88

		I 3H	C 3H
*Backup TSC, OSF-113	C. Warlow		1
*Bureau of Rad Protection	M. Vyenielo		1
*Control Rm-U/1 File Copy, OOB-1	L. Ritter		1
Control Rm-U/1 Shift Mgrs Station, OOB	L. Ritter		1
*Control Rm-U/1 Work Copy, OOB-1	L. Ritter		1
Dauphin County EMA	D. Fetterhoff		1
*Document Center, NOB-2	S. Burkett	1	
*Document Control Desk			
Dosimetry, Serv. Bldg.	D. College		1
*EP – NDB, Trng. Bldg. #2	N. D. Brown	1	
*Emerg. Prep. Dept.	D. Light		1
*EOF, Trng. Bldg.	R. Finicle		1
*EP Drills, Trng. Bldg. #2	N. D. Brown		1
ESD, Trng. Bldg..	R. Finicle		
Environ. Affairs-TMI, NOB-1	W. Ressler		
Logisitcal Support, Trng. Bldg..	R. Finincle		1
*NRC – Onsite, Service Bldg.	P. Sauder		1
*NRC – Region 1, (Chief EP Section)	N. McNamara		2
*PEMA – Bureau of Plans	D. Fleck		1
Personnnel/Vehicle Monitor Kit Trng Ctr.	T. Berstler		1
*Plant Maint. (Library), Serv. Bldg.	J. Eckroth		1
RLM, Rad Field Ops.	T. Berstler		
Rad Con –RAC Locker, Rad Field Ops.	T. Berstler		
Rad Con –Kit 1 PC, Rad Field Ops.	T. Berstler		
Rad Con –Kit 2 PC, Rad Field Ops.	T. Berstler		
Rad Con–Kit 3 EOF Bldg Rad Field Ops	T. Berstler		
Rad Con–Kit 4 EOF Bldg Rad Field Ops.	T. Berstler		
Rad Con–Kit 5 EOF Bldg Rad Field Ops.	T. Berstler		
Rad Con–Simulator Locker,Rad Field Ops	T. Berstler		
*Rad Engineers-U1, OOB	T. Simonetti		1
*Rad Instrument, Bldg. 159	D. Johnson		1
Radwaste/Chemistry, OOB-1	L. Ritter		
Secondary Chem Lab-, OOB-1	L. Ritter		1
*Security Mgr., PC	T. Dove		1
Security U-1, PC	R. Goodrich		1
*Simulator Room/File Copy, Trng.	D. Silar		1
Simulator Room/Shift Supvs Office, Trng	D. Silar		1
*Simulator Room/Working Copy, Trng.	D. Silar		1
*TSC - Unit 1, OSF-113	C. Warlow		1
*Training Dept., Trng	C. Flory		1
*OSC, Rad Field Ops..	T. Berstler		1
*Unit 1 Operations, OOB-1	L. Ritter		1
*Vice President – TMI , OSF-2	M. Warner		1
*Word Processing, OOB,No Stamp/Clip	A. Houseal		1
(does not receive TC's)			
RECORDS MGMT	S. Zimmerman		

EPIP/TEP Instruction Memo

Date 5/24/01 Verif: LS Box No. 20010179 T1 ✓ T2 ___

Please update your file with the attached listed below, destroy the superseded/cancelled document(s). Also, if Controlled Documents please sign the acknowledgment at the bottom of this memo and return to Debbie Marshbank, Configuration Cntrl., Rm. 135, SOB

Document Number	Rev	TC NUMBER	Page Replac.	Entire	TC/PROC Cld	Level
EPIP-TMI-.01	9			✓		2

ADDITIONAL DISTRIBUTION:

		I 3H	C 3H
EACC SR FINICLE	TRNG Bldg		1
TECH SUPPORT REP SR FINICLE	TRNG BLDG		1
EOF (PEMA AREA) S.R. FINICLE	TRNG BLDG		1
GPU EC SR FINICLE	TRNG BLDG		1

I hereby acknowledge receipt of this memo and have complied with the instructions. Signature and returned memo required ONLY if CONTROLLED.

Signature _____ Date _____

Info Copy 2 Stapled, 3 Hole Punch

Ctrl Copy 31 Stapled, 3 Hole Punch

Ctrl Copy 1 Clipped

Plain Copy 1 Clipped (Central File)

Memo Distribution:
Central File

TC Distribution:

____ Copies Stapled, 3-hole punch

03/19/01dsm

A045

FOR INFORMATION ONLY

AmerGen	TMI - Unit 1 Emergency Procedure	Number EPIP-TMI-.01
Title **Emergency Classification and Basis**		Revision No. 9
Applicability/Scope TMI Division	USAGE LEVEL 2	Effective Date 05/24/01

This document is within QA plan scope	X	Yes		No
50.59 Applicable		Yes	X	No

List of Effective Pages

Page	Revision	Page	Revision	Page	Revision	Page	Revision
1	9	21	9	41	9	61	9
2	9	22	9	42	9	62	9
3	9	23	9	43	9	63	9
4	9	24	9	44	9	64	9
5	9	25	9	45	9	65	9
6	9	26	9	46	9	66	9
7	9	27	9	47	9	67	9
8	9	28	9	48	9	68	9
9	9	29	9	49	9	69	9
10	9	30	9	50	9	70	9
11	9	31	9	51	9	71	9
12	9	32	9	52	9	72	9
13	9	33	9	53	9	73	9
14	9	34	9	54	9	74	9
15	9	35	9	55	9	75	9
16	9	36	9	56	9	76	9
17	9	37	9	57	9	77	9
18	9	38	9	58	9	78	9
19	9	39	9	59	9	79	9
20	9	40	9	60	9	80	9

	Signature	Date
Procedure Owner	/s/ S. R. Finicle	05/23/01
Approver	/s/ J. Grisewood	05/23/01

List of Effective Pages

Page	Revision	Page	Revision	Page	Revision	Page	Revision
81	9						
82	9						

1.0 PURPOSE

This procedure provides guidance for the Emergency Director for determination of emergency classification based on given initiating emergency conditions (emergency action levels). The emergency action levels stated in this procedure are TMI specific and consistent with federal guidance.

2.0 APPLICABILITY/SCOPE

This procedure applies to all Emergency Plan Implementations at TMI.

3.0 DEFINITIONS

Effluent Monitor - An on-line instrument monitoring radiological conditions of a designed pathway to the environment (e.g., station ventilation exhaust).

Emergency Action - Those measures or steps taken to ensure that an emergency situation is assessed (assessment actions) and that the proper corrective and/or protective actions are taken.

Emergency Action Levels (EAL's) - Predetermined conditions or values, including radiological dose, specific contamination levels of airborne or waterborne concentrations of radioactive materials; events such as material disasters or fire; or specific instrument indications which, when met or exceeded, require the implementation of the Emergency Plan.

Imminent - This is when the loss condition will occur in an hour or less. Additionally it is when equipment needed to prevent the loss is not available and it is unknown when the equipment will be available. It is also applicable if necessary equipment is not expected to be returned before the loss condition occurs.

Loss - The conditions exist that have resulted in the failure of a protective barrier.

Plant Conditions

Cold Shutdown - The plant is in the Cold Shutdown (CSD) Condition when the reactor is subcritical by at least one percent delta k/k and Tavg is no more than 200°F. Additionally the reactor coolant system pressure allowed is defined by Technical Specification 3.1.2.

