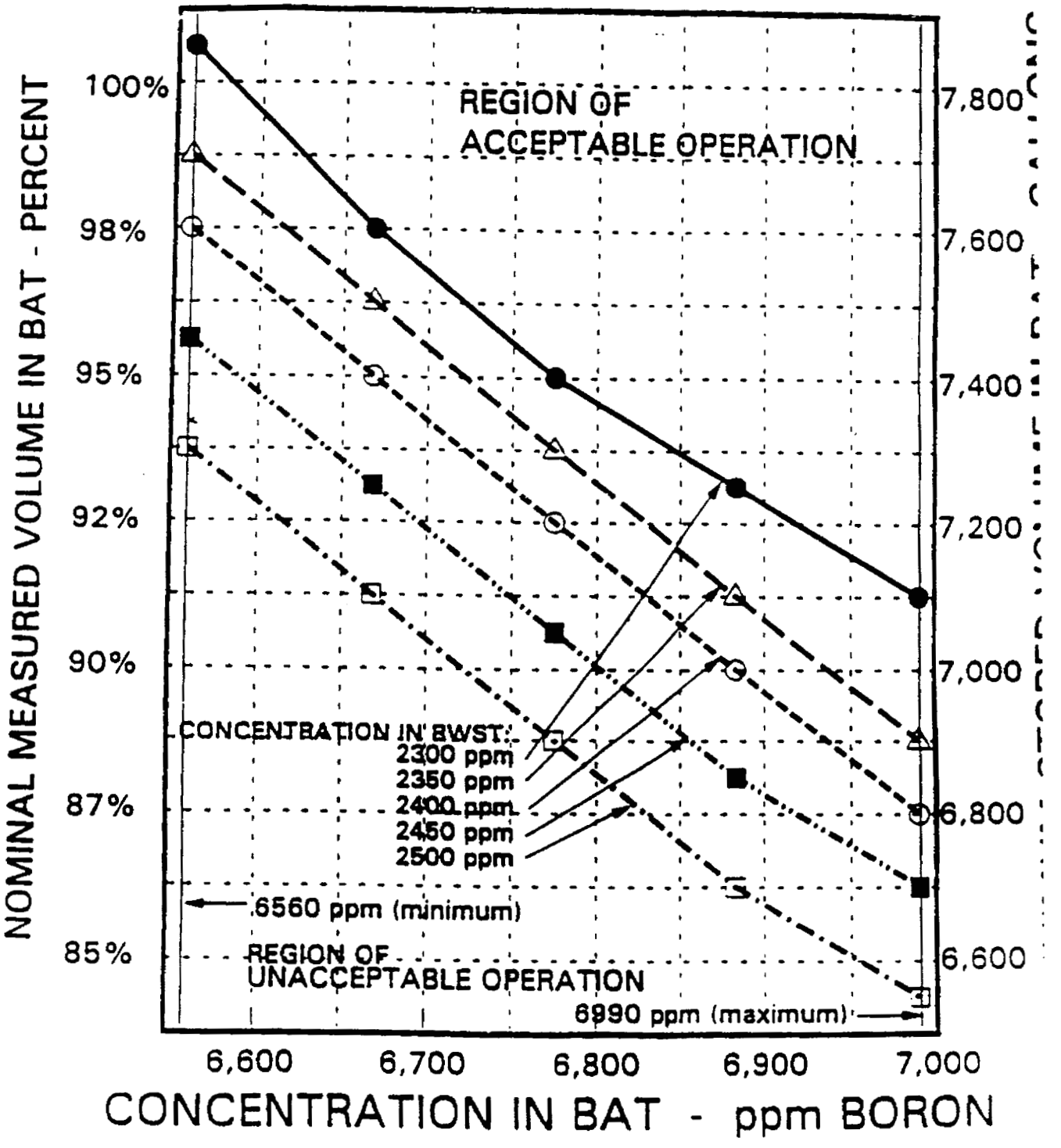


Figure 3.1-2

REACTIVITY CONTROL SYSTEMS
3/4.1.3 MOVABLE CONTROL ASSEMBLIES
GROUP HEIGHT

LIMITING CONDITION FOR OPERATION

3.1.3.1 All full length (shutdown and control) rods, shall be OPERABLE and positioned within ± 18 steps (indicated position) when reactor power is ≤ 85% RATED THERMAL POWER, or ± 12 steps (indicated position) when reactor power is > 85% RATED THERMAL POWER, of their group step counter demand position within one hour after rod motion.

APPLICABILITY: MODES 1* and 2*

ACTION:

a. With one or more full length rods inoperable due to being immovable as a result of excessive friction or mechanical interference or known to be untrippable, determine that the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied within 1 hour and be in HOT STANDBY within 6 hours.

b. With more than one full length rod inoperable or mis-aligned from the group step counter demand position by more than ± 18 steps (indicated position) at ≤ 85% RATED THERMAL POWER or ± 12 steps (indicated position) at > 85% RATED THERMAL POWER, be in HOT STANDBY within 6 hours.

c. With one full length rod inoperable due to causes other than addressed by ACTION a, above, or mis-aligned from its group step counter demand position by more than ± 18 steps (indicated position) at ≤ 85% RATED THERMAL POWER or ± 12 steps (indicated position) at > 85% RATED THERMAL POWER, POWER OPERATION may continue provided that within one hour either:

1. The rod is restored to OPERABLE status within the above alignment requirements, or

2. The remainder of the rods in the bank with the inoperable rod are aligned to within ± 18 steps (indicated position) at ≤ 85% RATED THERMAL POWER or ± 12 steps (indicated position) at >85% RATED THERMAL POWER, of the inoperable rod while maintaining the rod sequence and insertion limits in the COLR per Specification 3.1.3.5. The THERMAL POWER level shall be restricted pursuant to Specification 3.1.3.5 during subsequent operation, or

3. The rod is declared inoperable and the SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is satisfied. POWER OPERATION may then continue provided that:

*See Special Test Exceptions 3.10.2 and 3.10.3.

a) A reevaluation of each accident analysis of Table 3.1-1 is performed within 5 days; this reevaluation shall confirm that the previously analyzed results of these accidents remain valid for the duration of operation under these conditions.

b) The SHUTDOWN MARGIN requirement of Specification 3.1.1.1 is determined at least once per 12 hours.

c) A core power distribution measurement is obtained and $F_Q(Z)$ and $F^N_{\Delta H}$ are verified to be within their limits within 72 hours.

d) The THERMAL POWER level is reduced to less than or equal to 75% of RATED THERMAL POWER within one hour and within the next 4 hours the high neutron flux trip setpoint is reduced to less than or equal to 85% of RATED THERMAL POWER. THERMAL POWER shall be maintained less than or equal to 75% of RATED THERMAL POWER until compliance with ACTIONS 3.1.3.1.c.3.a and 3.1.3.1.c.3.c above are demonstrated.

SURVEILLANCE REQUIREMENTS

4.1.3.1.1 The position of each full length rod shall be determined to be within the limits established in the limiting condition for operation at least once per 12 hours (allowing for one hour thermal soak after rod motion) except during time intervals when the Rod Position Deviation Monitor is inoperable, then verify the group positions at least once per 4 hours.

4.1.3.1.2 Each full length rod not fully inserted in the core shall be determined to be OPERABLE by movement of at least 10 steps in any one direction at least once per 31 days.

TABLE 3.1-1

ACCIDENT ANALYSES REQUIRING REEVALUATION IN THE EVENT OF AN INOPERABLE FULL LENGTH ROD

Rod Cluster Control Assembly Insertion Characteristics

Rod Cluster Control Assembly Mis-alignment

Loss Of Reactor Coolant From Ruptured Pipes Or From Cracks In Large Pipes Which Actuates The Emergency Core Cooling System

Single Rod Cluster Control Assembly Withdrawal At Full Power

Major Reactor Coolant System Pipe Ruptures (Loss Of Coolant Accident)

Major Secondary System Pipe Rupture

Rupture of a Control Rod Drive Mechanism Housing (Rod Cluster Control Assembly Ejection)

POSITION INDICATION SYSTEMS - OPERATING

LIMITING CONDITION FOR OPERATION

3.1.3.2.1 The shutdown and control rod position indication systems shall be OPERABLE and capable of determining the actual and demanded rod positions as follows:

a. Analog rod position indicators, within one hour after rod motion (allowance for thermal soak);

All Shutdown Banks: ± 18 steps at ≤85% reactor power or if reactor power is > 85% RATED THERMAL POWER ± 12 steps of the group demand counters for withdrawal ranges of 0-30 steps and 200-228 steps.

Control Bank A: ± 18 steps at ≤85% reactor power or if reactor power is > 85% RATED THERMAL POWER ± 12 steps of the group demand counters for withdrawal ranges of 0-30 steps and 200-228 steps.

Control Bank B: ± 18 steps at ≤85% reactor power or if reactor power is > 85% RATED THERMAL POWER ± 12 steps of the group demand counters for withdrawal ranges of 0-30 steps and 160-228 steps.

Control Banks C and D: ± 18 steps at ≤85% reactor power or if reactor power is > 85% RATED THERMAL POWER ± 12 steps of the group demand counters for withdrawal range of 0-228 steps.

b. Group demand counters; ± 2 steps of the pulsed output of the Slave Cycler Circuit over the withdrawal range of 0-228 steps.

APPLICABILITY: MODES 1 and 2.

ACTION:

a. With a maximum of one analog rod position indicator per bank inoperable either:

1. Determine the position of the non-indicating rod(s) indirectly using the power distribution monitoring system (if power is above 25% RTP) or using the movable incore detectors (if power is less than 25% RTP or the power distribution monitoring system is inoperable) at least once per 8 hours and within one hour after any motion of the non-indicating rod which exceeds 24 steps in one direction since the last determination of the rod's position, or

2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

b. With two or more analog rod position indicators per bank inoperable, within one hour restore the inoperable rod position indicator(s) to OPERABLE status or be in HOT STANDBY within the next 6 hours. A maximum of one rod position indicator per bank may remain inoperable following the hour, with Action (a) above being applicable from the original entry time into the LCO.

c. With a maximum of one group demand position indicator per bank inoperable either:

1. Verify that all analog rod position indicators for the affected bank are OPERABLE and that the most withdrawn rod and the least withdrawn rod of the bank are within a maximum of 18 steps when reactor power is ≤ 85% RATED THERMAL POWER or if reactor power is > 85% RATED THERMAL POWER, 12 steps of each other at least once per 8 hours, or

2. Reduce THERMAL POWER to less than 50% of RATED THERMAL POWER within 8 hours.

SURVEILLANCE REQUIREMENTS

==========

4.1.3.2.1.1 Each analog rod position indicator shall be determined to be OPERABLE by verifying that the demand position indication system and the rod position indication system agree within 18 steps when reactor power is ≤ 85% RATED THERMAL POWER or if reactor power is > 85% RATED THERMAL POWER, 12 steps (allowing for one hour thermal soak after rod motion) at least once per 12 hours except during time intervals when the Rod Position Deviation Monitor is inoperable, then compare the demand position indication system and the rod position indication system at least once per 4 hours.

4.1.3.2.1.2 Each of the above required rod position indicator(s) shall be determined to be OPERABLE by performance of a CHANNEL calibration at least once per 18 months.

3/4.6 CONTAINMENT SYSTEMS

3/4.6.1 PRIMARY CONTAINMENT

CONTAINMENT INTEGRITY

LIMITING CONDITION FOR OPERATION

3.6.1.1 Primary CONTAINMENT INTEGRITY shall be maintained.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

Without primary CONTAINMENT INTEGRITY, restore CONTAINMENT INTEGRITY within one hour or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.1 Primary CONTAINMENT INTEGRITY shall be demonstrated:

a1. At least once per 31 days by verifying that each containment manual valve or blind flange that is located outside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls. Valves and blind flanges in high radiation areas may be verified by use of administrative controls.

a2. Prior to entering Mode 4 from Mode 5 if not performed within the last 92 days by verifying that each containment manual valve or blind flange that is located inside containment and required to be closed during accident conditions is closed, except for containment isolation valves that are open under administrative controls. Valves and blind flanges in high radiation areas may be verified by use of administrative controls.

b. By verifying that each containment air lock is OPERABLE per Specification 3.6.1.3.

c. After each closing of a penetration subject to Type B testing, except containment air locks, if opened following a Type A or B test, by leak rate testing in accordance with the Containment Leakage Rate Testing Program.

d. At least once per 12 hours by verifying that the surveillance requirements of 4.6.2.3.a are met for penetrations associated with the containment fan coil units.

e. At least once per 18 months by verifying that the surveillance requirements of 4.6.2.3.d are met for penetrations associated with the containment fan coil units.