Plant Conditions (cont'd)

Containment Integrity - The requirements for Containment Integrity are as follows:

a. Must meet the requirements of the Technical Specification definition 1.7.

b. Containment integrity requirements (per Technical Specification 3.6) must be met whenever all 3 of the following conditions exist:

- RCS pressure ≥ 300 psig
- RCS temperature ≥ 200°F
- Nuclear fuel is in the core

c. Other integrity conditions are listed in T.S. 3.6.2.

Heatup/Cooldown - The plant is in the Heatup/Cooldown (HU/CD) condition when the reactor coolant temperature is greater than 200°F and less than 525°F.

Hot Shutdown - The plant is in the Hot Shutdown (HSD) condition when the reactor is subcritical by at least one percent delta k/k and Tavg is at or greater than 525°F.

Hot Standby - The plant is in the Hot Standby (HStby) condition when all of the following conditions exist:

a. Tavg is greater than 525°F
b. The reactor is critical
c. Indicated neutron power on the power range channels is less than two percent of rated power.

Power Operation - The plant is in the Power Operation (PwrOps) condition when the indicated neutron power is two percent of rated power, or greater, as indicated on the power range channels.

Refueling Shutdown - The plant is in the Refueling Shutdown (RSD) condition when, even with all of the control rods removed, the reactor would be subcritical by at least one percent delta k/k and the reactor coolant temperature at the decay heat removal pump suction is no more than 140°F. Additionally, the allowable reactor coolant system pressure is defined by Technical Specification 3.1.2. One purpose of a refueling shutdown is to replace or rearrange all or a portion of the fuel assemblies including the control rods.

Startup - The plant shall be considered to be in the Startup (SU) mode when the shutdown margin is reduced with the intent of going critical.

Potential Loss - The conditions exist that have the possibility to result in the failure of a protective barrier.

Sabotage - Sabotage is defined as "The intentional and willful (e.g., eyewitness report or threat followed up with tangible evidence, investigation, etc.) act or attempt to cause an interruption of normal operations of the facility through the unauthorized use of, tampering with or destruction of machinery, components, or controls of the facility". Vandalism is also included in this category.

Unplanned - An event occurring that was NOT projected or considered (i.e., something NOT EXPECTED) in the procedure or plan for operation.

Valid (or Confirmed) - An indication that is conclusively justified from alternate or supportive (backup) indicators, (e.g., other meters, manual calculations, etc.) such that all doubt related to the indicators operability is removed, including prior knowledge related to the indicator.

4.0 RESPONSIBILITIES

The Emergency Director is responsible for implementing this procedure.

5.0 PROCEDURE

5.1 Upon recognition of an abnormal (unplanned, valid) condition, use the Emergency Action Level (EAL) Index to compare existing plant conditions to the general areas stated in the index, then refer to the referenced exhibit for the specific Emergency Action Levels.

> **NOTE**
>
> The detailed EAL specifications and bases provided in Exhibits 1 through 8 should be used for formal event classification activities. EAL matrices at the beginning of each exhibit provide abbreviated action level descriptions intended to facilitate general evaluation and consideration of event escalation.

5.1.1 Declare the highest classification of emergency (i.e., General Emergency [G], Site Area Emergency [S], Alert [A], Unusual Event [U]) for which an emergency action level has been met or exceeded, as determined by using the EAL index, EAL matrix and specific EAL and Basis.

5.1.1.1 Always refer to Exhibit 8 (JUDGEMENT) to determine if an emergency declaration is warranted based on Shift Manager/Emergency Director (SM/ED) judgement. The purpose of this action is to insure that the highest level of emergency is declared based on uncertain or ambiguous conditions.

5.1.2 Implement EPIP-TMI-.02, Emergency Direction, following determination that an emergency action level (specific or judgement) has been met or exceeded.

5.2 Review Administrative Procedure AP 1044, Incident Reporting Procedure and AP 1097, Corrective Action Process to ensure that applicable reporting requirements are being met.

5.3 Ensure that the appropriate plant procedures are being implemented.

***** EMERGENCY ACTION LEVEL (EAL) INDEX *****

1.0 RADIOLOGICAL CONTROLS EXHIBIT 1
- 1.1 Airborne Effluent Monitoring
- 1.2 Radioactive Material Control
- 1.3 Liquid Effluent Monitoring
- 1.4 Spent Fuel Pool
- 1.5 Reactor Cavity
- 1.6 Fuel Clad Degradation

2.0 FISSION PRODUCT BARRIER EXHIBIT 2
- 2.1 Multiple Barriers
- 2.2 RCS Leakage

3.0 ELECTRICAL EXHIBIT 3
- 3.1 AC
- 3.2 Shutdown AC
- 3.3 DC

4.0 INSTRUMENTATION, ACTUATION AND TECH SPECS EXHIBIT 4
- 4.1 Annunciators
- 4.1.1 Communications
- 4.2 Tech Specs/Actuation Failure
- 4.3 Shutdown Inventory
- 4.4 Hot Shutdown Functions

5.0 NATURAL PHENOMENA EXHIBIT 5
- 5.1 High River Water
- 5.2 High Wind
- 5.3 Tornado
- 5.4 Earthquake

6.0 MAN-MADE PHENOMENA EXHIBIT 6
- 6.1 Fire
- 6.2 Control Room Evacuation
- 6.3 Hazardous Gas
- 6.4 Non-Bomb Explosion
- 6.5 Turbine Failure
- 6.6 Vehicle Crash

7.0 SECURITY EXHIBIT 7
- 7.1 Security Event

8.0 JUDGEMENT EXHIBIT 8
- 8.1 Judgement (SM/ED)

EXHIBIT 1

1.0 RADIOLOGICAL CONTROLS

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
G1.1 (Airborne Effluent) EFFLUENT RADIOLOGICAL DOSE exceeds PAG limits as indicated by: 1) Dose Assessment information is not available for ≥ 15 minutes and any of the following RMS indications exist: RM-G-25 Off Scale high RM-A-8GH ≥ 1 E+05 CPM RM-A-9GH ≥ 6 E+05 CPM RM-A-14 ≥ 4 E+02 μCi/cc **OR** 2) Field Monitoring Team results indicate an integrated dose of ≥ 1000 mRem total Whole Body (TEDE) OR ≥ 5000 mRem Child Thyroid organ dose (CDE) **OR** 3) **VALID** dose projection for the SAB or beyond of ≥ 1000 mRem total Whole Body dose (TEDE) OR ≥ 5000 mRem child thyroid organ dose (CDE) APPLICABILITY: All Plant Conditions (BASIS: Page 10)	S1.1 (Airborne Effluent) HIGH RADIOLOGICAL DOSES at the SAB as indicated by: 1) Dose Assessment information is not available for ≥ 15 minutes and any of the following RMS indications exist: RM-G-25 ≥ 3 E+05 mR/hr RM-A-8GH ≥ 1 E+04 CPM RM-A-9GH ≥ 6 E+04 CPM RM-A-14 ≥ 4 E+01 μCi/cc **OR** 2) Field Monitoring Team results indicate an integrated dose of ≥ 100 mRem but < 1000 mRem total Whole Body (TEDE) OR ≥ 500 mRem but < 5000 mRem Child Thyroid organ dose (CDE) **OR** 3) **VALID** dose projection for the SAB or beyond of ≥ 100 mRem but < 1000 mRem total Whole Body dose (TEDE) OR ≥ 500 mRem but < 5000 mRem Child Thyroid organ dose (CDE) APPLICABILITY: All Plant Conditions (BASIS: Page 11)	A1.1 (Airborne Effluent) RADIOLOGICAL EFFLUENT LIMITS significantly exceeded (200X Tech Specs) as indicated by: 1) The RELEASE HAS or WILL exceed 15 minutes. **AND** 2a) Any of the following VALID RMS indications: RM-G-25 ≥ 2 E+04 mR/hr RM-A-8GH ≥ 8 E+02 CPM RM-A-9GH ≥ 4 E+03 CPM RM-A-14 ≥3 E+00 μCi/cc OR 2b) Sample results equal or exceed the following values (μCi/cc): Noble Gas / Iodine Offgas 1.5 E+03 / 8.4 E-02 Vent 9.1 E+00 / 5.0 E-04 Purge 2.0 E+01 / 1.0 E-03 OR 2c) The Dose Assessment system calculates a dose rate of: ≥ 10 mRem/hr but < 100 mRem/hr Whole Body (TEDE) OR ≥ 30 mRem/hr but < 500 mRem/hr Child Thyroid (CDE) APPLICABILITY: All Plant Conditions (BASIS: Page 12)	U1.1 (Airborne Effluent) RADIOLOGICAL EFFLUENT LIMITS being exceeded (2X Tech Specs) as indicated by: 1) The RELEASE HAS or WILL exceed 60 minutes. **AND** 2a) Any of the following VALID RMS indications: RM-G-25 ≥ 2 E+02 mR/hr RM-A-8G ≥ 2 E+05 CPM RM-A-9G ≥ 6 E+05 CPM RM-A-14 ≥ 3 E-02 μCi/cc OR 2b) Sample results equal or exceed the following values (μCi/cc): Noble Gas / Iodine Offgas 1.5 E+01 / 8.4 E-04 Vent 9.1 E-02 / 5.0 E-06 Purge 2.0 E-01 / 1.0 E-05 OR 2c) The Dose Assessment system calculates a dose rate of: ≥ 0.1 mRem/hr but < 10 mRem/hr Whole Body (TEDE) OR ≥ 0.3 mRem/hr but < 30 mRem/hr Child Thyroid (CDE) APPLICABILITY: All Plant Conditions (BASIS: Page 13)