CONTAINMENT SYSTEMS

CONTAINMENT AIR LOCKS

LIMITING CONDITION FOR OPERATION

3.6.1.3 Each containment air lock shall be OPERABLE with:

a. Both doors closed except when the air lock is being used for normal transit entry and exit through the containment, then at least one air lock door shall be closed, and:

b. An overall air lock leakage rate in accordance with the Containment Leakage Rate Testing Program.

APPLICABILITY: MODES 1, 2, 3, and 4

ACTION:

Notes

(1) Entry and exit is permissible to perform repairs on the affected air lock components.

(2) Separate condition entry is allowed for each air lock.

(3) Required ACTIONS a.1, a.2, and a.3 are not applicable if both doors in the same air lock are inoperable and condition c. is entered.

(4) Required ACTIONS b.1, b.2, and b.3 are not applicable if both doors in the same air lock are inoperable and condition c. is entered.

(5) Enter applicable Conditions and required Actions of LCO 3.6.1, "Primary Containment," when air lock leakage results in exceeding the overall containment leakage rate.

a. One or more containment air locks with one containment airlock door inoperable:

1. Verify the OPERABLE door is closed in the affected air lock within 1 hour, and:

2. Lock the OPERABLE door closed in the affected air lock within 24 hours, and:

3. Verify the OPERABLE door is locked closed in the affected air lock once per 31 days. Entry and exit is permissible for 7 days (from initial LCO entry) under administrative controls if one door is inoperable in each air lock. Air lock doors in high radiation areas may be verified locked closed by administrative means.

b. One or more containment air locks with only the containment air lock interlock mechanism inoperable.

1. Verify an OPERABLE door is closed in the affected air lock within 1 hour, and:

2. Lock an OPERABLE door closed in the affected air lock within 24 hours, and:

3. Verify an OPERABLE door is locked closed in the affected air lock once per 31 days. Entry and exit of containment is permissible under the control of a dedicated individual for the duration of the entry to ensure only one door is open at a time. Air lock doors in high radiation areas may be verified locked closed by administrative means.

LIMITING CONDITION FOR OPERATIONS (Continued)

c. One or more containment air locks inoperable for reasons other than condition a. or b.

   1. Immediately initiate action to evaluate overall containment leakage per LCO 3.6.1, and:

   2. Verify that at least one door is closed in the affected air lock within 1 hour, and:

   3. Restore the air lock to OPERABLE status within 24 hours.

d. If the ACTIONS and associated completion times of a., b., or c. cannot be met, be in Hot Standby within 6 hours and in Cold Shutdown within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.6.1.3 Each containment air lock shall be demonstrated OPERABLE:

a. By verifying seal leakage rate in accordance with the Containment Leakage Rate Testing program.

b. By conducting an overall air lock leakage test in accordance with the Containment Leakage Rate Testing Program.

c. At least once per 6 months by verifying that only one door in each air lock can be opened at a time.

3/4.8 ELECTRICAL POWER SYSTEMS

3/4.8.1 A.C. SOURCES

OPERATING

LIMITING CONDITION FOR OPERATION

3.8.1.1 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. Two physically independent A.C. circuits between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and

b. Three separate and independent diesel generators with:

1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and

2. A common fuel storage system consisting of two storage tanks, each containing a minimum volume of 23,000 gallons of fuel, and two fuel transfer pumps.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With an independent A.C. circuit of the above required A.C. electrical power sources inoperable:

1. Demonstrate the OPERABILITY of the remaining independent A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; and

2. Within 24 hours, declare required systems or components with no offsite power available inoperable when a redundant required system or component is inoperable, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and

3. Restore the inoperable independent A.C. circuit to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one diesel generator of the above required A.C. electrical power sources inoperable:

1. Demonstrate the OPERABILITY of the independent A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within 1 hour and at least once per 8 hours thereafter; and

2. Within 4 hours, declare required systems or components supported by the inoperable diesel generator inoperable when a required redundant system or component is inoperable, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and

ACTION (Continued)

3. Determine the two remaining OPERABLE diesel generators are not inoperable due to common cause failure or perform Surveillance Requirement 4.8.1.1.2.a.2 within 24 hours. If the diesel generator is inoperable for preventive maintenance, the two remaining OPERABLE diesel generators need not be tested nor the OPERABILITY evaluated; and

4. In any case, restore the inoperable diesel generator to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With one independent A.C. circuit and one diesel generator of the above required A.C. electrical power sources inoperable, demonstrate the OPERABILITY of the remaining independent A.C. circuit by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; demonstrate the OPERABILITY of the remaining OPERABLE diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 8 hours; restore at least one of the inoperable sources to OPERABLE status within 12 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore at least two independent A.C. circuits and three diesel generators to OPERABLE status within 72 hours from the time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

d. With two of the above required independent A.C. circuits inoperable:

1. Demonstrate the OPERABILITY of three diesel generators by performing Surveillance Requirement 4.8.1.1.2.a.2 within 8 hours, unless the diesel generators are already operating; and

2. Within 12 hours, declare required systems or components supported by the inoperable offsite circuits inoperable when a required redundant system or component is inoperable, or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; and

3. Restore at least one of the inoperable independent A.C. circuits to OPERABLE status within 24 hours or be in at least HOT STANDBY within the next 6 hours; and

4. With only one of the independent A.C. circuits OPERABLE, restore the other independent A.C. circuit to OPERABLE status within 72 hours from time of initial loss or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

ACTION (Continued)

e. With two or more of the above required diesel generators inoperable, demonstrate the OPERABILITY of two independent A.C. circuits by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least two of the inoperable diesel generators to OPERABLE status within 2 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours. Restore three diesel generators to OPERABLE status within 72 hours from time of initial loss or be in least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

f. With one of the above required fuel transfer pumps inoperable, either restore it to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

g. With one of the above required fuel storage tanks inoperable, either restore it to OPERABLE status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

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SURVEILLANCE REQUIREMENTS

4.8.1.1.1 Two physically independent A.C. circuits between the offsite transmission network and the onsite Class 1E distribution system (vital bus system) shall be:

a. Determined OPERABLE at least once per 7 days by verifying correct breaker alignments, power availability, and

b. Demonstrated OPERABLE at least once per 18 months during shutdown by transferring (manually and automatically) vital bus supply from one 13/4 kv transformer to the other 13/4 kv transformer.

4.8.1.1.2 Each diesel generator shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by:

1. Verifying the fuel level in its day tank.

2. Verifying the diesel generator starts from standby conditions* and achieves $\geq$ 3910 volts and $\geq$ 58.8 Hz in $\leq$ 13 seconds, and subsequently achieves steady state voltage of $\geq$ 3910 and $\leq$ 4400 volts and frequency of 60 ± 1.2 Hz.

   Subsequently, verifying the generator is synchronized with voltage maintained $\geq$ 3910 and $\leq$ 4580 volts, gradually loaded to 2340-2600 kw**, and operates at a load of 2340-2600 kw for greater than or equal to 60 minutes.

3. Verifying the diesel generator is aligned to provide standby power to the associated vital bus.

b. At least once per 31 days and after each operation of the diesel where the period of operation was greater than or equal to 1 hour by checking for and removing accumulated water from the day tanks.

c. At least once per 6 months by verifying the diesel generator starts from standby conditions* and achieves $\geq$ 3910 volts and $\geq$ 58.8 Hz in $\leq$ 13 seconds, and subsequently achieves steady state voltage of $\geq$ 3910 and $\leq$ 4400 volts and frequency of 60 ± 1.2 Hz.

   The generator shall be synchronized to its emergency bus with voltage maintained $\geq$ 3910 and $\leq$ 4580 volts, loaded to 2340-2600** kw in less than or equal to 60 seconds, and operate at a load of 2340-2600 kw for at least 60 minutes.

   This test, if it is performed so it coincides with the testing required by Surveillance Requirement 4.8.1.1.2.a.2, may also serve to concurrently meet those requirements.

SURVEILLANCE REQUIREMENTS (Continued)

d. At least once per 18 months during shutdown by:

1. DELETED

2. Verifying that, on rejection of a load greater than or equal to 820 kw, the voltage and frequency are restored to ≥ 3910 and ≤ 4400 volts and 60 ± 1.2 Hz within 4 seconds, and subsequently achieves a steady state frequency of ≥ 58.8 and ≤ 60.5 Hz.

3. Simulating a loss of offsite power by itself, and:

   a) Verifying de-energization of the vital bus and load shedding from the vital bus.

   b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 seconds, energizes the auto-connected shutdown loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the shutdown loads. After energization of these loads, the steady state voltage and frequency of the vital bus shall be maintained at ≥ 3910 and ≤ 4400 volts and ≥ 58.8 and ≤ 60.5 Hz during this test.

4. Verifying that on an ESF actuation test signal without loss of offsite power the diesel generator starts on the auto-start signal and operates on standby for greater than or equal to 5 minutes*. The diesel generator shall achieve ≥ 3910 volts and ≥ 58.8 Hz in ≤ 13 seconds, and subsequently achieves steady state voltage of ≥ 3910 and ≤ 4400 volts and frequency of ≥ 58.8 and ≤ 60.5 Hz.

5. Deleted

6. Simulating a loss of offsite power in conjunction with an ESF actuation test signal, and

   a) Verifying de-energization of the vital bus and load shedding from the vital bus.

   b) Verifying the diesel starts on the auto-start signal*, energizes the vital bus with permanently connected loads within 13 seconds, energizes the auto-connected emergency (accident) loads through the load sequencer and operates for greater than or equal to 5 minutes while its generator is loaded with the emergency loads. After energization of these loads, the steady state voltage and frequency of the vital bus shall be maintained at ≥ 3910 and ≤ 4400 volts and ≥ 58.8 and ≤ 60.5 Hz during this test.

SURVEILLANCE REQUIREMENTS (Continued)

c) Verifying that all nonessential automatic diesel generator trips (i.e., other than engine overspeed, lube oil pressure low, 4 KV Bus differential and generator differential) are automatically bypassed upon loss of voltage on the vital bus concurrent with a safety injection actuation signal.

7. Deleted

8. Verifying that the auto-connected loads to each diesel generator do not exceed the two hour rating of 2860 kw.

9. Verifying that with the diesel generator operating in a test mode (connected to its bus), a simulated safety injection signal overrides the test mode by (1) returning the diesel generator to standby operation and (2) automatically energizing the emergency loads with offsite power.

e. At least once per 10 years or after any modifications which could affect diesel generator interdependence by starting all diesel generators simultaneously*, during shutdown, and verifying that all diesel generators accelerate to at least 58.8 Hz in less than or equal to 13 seconds.

f. At least once per 18 months, the following test shall be performed within 5 minutes of diesel shutdown after the diesel has operated for at least two hours at 2340-2600 kw**:

Verifying the diesel generator starts and achieves ≥ 3910 volts and ≥ 58.8 Hz in ≤ 13 seconds, and subsequently achieves steady state voltage of ≥ 3910 and ≤ 4400 volts and frequency of 60 ± 1.2 Hz.

g. At least once per 18 months verifying the diesel generator operates for at least 24 hours*. During the first 2 hours of this test, the diesel generators shall be loaded to 2760-2860 Kw**. During the remaining 22 hours of this test, the diesel generator shall be loaded to 2500-2600 Kw**. The steady state voltage and frequency shall be maintained at ≥ 3910 and ≤ 4580 volts and 60 ± 1.2 Hz during this test.

4.8.1.1.3 The diesel fuel oil storage and transfer system shall be demonstrated OPERABLE:

a. At least once per 31 days by:

1. Verifying the level in each of the above required fuel storage tanks.

2. Verifying that both fuel transfer pumps can be started and transfer fuel from the fuel storage tanks to the day tanks.