EXHIBIT 1

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
		A1.2 (In Plant) VALID UNEXPECTED RADIATION LEVELS impede Safe Operation/Cold Shutdown As indicated by: 1) > 15 mR/hr on RM-G-1 (Control Room) **OR** 2) Select in plant area radiation monitors read > 1000 mR/hr APPLICABILITY: All Plant Conditions (BASIS: Page 14)	U1.2 (In Plant) VALID UNEXPECTED IN PLANT AREA RADIATION MONITOR (RM-G) readings of ≥ 500 mR/hr. APPLICABILITY: All Plant Conditions (BASIS: Page 15)
		A1.3 (Liquid Effluents) RADIOLOGICAL EFFLUENT LIMITS significantly exceeded (200X Tech Spec) as indicated by ANY of the following indications for ≥ 15 minutes: 1) RM-L-7 ≥ 1 E+05 CPM **OR** 2) RM-L-12 Off Scale High **OR** 3) Sample results of ≥ 2E-03 μCi/cc APPLICABILITY: All Plant Conditions (BASIS: Page 16)	U1.3 (Liquid Effluent) RADIOLOGICAL EFFLUENT LIMITS being exceeded (2X Tech Spec) as indicated by ANY of the following indications for ≥ 60 minutes: 1) RM-L-7 ≥ 1 E+03 CPM **OR** 2) RM-L-12 ≥ 1 E+05 CPM **OR** 3) Sample results of ≥ 2E-05 μCi/cc APPLICABILITY: All Plant Conditions (BASIS: Page 17)
		A1.4 (Spent Fuel Pool) 1) Report that the irradiated fuel in the Spent Fuel Pool is uncovered **OR** 2) Decreasing level in the Spent Fuel Pool and RM-G-9 ≥ 1000 mR/hr **OR** 3) Report of damage to irradiated fuel AND Either of the following VALID RMS indications: RM-A-4G ≥ 8.0 E + 05 CPM or RM-A-14 ≥ 2.0E – 02 μCi/cc APPLICABILITY: All Plant Conditions (BASIS: Page 18)	U1.4 (Spent Fuel Pool) Low Spent Fuel Pool Level alarm with uncontrolled leakage. APPLICABILITY: All Plant Conditions (BASIS: Page 19)

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
		A1.5 (Reactor Cavity) 1) Report that the irradiated fuel in the Fuel Transfer Canal is uncovered. **OR** 2) Decreasing water level in the Fuel transfer Canal and either of the following VALID RMS indications: RM-G-6 ≥ 1000 mR/hr or RM-G-7 ≥ 1000 mR/hr **OR** 3) Report of damage to the irradiated fuel. AND Either of the following VALID RMS indications: RM-A-9G ≥ 1.0 E + 05 CPM or RM-A-2G ≥ 8.0 E + 05 CPM APPLICABILITY: CSD, RSD (BASIS: Page 20)	U1.5 (Reactor Cavity) Low Fuel Transfer Canal Level alarm with uncontrolled leakage. APPLICABILITY: CSD, RSD (BASIS: Page 21)
			U1.6 (Fuel Clad Degration) RCS activity exceeds one of the following: 1) UNPLANNED VALID Alert Alarm on either: a) RM-L-1 low or b) RM-L-1 high **OR** 2) Power Operations radiochemistry analysis indicates any of the following: a) Activity > 100/ $\bar{E}$ μCi/gm or b) DEI–131 > 0.35 μCi/gm for > 48 hours. or c) DEI-131 > 60 μCi/gm **OR** 3) Hot Standby radiochemistry analysis indicates any of the following: a) Activity > 100/ $\bar{E}$ μCi/gm or b) DEI–131 > 0.35 μCi/gm for > 48 hours. or c) DEI-131 > 275 μCi/gm **OR** 4) All other plant conditions radiochemistry analysis indicated DEI-131 > 275 μCi/gm APPLICABILITY: All Plant Conditions (BASIS: Page 22)

EXHIBIT 1

G1.1 (Airborne Effluent) (GENERAL EMERGENCY)
EFFLUENT RADIOLOGICAL DOSES at the Site Area Boundary as indicated by the following:

1) Dose Assessment information is NOT available for ≥ 15 minutes and ANY of the following RMS indications exist:

RM-G-25	Off Scale High
RM-A-8GH	≥ 1.0 E+05 CPM
RM-A-9GH	≥ 6.0 E+05 CPM
RM-A-14	≥ 4.0 E+02 μCi/cc (When ESF ventilation is required)

OR

2) Field Monitoring Team results indicate an integrated dose of
≥ 1000 mRem total Whole Body dose (TEDE)
OR
≥5000 mRem Child Thyroid organ dose (CDE)

OR

3) VALID dose projection for the Site Area Boundary (SAB) or beyond of
≥ 1000 mRem total Whole Body dose (TEDE)
OR
≥ 5000 mRem Child Thyroid organ dose (CDE)

'1 **OR** 2 **OR** 3)

APPLICABILITY: All Plant Conditions

BASIS:

- TMI has "REAL TIME" dose assessment capability.
- The dose assessment code accesses current plant data to automatically perform a dose assessment as frequently as the user selects this option.
- The Emergency Procedures and alarm response procedures direct the Operations personnel to have the GRCS (Group Rad Con Supervisor) evaluate abnormal and unexpected radiological indications.
- The Radiation Monitoring System indications are in accordance with calculation RAF 6612-96-030.
- This EAL satisfies NESP-007 General Emergency AG1.