SURVEILLANCE REQUIREMENTS (Continued)

b. At least once per 92 days by verifying that a sample of diesel fuel from each of the above required fuel storage tanks is within the acceptable limits specified in Table 1 of ASTM D975-77 when checked for viscosity, water and sediment.

4.8.1.1.4 Reports - NOT USED

* Surveillance testing may be conducted in accordance with the manufacturer's recommendations regarding engine prelube, warm-up and loading (unless loading times are specified in the individual Surveillance Requirements).

** This band is meant as guidance to preclude routine exceedances of the diesel generator manufacturer's design ratings. Loads in excess of this band for special testing or momentary variations due to changing bus loads shall not invalidate the test.

SURVEILLANCE REQUIREMENTS (Continued)

TABLE 4.8-1

DIESEL GENERATOR TEST SCHEDULE

NOT USED

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ELECTRICAL POWER SYSTEMS

SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.1.2 As a minimum, the following A.C. electrical power sources shall be OPERABLE:

a. One circuit between the offsite transmission network and the onsite Class 1E distribution system (vital bus system), and

b. Two separate and independent diesel generators with:

1. Separate day tanks containing a minimum volume of 130 gallons of fuel, and

2. A common fuel storage system containing a minimum volume of 23,000 gallons of fuel, and

3. A fuel transfer pump.

APPLICABILITY: MODES 5 and 6.

ACTION:

With less than the above minimum required A.C. electrical power sources OPERABLE, suspend all operations involving CORE ALTERATIONS or positive reactivity changes until the minimum required A.C. electrical power sources are restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

----------NOTE----------
The following surveillances are not required to be performed to maintain operability during Modes 5 and 6. These surveillances are: 4.8.1.1.1.b, 4.8.1.1.2.d.2, 4.8.1.1.2.d.3, 4.8.1.1.2.d.4, 4.8.1.1.2.d.6, 4.8.1.1.2.d.9, 4.8.1.1.2.e, 4.8.1.1.2.f, and 4.8.1.1.2g.

4.8.1.2 The above required A.C. electrical power sources shall be demonstrated OPERABLE by the performance of each of the Surveillance Requirements of 4.8.1.1.1, 4.8.1.1.2, 4.8.1.1.3 (except for requirement 4.8.1.1.3.a.2) and 4.8.1.1.4.

ELECTRICAL POWER SYSTEMS

3/4.8.2 ONSITE POWER DISTRIBUTION SYSTEMS

A.C. DISTRIBUTION - OPERATING

LIMITING CONDITION FOR OPERATION

3.8.2.1 The following A. C. electrical busses shall be OPERABLE and energized from sources of power other than the diesel generators:

4 kvolt	Vital Bus # 2A	
4 kvolt	Vital Bus # 2B	
4 kvolt	Vital Bus # 2C	
460 volt	Vital Bus # 2A	and associated control centers
460 volt	Vital Bus # 2B	and associated control centers
460 volt	Vital Bus # 2C	and associated control centers
230 volt	Vital Bus # 2A	and associated control centers
230 volt	Vital Bus # 2B	and associated control centers
230 volt	Vital Bus # 2C	and associated control centers
115 volt	Vital Instrument Bus # 2A	and Inverter *
115 volt	Vital Instrument Bus # 2B	and Inverter *
115 volt	Vital Instrument Bus # 2C	and Inverter *
115 volt	Vital Instrument Bus # 2D	and Inverter *

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTION:

a. With less than the above complement of A.C. busses OPERABLE or energized, restore the inoperable busses to OPERABLE and energized status within 8 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With one inverter inoperable, energize the associated A.C. Vital Bus within 8 hours; restore the inoperable 2A, 2B, or 2C inverter to OPERABLE and energized status within 24 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours; restore the inoperable 2D inverter to OPERABLE and energized status within 72 hours or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.8.2.1 The specified A.C. busses and inverters shall be determined OPERABLE and energized from A.C. sources other than the diesel generators at least once per 7 days by verifying correct breaker alignment and indicated voltage on the busses.

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*An inverter may be disconnected from its D.C. source for up to 24 hours for the purpose of performing an equalizing charge on its associated battery bank provided (1) its vital bus is OPERABLE and energized, and (2) the vital busses associated with the other battery banks are OPERABLE and energized.

ELECTRICAL POWER SYSTEMS

A.C. DISTRIBUTION - SHUTDOWN

LIMITING CONDITION FOR OPERATION

3.8.2.2 As a minimum, two A.C. electrical bus trains shall be OPERABLE and energized from sources of power other than a diesel generator but aligned to an OPERABLE diesel generator with each train consisting of:

1 - 4 kvolt Vital Bus

1 - 460 volt Vital Bus and associated control centers

1 - 230 volt Vital Bus and associated control centers

1 - 115 volt Instrument Bus energized from its respective inverter connected to its respective D.C. Bus Train.

APPLICABILITY: MODES 5 and 6.
During movement of irradiated fuel assemblies.

ACTION:

With less than the above complement of A.C. busses and inverters OPERABLE and energized, suspend all operations involving CORE ALTERATIONS, positive reactivity changes, and movement of irradiated fuel assemblies until the minimum required A.C. electrical power sources are restored to OPERABLE status.

SURVEILLANCE REQUIREMENTS

4.8.2.2 The specified A.C. busses and inverters shall be determined OPERABLE and energized from A.C. sources other than the diesel generators at least once per 7 days by verifying correct breaker alignment and indicated voltage on the busses.

9.0 Hazards - Internal/External

9.1 Security Threats

Initiating Condition	Confirmed Security Event Which Indicates a Potential Degradation in the Level of Safety of the Plant	Security Event in a Plant Protected Area	Security Event in a Plant Vital Area	Security Event Resulting in Loss of Ability to Reach and Maintain Cold Shutdown
MODE	All	All	All	All
EAL #	9.1.1	9.1.2	9.1.3	9.1.4
EMERGENCY ACTION LEVELS	IF Confirmed security threat directed toward the station as evidenced by ANY one of the following: • Credible threat of malicious acts or destructive device within the Protected Area resulting in **SCP-5** implementation • Credible intrusion or assault threat to the Protected Area resulting in **SCP-5** implementation • Attempted intrusion or assault to the Protected Area resulting in **SCP-7** or **SCP-11** implementation • Malicious acts attempted or discovered within the Protected Area resulting in **SCP-10** implementation • Hostage/Extortion situation that threatens normal plant operations resulting in **SCP-8** implementation • Destructive Device discovered within the Protected Area resulting in **SCP-10** implementation **THEN**	IF Confirmed hostile intrusion or malicious acts as evidenced by ANY one of the following: • Discovery of an intruder(s), armed and violent, within the Protected Area resulting in **SCP-6** implementation • Hostage held on-site in a non-vital area resulting in **SCP-8** implementation • Malicious acts attempted or discovered within a Vital Area (which is in the Protected Area) resulting in **SCP-10** implementation that does not meet criteria of 9.1.3 **THEN**	IF Confirmed hostile intrusion or malicious acts in Plant Vital Areas that involve actual or likely major failures of plant functions needed for the protection of the public as evidenced by any one of the following: • Discovery of an intruder(s), armed and violent, within the Vital Area resulting in **SCP-6** implementation • Destructive device discovered in a Vital Area resulting in **SCP-10** implementation • Malicious act(s) attempted or discovered in a Vital Area resulting in **SCP-10** implementation AND the malicious act(s) is of a magnitude that it SPECIFICALLY results in **Damage** to ANY one of the following: • TWO OR MORE Trains of a **Safety System** • MORE THAN ONE **Safety System** • Any Plant Vital Structure which renders the structure incapable of performing its Design Function AND Damaged Safety System(s) or Plant Vital Structure is required for the present MODE of Operation **THEN**	IF Security event resulting in the **actual loss of physical control** of EITHER one of the following: • Control Room • Remote Shutdown Panel 213 **THEN**
Action Required	Refer to Attachment 24 **UNUSUAL EVENT (Common Site)**	Refer to Attachment 2 **ALERT**	Refer to Attachment 3 **SITE AREA EMERGENCY**	Refer to Attachment 4 **GENERAL EMERGENCY**

9.0 Hazards - Internal/External

9.2 Fire

Initiating Condition

MODE

EAL #

EMERGENCY ACTION LEVELS

Action Required

Fire Within the Protected Area Boundary Not Extinguished Within 15 Minutes of Detection

All

9.2.1

IF

Valid Fire Alarm is received in the Control Room

All

9.2.1

IF

Report of a fire from personnel at the scene

AND

Fire within ANY one of the following Plant Structures (EXCLUDING small fires that have NO potential to affect Safety Systems or Protected Area Permanent Plant Structures)

- Auxiliary Building
- Service Water Intake Structure
- Control Point Area
- Inner/Outer Penetration Areas
- Containment
- Fuel Handling Building
- Service Building
- RWST, PWST, and AFWST Area
- Turbine Building

AND

The Fire is NOT extinguished within 15 minutes of EITHER one of the following:

- Receipt of a **Valid Fire** Alarm
- Report of a fire from the scene

THEN

Refer to Attachment 1
UNUSUAL EVENT

Fire Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown

All

9.2.2

IF

Fire within ANY one of the following Plant Vital Structures:

- Auxiliary Building
- Service Water Intake Structure
- Control Point Area
- Inner/Outer Penetration Areas
- Containment
- Fuel Handling Building
- Service Building
- RWST, PWST, and AFWST Area

AND

The Fire is of a magnitude that it SPECIFICALLY results in Damage to ANY one of the following:

- TWO OR MORE Trains of a **Safety System**
- MORE THAN ONE **Safety System**
- Any Plant Vital Structure which renders the structure incapable of performing its Design Function

AND

Damaged Safety System(s) or Plant Vital Structure is required for the present MODE of operation