S1.1 (Airborne Effluent) (SITE AREA EMERGENCY)
HIGH RADIOLOGICAL DOSES at the Site Area Boundary as indicated by the following:

1) Dose Assessment information is NOT available for ≥ 15 minutes and ANY of the following RMS indications exist:

RM-G-25	≥ 3.0 E+05 mR/hr
RM-A-8GH	≥ 1.0 E+04 CPM
RM-A-9GH	≥ 6.0 E+04 CPM
RM-A-14	≥ 4.0 E+01 μCi/cc (When ESF ventilation is required)

OR

2) Field Monitoring Team results indicate an integrated dose of
≥ 100 mRem but < 1000 mRem total Whole Body dose (TEDE)
OR
≥ 500 mRem but < 5000 mRem Child Thyroid organ dose (CDE)

OR

3) VALID dose projection for the Site Area Boundary (SAB) or beyond of
≥ 100 mRem but < 1000 mRem total Whole Body dose (TEDE)
OR
≥ 500 mRem but < 5000 mRem Child Thyroid organ dose (CDE)

(1 **OR** 2 **OR** 3)

APPLICABILITY: All Plant Conditions

BASIS:

- TMI has "REAL TIME" dose assessment capability.
- The dose assessment code accesses current plant data to automatically perform a dose assessment as frequently as the user selects this option.
- The Emergency Procedures and alarm response procedures direct the Operations personnel to have the GRCS (Group Rad Con Supervisor) evaluate abnormal and unexpected radiological indications.
- The Radiation Monitoring System indications are in accordance with calculation RAF 6612-96-030.
- This EAL satisfies NESP-007 Site Area Emergency AS1.

EXHIBIT 1

A1.1 (Airborne Effluent) (ALERT)
RADIOLOGICAL EFFLUENT LIMITS (200X TECH SPECS) being exceeded, as indicated by the following:

1) The RELEASE HAS or WILL exceed 15 minutes.
AND
2a) Any one of the following VALID effluent Radiation Monitoring System indications are present:

Condenser Offgas	RM-G-25	≥ 2.0 E+04 mR/hr
Station Vent	RM-A-8GH	≥ 8.0 E+02 CPM
RB Purge	RM-A-9GH	≥ 4.0 E+03 CPM
ESF Vent	RM-A-14	≥ 3.0 E+00 μCi/cc (When ESF ventilation is required)

OR
2b) Sample results for any of the following effluent pathways equal or exceed the values listed:

	TOTAL Noble Gas Concentrations	TOTAL Iodine Concentrations
Condenser Offgas	1.5 E+03 μCi/cc	8.4 E-02 μCi/cc
Station Vent	9.1 E+00 μCi/cc	5.0 E-04 μCi/cc
RB Purge	2.0 E+01 μCi/cc	1.0 E-03 μCi/cc

OR
2c) The Dose Assessment system calculates one of the following dose rates:
≥ 10 mRem/hour but < 100 mRem/hour whole body (TEDE)
OR
≥ 30 mRem/hour but < 500 mRem/hour child thyroid dose (CDE)

(1 **AND** 2a, OR 1 **AND** 2b, OR 1 **AND** 2c)

APPLICABILITY: All Plant Conditions

BASIS:

- The Emergency Director SHALL declare the event as soon as it is determined that the release duration HAS or WILL LIKELY exceed fifteen minutes, with the indications that the Technical Specification limits have been exceeded by a factor of 200 (two hundred times higher than the amount specified in TS).
- Calculation RAF 6612-96-030 contains the basis for the RMS indications for two hundred times Technical Specification values in accordance with 6610-PLN-4200.01.
- The sample results are based on the assumptions in OP 1101-2.1, RMS Setpoint.
- This EAL satisfies NESP-007 Alert AA.1.

EXHIBIT 1

U1.1 (Airborne Effluent) (UNUSUAL EVENT)
RADIOLOGICAL EFFLUENT LIMITS (2X Tech Specs) being exceeded as indicated by the following:

1) The RELEASE HAS or WILL exceed 60 minutes.
AND
2a) Any one of the following VALID effluent Radiation Monitoring System indications are present:

Condenser Offgas	RM-G-25	≥ 2.0 E+02 mR/hr
Station Vent	RM-A-8G	≥ 2.0 E+05 CPM
RB Purge	RM-A-9G	≥ 6.0 E+05 CPM
ESF Vent	RM-A-14	≥ 3.0 E-02 μCi/cc (When ESF ventilation is required)

OR
2b) Sample results for any of the following effluent pathways exceed the values listed:

	TOTAL Noble Gas Concentrations	TOTAL Iodine Concentrations
Condenser Offgas	1.5 E+01 μCi/cc	8.4 E-04 μCi/cc
Station Vent	9.1 E-02 μCi/cc	5.0 E-06 μCi/cc
RB Purge	2.0 E-01 μCi/cc	1.0 E-05 μCi/cc

OR
2c) The Dose Assessment system calculates one of the following dose rates:
≥ 0.1 mRem/hour but < 10 mRem/hour whole body (TEDE)
OR
≥ 0.3 mRem/hour but < 30 mRem/hour child thyroid dose (CDE)

(1 **AND** 2a, OR 1 **AND** 2b, OR 1 **AND** 2c)

APPLICABILITY: All Plant Conditions

BASIS:

- The Emergency Director SHALL declare the event as soon as it is determined that the release duration HAS or WILL LIKELY exceed sixty minutes, with the indications that the Technical Specification limits have been exceeded by a factor of 2 (twice the amount specified in TS).
- Calculation RAF 6612-96-030 contains the basis for the RMS indications for two times Technical Specification values in accordance with 6610-PLN-4200.01.
- The sample results are based on the assumptions in OP 1101-2.1, RMS Setpoint.
- This EAL satisfies NESP-007 Unusual Event AU1.

A1.2 (In Plant) (ALERT)
VALID UNEXPECTED RADIATION LEVELS impede Safe Operation or Reaching and Maintaining Cold Shutdown as indicated by the following:

1) Greater than 15 mR/hour on RM-G-1 (Control Room)
OR
2) Select in-plant area radiation monitors (listed in Basis, below) indicating greater than 1000 mR/hour

(1 **OR** 2)
APPLICABILITY: All Plant Conditions

BASIS:
The EAL address increased radiation levels that may impede safe operation or safe shutdown.

- This is not intended to address planned temporary conditions such as fuel transfer, or radiography for example.
- This EAL addresses increased radiation levels that limit effective safe operation of the plant or limit the transition to and maintenance of Cold Shutdown conditions.
- This is a degraded condition and warrants event declaration with additional support to assist in achieving safe conditions without severely impairing the health and safety of the public.
- The first part of this EAL addresses the Control Room, an area of continuous occupancy required for normal safe operation and safe shutdown.
- The second part of this EAL addresses areas outside of the Control Room.
  SELECT AREA RADIATION MONITORS
  RM-G-2 (Radio Chem Lab), RM-G-3 (Primary Sampling Room), RM-G-4 (Hot Tool Room Area), RM-G-10 (Aux Bldg entrance 305'), RM-G-11 (Aux Bldg near Waste Tank 305'), RM-G-12 (Aux Bldg 305', outside Solidification Valve alley), RM-G-13 (Aux Bldg entrance 281'), RM-G-14 (Aux Bldg near Waste Tank 281'), and RM-G-15 (Aux Bldg Ht Exchanger Vault 271')
- Unexpected radiation levels of this magnitude represent a serious degradation in the control of radioactive material and degradation in the level of safety of the plant.
- The basis for the 1000 mR/hr criteria is that such areas would require locked high radiation controls by Technical Specifications. These controls will slow down personnel response to these areas.
- This EAL satisfies NESP-007 Alert AA3.

U1.2 (In Plant) (UNUSUAL EVENT)
VALID UNEXPECTED IN-PLANT AREA RADIATION MONITOR (Any in-plant RM-G monitors) readings of ≥ 500 mR/hr.

APPLICABILITY: All Plant Conditions

BASIS:

- Normal levels are the highest reading in the past 24 hours, excluding the current peak, which typically range as high as .5 mR/hr.
- This value of 500 mR/hr identifies that an abnormal condition exists (this is an approximate increase by a factor of 1000 over normal readings, background).
- Unexpected radiation levels of this magnitude represent a degradation in the control of radioactive material and potential degradation in the level of safety of the plant.
- This EAL does not include the Control Room. (Refer to EAL A1.2 for Control Room habitability.)
- This EAL satisfies NESP-007 Unusual Event AU2.

A1.3 (Liquid Effluent) (ALERT)
RADIOLOGICAL EFFLUENT LIMITS being EXCEEDED (200X TECH SPECS) with ANY of the following indications:

1) RM-L-7 ≥ 1 E+05 CPM for ≥ 15 minutes
OR
2) RM-L-12 Off Scale High for ≥ 15 minutes
OR
3) Sample results (Cesium and Iodine) indicate ≥ 2 E-03 μCi/cc

(1 **OR** 2 **OR** 3)

APPLICABILITY: All Plant Conditions

BASIS:

- This is based on exceeding, by 200 times the Technical Specification limit for a 15 minute release.
- This is meant to satisfy, in part, NESP-007 Alert, AA.1.

EXHIBIT 1

U1.3 (Liquid Effluent) (UNUSUAL EVENT)
RADIOLOGICAL EFFLUENT LIMITS being EXCEEDED (2X TECH SPEC) as indicated by ANY of the following:

1) VALID RM-L-7 indication of ≥ 1 E+03 CPM for greater than or equal to 60 minutes
OR
2) VALID RM-L-12 indication of ≥ 1 E+05 CPM for greater than or equal to 60 minutes
OR
3) Sample results (Cesium and Iodine) indicate ≥ 2 E-05 μCi/cc

(1 **OR** 2 **OR** 3)

APPLICABILITY: All Plant Conditions

BASIS:

- This is based on exceeding, by two (2) times, the applicable limits for liquid effluent.
- This is meant to satisfy, in part, NESP-007 Unusual Event AU.1.

A1.4 (Spent Fuel Pool) (ALERT)

1) Report that the irradiated fuel in the Spent Fuel Pool is uncovered
OR
2) Decreasing level in the Spent Fuel Pool and RM-G-9 ≥ 1000 mR/hr
OR
3) Report of damage to irradiated fuel
AND
Either of the following VALID RMS indications:
RM-A-4G ≥ 8.0 E+05 CPM
or
RM-A-14 ≥ 2.0 E-02 μCi/cc

(1 **OR** 2 **OR** 3)

APPLICABILITY: All Plant Conditions

BASIS:

- The report that fuel is uncovered is sufficient for event declaration because of the potential damage to the fuel and subsequent lack of control of radioactive material.

  Calculation RAF 6612-96-022 provides guidance for radiation monitor response to uncovering of irradiated fuel.

- Potential for increased doses to plant personnel due to damage or uncovering of irradiated fuel.

- This EAL satisfies part of NESP-007 Alert AA.2.

U1.4 (Spent Fuel Pool) (UNUSUAL EVENT)

Low Level alarm on the Spent Fuel Pool due to uncontrolled Spent Fuel Pool leakage, as determined by the Shift Manager.

APPLICABILITY: All Plant Conditions

BASIS:

- Early indication of a problem with cooling the Spent Fuel and potential for increased doses to the plant staff.
- Uncontrolled is when the leakage exceeds or is expected to exceed the makeup and collection capability.
- Event classification is warranted as a precursor to a more serious event.
- This EAL satisfies part of NESP-007 Unusual Event AU.2.

A1.5 (Reactor Cavity) (ALERT)

1) Report that the irradiated fuel in the Fuel Transfer Canal is uncovered

OR

2) Decreasing water level in the Fuel Transfer Canal and either of the following VALID RMS indications:
RM-G-6 ≥ 1000 mR/hr
or
RM-G-7 ≥ 1000 mR/hr

OR

3) Report of damage to irradiated fuel
AND
Either of the following VALID RMS indications:
RM-A-9G ≥ 1.0 E +05 CPM
or
RM-A-2G ≥ 8.0 E +05 CPM

(1 **OR** 2 **OR** 3)

APPLICABILITY: Cold Shut Down, Refueling Shut Down

BASIS:

- Potential for increased doses to plant personnel due to damage or unrecovering of irradiated fuel.
- The EAL is intended to identify problems in the Fuel Transfer Canal with the handling of irradiated fuel, such that, it may become uncovered or damaged.
- The EAL satisfies part of NESP-007 Alert AA.2.

U1.5 (Reactor Cavity) (UNUSUAL EVENT)

1) Low Fuel Transfer Canal Level alarm with uncontrolled leakage.

APPLICABILITY: Cold Shut Down, Refueling Shut Down

BASIS:

- Indication of a problem with cooling the fuel in the Reactor Vessel and potential for increased doses to the plant staff.
- Level alarm is only energized when the Transfer canal is filled. Alarm is PLB-4-9.
- Uncontrolled is when the leakage exceeds or is expected to exceed the makeup and collection capability.
- Event classification is warranted as a precursor to a more serious event.
- The EAL satisfies part of NESP-007 Unusual Event AU.2.

EXHIBIT 1

U1.6 (Fuel Clad Degradation) (UNUSUAL EVENT)

Reactor Coolant activity exceeds one of the following:

1) UNPLANNED VALID Alert Alarm on either:
   a) RM-L-1 low
   or
   b) RM-L-1 high

OR

2) Power Operations radiochemistry analysis indicates any of the following:
   a) Activity > 100/$\bar{E}$ μCi/gm
   or
   b) Dose Equivalent Iodine (DEI) 131, > 0.35 μCi/gm for > 48 hours
   or
   c) Dose Equivalent Iodine (DEI) 131, > 60 μCi/gm

OR

3) Hot Standby radiochemistry analysis indicates any of the following:
   a) Activity > 100/$\bar{E}$ μCi/gm
   or
   b) Dose Equivalent Iodine (DEI) 131, > 0.35 μCi/gm for > 48 hours
   or
   c) Dose Equivalent Iodine (DEI) 131, > 275 μCi/gm

OR

4) All other plant conditions (Hot Shutdown, Heat Up/Cool Down, Cold Shutdown, Refueling Shutdown) radiochemistry analysis indicates
   Dose Equivalent Iodine (DEI) 131, > 275 μCi/gm

(1 **OR** 2 **OR** 3 **OR** 4)

APPLICABILITY: All Plant Conditions

BASIS:

- The stated conditions are indications of potential degradation in the level of safety of the plant and potential precursor of more serious problems.
- The Letdown monitor (RM-L-1) low and high range monitor being in alarm are possible indications that the activity of the Reactor Coolant System is in excess of the Technical Specification limits as stated in TS 3.1.4.
- UNPLANNED is added to preclude event declaration when an activity that causes a crud burst is implemented. Results from the radiochemistry analysis required by EP 1202-12 should be carefully examined to verify that the increased activity was a result of the <u>planned</u> crud burst and not an <u>unplanned</u> fuel clad degradation.
- This EAL satisfies NESP-007 Unusual Event, SU4.

EXHIBIT 2

2.0 FISSION PRODUCT BARRIERS

METHOD TO DETERMINE EMERGENCY LEVEL: EVALUATE EACH BARRIER FOR POTENTIAL LOSS/LOSS. RECORD POINTS BELOW FOR MOST SEVERE CONDITION FOR EACH BARRIER. IF LOSS CRITERIA IS MET FOR A BARRIER IT IS NOT AUTOMATICALLY RECOVERABLE, AN EVALUATION IS REQUIRED BEFORE CHANGING THE BARRIER STATUS. ENTER A ZERO IF THRESHOLD CONDITIONS ARE NOT MET. ADD POINTS FOR TOTAL AND DECLARE EVENT.