THEN

Refer to Attachment 2
ALERT

9.0 Hazards - Internal/External

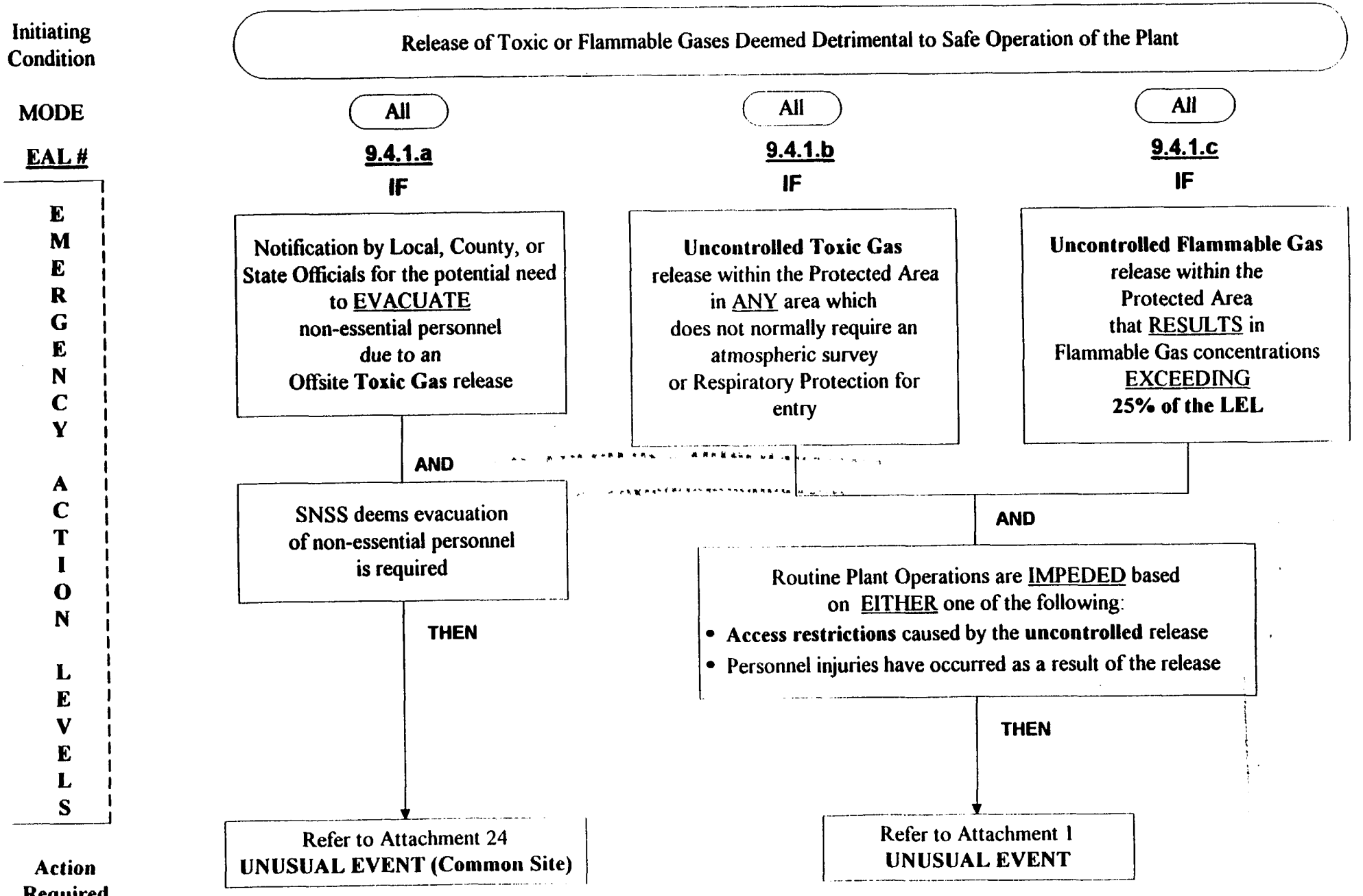
9.3 Explosion

EMERGENCY ACTION LEVELS

Initiating Condition	Natural and Destructive Phenomena Affecting the Protected Area	Explosion Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown
MODE	All	All
EAL #	9.3.1	9.3.2
	IF **Confirmed Explosion** within the Protected Area AND Report of visible damage to Plant equipment or to Protected Area Permanent Plant Structures THEN	IF **Confirmed** Explosion within ANY one of the following Plant Vital Structures: • Auxiliary Building • Service Water Intake Structure • Control Point Area • Inner/Outer Penetration Areas • Containment • Fuel Handling Building • Service Building • RWST, PWST, and AFWST Area AND The Explosion is of a magnitude that it SPECIFICALLY results in **Damage** to ANY one of the following: • TWO OR MORE Trains of a Safety System • MORE THAN ONE Safety System • Any Plant Vital Structure which renders the structure incapable of performing its Design Function AND Damaged Safety System(s) or Plant Vital Structure is required for the present MODE of operation THEN
Action Required	Refer to Attachment 1 **UNUSUAL EVENT**	Refer to Attachment 2 **ALERT**

9.0 Hazards - Internal/External

9.4 Toxic/Flammable Gases



9.0 Hazards - Internal/External

9.4 Toxic/Flammable Gases

Initiating Condition

Release of Toxic or Flammable Gases Within a Facility Structure Which Jeopardizes Operation of Systems Required to Maintain Safe Operations or to Establish or Maintain Cold Shutdown Conditions

MODE

All

EAL #

9.4.2.a

IF

Uncontrolled Toxic Gas release within ANY one of the following Plant Vital Structures

- Auxilary Building
- Service Water Intake Structure
- Control Point Area
- Inner/Outer Penetration Area
- Containment
- Fuel Handling Building
- Service Building
- RWST, PWST, and AFWST Area

AND

Toxic Gas concentrations result in ANY one of the following:

- An IDLH atmosphere
- Plant personnel report severe adverse health reactions, including burning eyes, nose, throat, dizziness
- The Threshold Limit Value (TLV) being EXCEEDED

AND

Plant personnel are unable to perform actions necessary to complete a Safe Shutdown of the plant without appropriate personnel protection equipment

THEN

Action Required

Refer to Attachment 2
ALERT

MODE

All

EAL #

9.4.2.b

IF

Uncontrolled Flammable Gas release within ANY one of the following Plant Vital Structures:

- Auxilary Building
- Service Water Intake Structure
- Control Point Area
- Inner/Outer Penetration Area
- Containment
- Fuel Handling Building
- Service Building
- RWST, PWST, and AFWST Area