G2.1 GENERAL EMERGENCY (Points 11-13)	**S2.1 SITE AREA EMERGENCY** (Points 7-10)	**A2.1 ALERT** (Points 4-6)	**U2.1 UNUSUAL EVENT** (Points 1-3)
LOSS of ANY TWO BARRIERS AND POTENTIAL LOSS of THIRD BARRIER	LOSS of **BOTH** FUEL CLAD and RCS or POTENTIAL LOSS of **BOTH** FUEL CLAD and RCS or POTENTIAL LOSS OF **EITHER** FUEL CLAD or RCS and LOSS of ANY OTHER BARRIER	LOSS or POTENTIAL LOSS of **EITHER** FUEL CLAD or RCS NOTE: The reference basis document (NESP-007) does not address the status of containment, however, potential loss of containment is considered and included in the ALERT evaluation.	LOSS or POTENTIAL LOSS of CONTAINMENT **U2.2** (RCS/Total OTSG Leakage) SPECIAL CASE Any of the following: 1) Unidentified RCS or Pressure Boundary leakage ≥ 10 gpm **OR** 2) Total OTSG leakage ≥ 10 gpm to the condenser **OR** 3) Identified RCS leakage ≥ 25 gpm Applicability: All Plant Conditions (Basis Page 25)

	RCS (BASIS on Page 26)		**FUEL CLAD** (BASIS on Page 27)		**CONTAINMENT** (RB) (BASIS on Page 28)	
CONDITIONS	POTENTIAL LOSS **(4 Points)**	LOSS **(5 Points)**	POTENTIAL LOSS **(4 Points)**	LOSS **(5 Points)**	POTENTIAL LOSS **(1 Point)**	LOSS **(3 Points)**
RB RAD		1) RM-G-22 **OR** RM-G-23 ≥ 22 R/hr		1) RM-G-22 **OR** RM-G-23 ≥ ALERT ALARM	1) RM-G-22 or RM-G-23 ≥ 12000 R/hr	
INCORE TEMPERATURE		2) < 25°SCM	1) >25° Super Heat	2) T_{clad} ≥ 1400°F	2) T_{clad} ≥ 1800°F	
RCS ACTIVITY				3) ≥ 2500 μCi/CC		
RCS INTEGRITY	1) Cycling PORV **OR** RCS Code Safety Valves 2) Exceeds pressure/temperature limits of TS HU/CD Curve	3) Stuck open PORV **OR** RCS Code Safety Valve **OR** HPI-PORV Cooling				
PRIMARY LEAKAGE	3) VALID High flow (D-3-1) or calculated leakrate ≥ 160gpm.					
PRI/SEC LEAKAGE	4) VALID High flow (D-3-1) or calculated leakrate ≥ 160gpm.					1) Total OTSG leak > 1 gpm TS to atmosphere
CONTAINMENT CONDITIONS					3.1) RB Press. ≥ 50 psig **OR** 3.2) RB Hydrogen concentration ≥ 4% **OR** 3.3) RB pressure ≥ 30 psig and RB Emergency Cooling is less than assumed in the FSAR	2.1) RB Press ≥ 100 psig **OR** 2.2) RB Isolation fails resulting in a release pathway **OR** 2.3) Rapid unexplained loss of RB pressure following an initial pressure increase **OR** 2.4) RB pressure or sump level response not consistent with LOCA conditions.
RADIATION LEVEL READINGS				4) LETDOWN LINE > 15 R/hr		3) RM-A-8GH ≥ 200 cpm (Gas High Range)

_____ RCS POINTS + _____ FUEL CLAD POINTS + _____ CONTAINMENT POINTS = _____ TOTAL POINTS (refer below for event level)

NOTE

Point Total		Event Classification
1 or 3	=	Unusual Event (U2.1)
4, 5, 6	=	Alert (A2.1)
7, 8, 9, 10	=	Site Area Emergency (S2.1)
11, 12, 13	=	General Emergency (G2.1)

EXHIBIT 2

U2.2 (RCS/OTSG Leakage) (UNUSUAL EVENT)
SPECIAL CASE, DOES NOT MEET BARRIER CRITERIA

RCS / Total OTSG leakage as indicated by any of the following:

1) Unidentified RCS or Pressure Boundary leakage is ≥ 10 gpm

OR

2) Total OTSG leakage ≥ 10 gpm to the condenser

OR

3) RCS identified leakage is ≥ 25 gpm

(1 **OR** 2 **OR** 3)

APPLICABILITY: All Plant Conditions

BASIS:
The EAL is a precursor for more serious conditions and potential degradation of the level of safety of the plant.

- The 10 gpm value for unidentified and pressure boundary leakage was selected because it is an observable amount on normal Control Room indications. The value is above that typically requiring time consuming tests, such as mass balance, to determine the leak magnitude.

  The 25 gpm value for identified leakage is set higher because if the leak location and magnitude are known, there is less significance than unknown leakage. Typically this leakage is recoverable or has been evaluated as safe in accordance with Technical Specifications.

- The numbers used are greater than those allowed by Technical Specifications and these are the ones that have the potential for causing a degradation in the level of safety of the plant.

- The Fission Product Barrier EALs provide guidance on escalation of this event.

- "RCS" includes any interfacing system - i.e., MU, DHR.

- This EAL satisfies NESP-007 EAL SU5.

BARRIER status.

RCS

Potential Loss of RCS Fission Product Barrier

1) Cycling (2 or more times) the PORV or RCS Code Safety Valves

BASIS:

Rather than depend on instrumentation to determine the potential loss of this barrier the over pressure protection is monitored. The safety valves open between 2450 psig and 2510 psig (Allowance for set pressure and Code Safety valve accumulation). This is at the limit of design of the RCS but well within tested values (2750 psig) verifying integrity.

Pressure transients that cause multiple cycles (>2) increases the probability of failure.

2) Exceed the pressure and temperature limits of the Technical Specification Heat Up or Cool Down curve

BASIS:

This curve (Figure 3.1-1) represents the RT_{NDT} Limits to prevent brittle fracture of the vessel. Specific analysis would be required if violated therefore it is conservative to assume the RCS boundary is potentially lost.

3) RCS leakage: VALID High Make Up Flow alarm (D-3-1) or calculated leak rate of ≥ 160 gpm.

BASIS:

The 160 gpm is based upon the makeup capability of a single Make Up Pump, which is normally running. Additionally, even with elevated pressure, the normal makeup line bypass (MU-V-217) does not have to be used.

4) Total OTSG leakage: VALID High Make Up Flow alarm (D-3-1) or calculated leak rate of ≥ 160 gpm and the loss of RCS inventory is into the OTSG.

BASIS:

The 160 gpm is based upon the makeup capability of a single Make Up Pump, which is normally running. Additionally, even with elevated pressure, the normal makeup line bypass (MU-V-217) does not have to be used.

Loss of RCS Fission Product Barrier

1) RM-G-22 **OR** RM-G-23 ≥ 22R/hr

BASIS:

- Calculation RAF 6612-96-023 documents RM-G-22/23 readings under LOCA conditions with Tech Spec RCS activity.
- This should be considered a loss of RCS.

2) < 25° SCM (Subcooled Margin)

BASIS:

While there is effective heat removal to protect the Fuel Cladding, this is indicative of a loss in the RCS barrier.

3) Stuck open PORV **OR** RCS Code Safety Valve **OR** HPI-PORV Cooling

BASIS:

The PORV to be included must be stuck open and its isolation valve stuck in the open position (PORV cannot be isolated) or being used in the HPI-PORV Cooling mode. One or both of the Code Safety Valves is assumed to be open. Unisolable flow through either the PORV or a Code Safety Valve places a hole in the RCS and therefore the barrier is lost.

BARRIER status.

FUEL CLAD

Potential Loss of Fuel Clad Fission Product Barrier

1) > 25° Superheat

BASIS:

The RCS may be sub-cooled or at saturated conditions and still be effective in removing heat from the core. The case of 25° superheat addresses the concern of inadvertent declaration based on instrument error. Valid indication of superheat places the cladding in a potential loss condition because the amount of heat removal from the core can be less than expected allowing further heatup and actual cladding failure.

Loss of Fuel Clad Fission Product Barrier

NOTE
Loss of this barrier is NOT RECOVERABLE.

1) RM-G-22 **OR** RM-G-23 ≥ ALERT ALARM

BASIS:

- The alarm set point is based on cladding failure to provide a reading this high. Additional reference is OP 1101-2.1, the RMS setpoint procedure for additional information.
- 2500 μCi/cc total RCS activity corresponds to approximately 300 μCi/cc DEI 131, per the EDCM. This is approximately 5% fuel clad damage.

2) T_{CLAD} ≥ 1400°F curve

BASIS:

The RCS is in a very poor heat transfer region and the potential for cladding damage is greatly increased. This is the starting point where certain fuel pins could experience eutectic effects and release the gap activity from the fuel pins.

3) RCS Activity ≥ 2500 μCi/cc (Total)

BASIS:

These are cladding damage numbers, indication that 5% of the core has experienced cladding damage and has released its gap activity. In the absence of sample results, the TSC evaluates fuel cladding status. A report of greater than or equal to damage class 2 or fuel clad barrier lost is sufficient to meet this activity requirement.

4) Letdown line reading > 15 R/hr

BASIS:

These are cladding damage numbers, indication that 5% of the core has experienced cladding damage and has released its gap activity.

The letdown line reading taken at the letdown monitor provides a quick conservative approach to ascertain this minimum level without the delay associated with a post accident sample.

BARRIER status.
CONTAINMENT

Potential loss of Containment Fission Product Barrier

1) RM-G-22 or RM-G-23 reading ≥ 12000 R/hr

BASIS:

- Based on calculation RAF 9140-89-002, RM-G-22 or RM-G-23 readings would correspond to a LOCA with 20% release of fuel gap activity.

2) T_{CLAD} ≥ 1800°F curve

BASIS:
This condition is a conservative estimate that if conditions continue degrading the Containment barrier could be lost. This is the point where exothermic reactions are taking place inside the RCS based on the steam envelope around the hot zirconium clad fuel pellets. Based on the assumption that the Core could melt through the RCS barrier and interact with the hydrogenous containment floor, the subsequent loss of containment could result in the release of large amounts of radioactivity to the general public.

3.1) RB Pressure ≥ 50 psig

BASIS:
This is the closest major instrument division below the design pressure of the Reactor Building. This is about the pressure to which the building is leak tested.

3.2) RB Hydrogen ≥ 4%

BASIS:
Sandia Laboratory analysis on ignition of hydrogen supports that in a steam environment, hydrogen is not flammable in concentrations of less than 4%.

3.3) The Reactor Building Pressure is ≥ 30 psig and the Reactor Building Emergency Cooling is less than the minimum assumed in the FSAR.

BASIS:

- This condition of less than minimum is exceeded if any one of the following conditions are not met:

SPRAY	COOLERS
2	0
0	3
1	1

- This is consistent with the Level 2 Probability Risk Assessment (PRA) assumptions of no Coolers and no Spray where the pressure could increase to 4 times the value with a combustion or similar event to cause a pressure spike. Four times the setpoint (30 psig) is still below the assumed failure value from the PRA of 144 psig. However, above 30 psig there could be a pressure spike that could exceed 144 psig; therefore the RB is in jeopardy.

[**CONTAINMENT** continued on the next page]

CONTAINMENT (Cont'd)

Loss of Containment Fission Product Barrier

1) Total OTSG leak > 1 gpm (Tech Spec) and steam to atmosphere from the affected generator.

BASIS:

- This magnitude of leakage, assuming an 8 hour release duration, will result in expected measurable doses to the public. These doses are above those received normally, therefore the barrier to prevent the release of radioactivity has been lost.
- The OTSG leak and path from the affected generator to the environment have the potential to impact the public with small doses.
- This is anticipatory because dose assessment will validate the event classification.
- Paths are Steam Line Break, Main Steam Relief stuck open or steaming via the Atmospheric Dump Valves. (Affected generator)
- The direct to atmosphere means that the condenser function has been lost for the affected (leaking) generator.

2.1) RB Pressure ≥ 100 psig

BASIS:

- An analysis was performed to verify integrity of the containment as a barrier to the release of fission products. This showed that, mathematically, the building would be intact at up to three times the design pressure or 150 psig. The margin of safety would be greatly decreased at that point. The calculations showed that cracking could be expected at 120 psig, therefore a conservative value of 100 psig was assumed to be the point where the containment barrier was lost.. This does not consider the status of the steel liner on preventing the release of fission products. Another condition is that an analysis would be performed for any pressure over design to verify the integrity of the barrier.
- This loss is NOT RECOVERABLE.

2.2) RB isolation
Failure of the RB isolation resulting in a release pathway.

BASIS:
Attempt isolation from the Control Room prior to event classification.

- This condition has at least two valves failed and a pathway exists for the release of fission products from the containment.
  (Isolation can be considered successful if at least one valve closes.)

[**CONTAINMENT** continued on the next page]

CONTAINMENT (Cont'd)

- A breach of containment includes any unisolable containment penetration that opens a release pathway to the environment.
  (A breach is when it cannot be isolated from the Control Room OR an unsuccessful attempt for isolation has been made from the Control Room.)

- Reactor Building isolation failure on an INTACT interfacing system does not satisfy this EAL, an event should not be declared.

2.3) Rapid unexplained loss of RB pressure, following an initial pressure increase above normal levels.

BASIS:

- The rapid (<1 minute) decrease in pressure is not attributable to containment spray or condensation effects.

- The pressure drop is to normal or near normal RB pressure (i.e., less than 2 psig, typically 0 psig).

- Normal RB pressure is between –1 and +2 psig.

2.4) A LOCA has occurred and the RB sump and/or RB pressure indications are not increasing.

BASIS:

Radiation monitors support that a loss of coolant has occurred but other containment parameters are in disagreement.

- This address the condition when RB pressure and sump level do not increase as a result of mass and energy released into the RB from a LOCA (≥ 100 gpm).

- This lack of increase (pressure sump level) indicates preincident failure of the RB or that the LOCA is outside the RB (e.g., interfacing system LOCA or a V-sequence failure).

3) Plant Exhaust
RM-A-8 Gas Hi Range ≥ 200 CPM

BASIS:

This is indicative of a 120 gpm leak with the RCS activity ≥ Tech Spec, assuming leakage in the Auxiliary building that cannot be isolated. This provides for fission products to be outside the containment barrier (bypassed) and can be considered as lost.