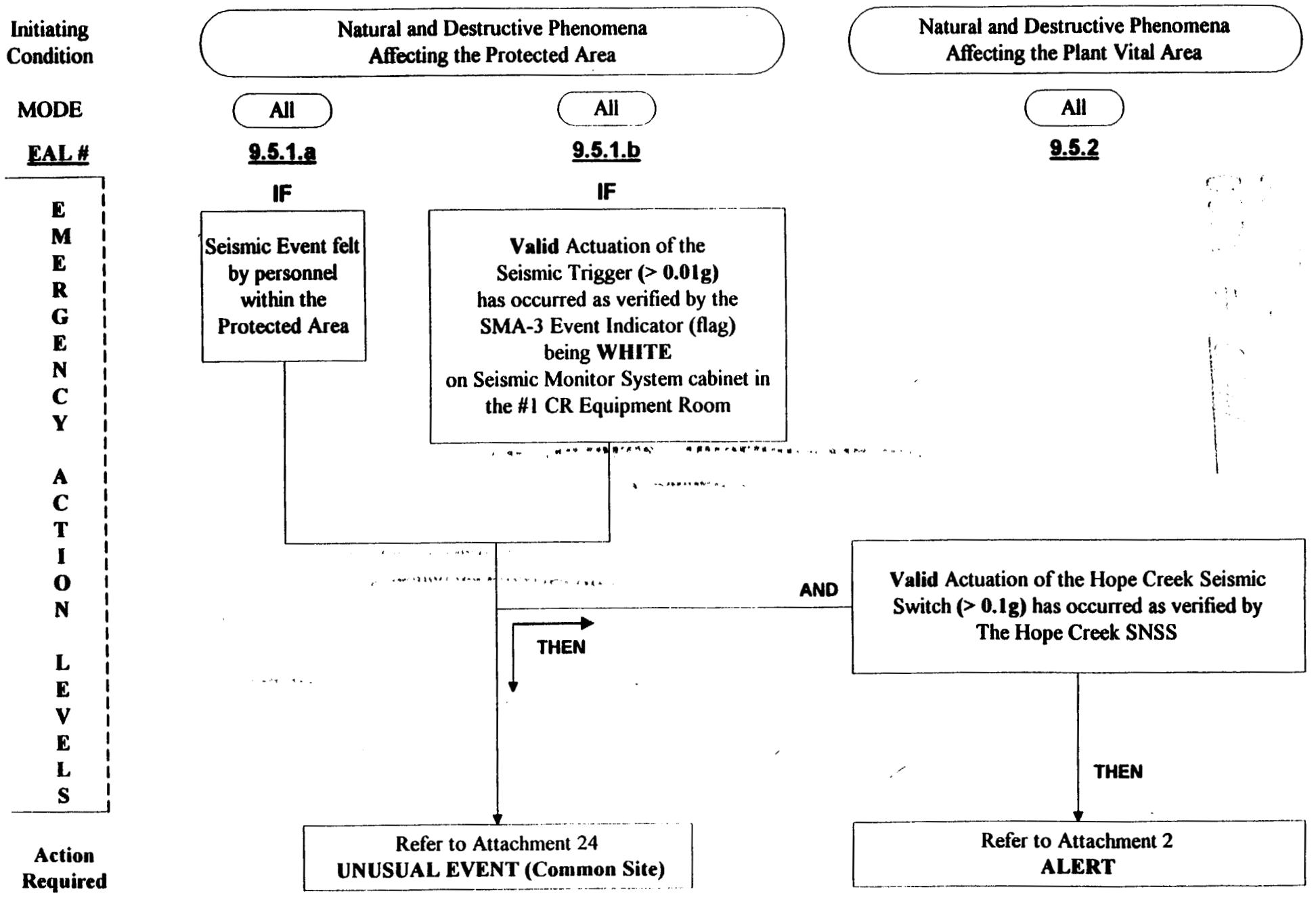
AND

Flammable Gas concentrations EXCEED **50% of the LEL**

EMERGENCY ACTION LEVELS

9.0 Hazards - Internal/External

9.5 Seismic Event



9.0 Hazards - Internal/External

9.6 High Winds

Initiating Condition	Natural and Destructive Phenomena Affecting the Protected Area		Natural and Destructive Phenomena Affecting the Plant Vital Area
MODE	All	All	All
EAL #	9.6.1.a IF	9.6.1.b IF	9.6.2
EMERGENCY ACTION LEVELS	Report of a Tornado TOUCHING DOWN within the Protected Area	**Sustained** wind speeds **> 75 MPH** for 15 minutes, from ANY elevation of the Met Tower	The Wind Speed is of a magnitude that it SPECIFICALLY results in **Damage** to ANY of the following: • TWO OR MORE Trains of a **Safety System** • MORE THAN ONE **Safety System** • Rendering ANY of the following structures incapable of performing its Design Function: * Auxiliary Building * Service Water Intake Structure * Control Point Area * Inner/Outer Penetration Areas * Containment * Fuel Handling Building * Service Building * RWST, PWST,and AFWST Area
	AND		AND
	THEN		Damaged Safety System(s) or Plant Vital Structure is required for the present MODE of operation
			THEN
Action Required	Refer to Attachment 24 **UNUSUAL EVENT (Common Site)**		Refer to Attachment 2 **ALERT**

9.0 Hazards - Internal/External

9.7 Flooding

Initiating Condition

MODE

EAL #

EMERGENCY ACTION LEVELS

Internal Flooding in Excess of Sump Handling Capability Affecting Safety Related Areas of the Plant	Internal Flooding Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown
All	All
9.7.1	**9.7.2**
IF	**IF**
Severe Flooding of Safety System Areas HAS ENDANGERED safety related equipment per OP-AB.ZZ-0002	Visual Observation of Flooding within ANY one of the following Plant Vital Structures: • Auxiliary Building • Service Water Intake Structure • Fuel Handling Building • Service Building • Containment
	AND
	The Flooding is of a magnitude that it SPECIFICALLY results in **Damage** to ANY one of the following: • TWO OR MORE Trains of a **Safety Syetem** • MORE THAN ONE **Safety System** • Any of the above listed Plant Vital Structures which renders the structure incapable of performing its Design Function
	AND
	Damaged Safety System(s) or Plant Vital Structure is required for the present MODE of operation
THEN	**THEN**
Refer to Attachment 1 **UNUSUAL EVENT**	Refer to Attachment 2 **ALERT**

Action Required

9.0 Hazards - Internal/External

9.8 Turbine Failure / Vehicle Crash / Missile Impact

Initiating Condition: Natural and Destructive Phenomena Affecting Certain Structures Within the Protected Area

MODE: All | All | All

EAL #: 9.8.1.a | 9.8.1.b | 9.8.2

EMERGENCY ACTION LEVELS

9.8.1.a
IF

Catastrophic damage to the Main Turbine as evidenced by EITHER one of the following:
- Main Turbine casing penetration
- Main Turbine/Generator Damage potentially releasing Lube Oil or Hydrogen Gas to the Turbine Building

9.8.1.b
IF

Vehicle Crash / Missile Impact with or within ANY one of the following Plant Vital Structures:
- Auxiliary Building
- Service Water Intake Structure
- Inner/Outer Penetration Areas
- Containment
- Fuel Handling Building
- Service Building
- RWST, PWST, and AFWST Area

AND

9.8.2

The **Vehicle Crash / Missile Impact** is of a magnitude that it SPECIFICALLY results in **Damage** to ANY one of the following:
- TWO OR MORE Trains of a **Safety System**
- MORE THAN ONE **Safety System**
- Any of the above Plant Vital Structures which renders the structure incapable of performing its Design Function

THEN

AND

Damaged Safety System(s) or Plant Vital Structure is required for the present MODE of operation

THEN

Action Required

Refer to Attachment 1
UNUSUAL EVENT

Refer to Attachment 2
ALERT

9.0 Hazards - Internal/External

9.9 River Level

Initiating Condition

MODE
EAL #

EMERGENCY ACTION LEVELS

Natural and Destructive Phenomena Affecting the Protected Area

All	All
9.9.1.a	**9.9.1.b**
IF	IF
River Level > 99.5'	River Level < 80.0'

THEN

Refer to Attachment 24
UNUSUAL EVENT (Common Site)

Action Required