EXHIBIT 3

3.0 ELECTRICAL

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
G3.1 (AC) Prolonged Station Blackout exists as indicated by: 1) LOOP **AND** 2) No emergency 4KV Bus (1D or 1E) energized. **AND** 3a) > 25° Superheat **OR** 3b) 4 KV restoration not likely within 4 hours of loss. APPLICABILITY: Pwr Ops, HStby, HSD, SU, HU/CD (BASIS Page 32)	S3.1 (AC) Station Blackout exists as indicated by: 1) LOOP > 15 minutes **AND** 2) No emergency 4KV Bus (1D or 1E) energized for greater than 15 minutes. APPLICABILITY: Pwr Ops, HStby, HSD, SU, HU/CD (BASIS Page 33)	A3.1 (AC) Risk of Station Blackout, redundant power **NOT** available, as indicated by: 1) LOOP >15 minutes; **AND** 2a) Only 1 emergency 4KV Bus (1D or 1E) energized. **OR** 2b) ONE on-site power source available APPLICABILITY: Pwr Ops, HStby, HSD, SU, HU/CD (BASIS Page 34)	U3.1 (AC) Risk of Station Blackout, with redundant power available, as indicated by: 1) LOOP >15 minutes; **AND** 2) Both emergency 4 KV Buses (1D or 1E) energized. **AND** 3) ≥ TWO on-site power sources available APPLICABILITY: All Plant Conditions (BASIS Page 35)
		A3.2 (Shutdown AC) Station Blackout, during Cold Shutdown or Refueling Shutdown, as indicated by: 1) LOOP > 15 minutes **AND** 2) No emergency 4KV Bus (1D or 1E) energized for greater than 15 minutes. APPLICABILITY: CSD, RSD (BASIS Page 36)	
	S3.3 (DC) Unplanned loss of ALL on-site DC power for greater than 15 minutes as indicated by: 1) Receipt of all annunciators per EP 1202-9A or local meter < 105 volts. **AND** 2) Receipt of all annunciators per EP 1202-9B or local meter < 105 volts APPLICABILITY: Pwr Ops, Hstby, HSD, SU, HU/CD (BASIS Page 37)		U3.3 (DC) Unplanned loss of ALL on-site DC power for greater than 15 minutes as indicated by: 1) Receipt of all annunciators per EP 1202-9A or local meter < 105 volts. **AND** 2) Receipt of all annunciators per EP 1202-9B or local meter < 105 volts. APPLICABILITY: CSD, RSD (BASIS Page 38)

G3.1 (AC) (GENERAL EMERGENCY)
Prolonged Station Blackout exists as indicated by:

1) Loss of off-site power (LOOP) to both 1A and 1B Auxiliary Transformers
AND
2) No emergency 4KV Bus (1D or 1E) energized
AND
3a) > 25° Superheat
OR
3b) Restoration of a 4KV Bus (1D or 1E), from any source, is not likely within 4 hours of the loss

(1 **AND** 2 **AND** 3a or 1 **AND** 2 **AND** 3b)

APPLICABILITY: Power Operations, Hot Standby, Startup, Hot Shutdown, Heatup/Cooldown

BASIS:

- When assessing whether or not it is likely that a 4KV Bus will be restored within 4 hours of the loss, consider the following:

  a. The likelihood that power can be restored in time to prevent a loss of two Fission Product Barriers with a potential loss of the third.

  b. The level of damage and resources available to restore at least 1 4KV Bus.

  c. The availability of indications to monitor the transient.

  The GENERAL EMERGENCY declaration should be made as early as appropriate, based on a reasonable assessment of the event trajectory.

- TMI is a 4 hour coping plant.

- Beyond the 4 hours the potential exists to breach the RCS and CLAD. The CONTAINMENT is still intact. This is an anticipatory declaration.

- This satisfies NESP-007 GENERAL EMERGENCY SG.1.

EXHIBIT 3

S3.1 (AC) (SITE AREA EMERGENCY)
Station Blackout condition exists, as indicated by:

1) Loss of off-site power (LOOP) to both 1A and 1B Auxiliary Transformers for greater than 15 minutes.
AND
2) No emergency 4 KV bus (1D or 1E) energized for greater than 15 minutes.

(1 **AND** 2)

APPLICABILITY: Power Operation, Hot Standby, Hot Shutdown, Startup, Heatup/Cooldown

BASIS:

Loss of AC power compromises all plant safety systems requiring electric power, including Decay Heat Removal, ECCS, containment heat removal systems, and closed/river water cooling systems. Fifteen minutes was selected as a threshold to exclude transient or momentary losses.

- The 1D or 1E 4KV busses may be energized automatically or manually by their respective emergency diesel generators or manually by the SBO diesel generator. Additionally the Main Turbine Generator may be used to energize the buses.

  Prolonged loss of all AC power will cause core uncovering and loss of containment integrity, thus the event can escalate to a General Emergency via a Fission Product Barrier Degradation EAL, or SM/ED judgement.

- Subsequent start and load of one on-site power source (EG-Y-1A, EG-Y-1B, EG-Y-4 or Main Turbine) to energize 1D or 1E 4KV bus enables the event to be downgraded to an Alert.

- Subsequent start and load of two on-site power sources (EG-Y-1A, EG-Y-1B, EG-Y-4 or Main Turbine) to energize 1D or 1E 4KV bus enables the event to be downgraded to an Unusual Event

- This EAL satisfies NESP-007 Site Area Emergency SS1.

EXHIBIT 3

A3.1 (AC) (ALERT)
Risk of Station Blackout, redundant backup power is **NOT** available, as indicated by:

1) Loss of off-site power (LOOP) to both 1A and 1B Auxiliary Transformers for greater than 15 minutes
AND
2a) Only one (1) emergency 4KV Bus (1D or 1E) energized.
OR
2b) There is only ONE on-site power source available and supplying power to ONE emergency bus.

(1 **AND** 2a **OR** 1 **AND** 2b)

APPLICABILITY: Power Operation, Hot Standby, Hot Shutdown, Startup, Heatup/Cooldown

BASIS:

This EAL is based upon degradation of off-site and on-site power systems such that any additional single failure would result in a station blackout.

- This EAL is met if a loss of off-site power is sustained for more than 15 minutes, and if 1D or 1E 4KV bus remains energized or becomes energized without a backup on-site power source.
- The 1D or 1E 4KV busses may be energized automatically or manually by their respective emergency diesel generators or manually by the SBO diesel generator or the Main Turbine Generator.
- A load rejection (separation from the grid with the main generator supplying station loads) meets this EAL if either 1D or 1E 4KV bus is de-energized and there are no emergency diesel generators operable.
- The subsequent loss of the single on-site power source would escalate the event to a SITE AREA EMERGENCY.
- This EAL satisfies NESP-007 Alert SA5.

EXHIBIT 3

U3.1 (AC) (UNUSUAL EVENT)
A risk of a Station Blackout exists although redundant backup power is available, as indicated by:

1) Loss of off-site power (LOOP) to both 1A and 1B Auxiliary Transformers for greater than 15 minutes
AND
2) Both emergency 4KV Buses (1D or 1E) energized
AND
3) There are 2 or more on-site power sources providing power to at least one emergency bus.

(1 **AND** 2 **AND** 3)

APPLICABILITY: All Plant Conditions

BASIS:
Loss of off-site AC power reduces required redundancy and potentially degrades the level of safety of the plant by rendering the plant more vulnerable to a complete Loss of AC Power (Station Blackout). Fifteen minutes was selected as a threshold to exclude transient or momentary losses.

- This EAL is met if a loss of off-site power is sustained for 15 minutes and, either 1D or 1E 4KV bus remains energized or becomes energized within that 15 minutes.

- The 1D or 1E 4KV busses may be energized automatically or manually by their respective emergency diesel generators or manually by the SBO diesel generator. Additionally, a second on-site source of power must be available.
  The 2 or more sources of power are made up from the following list:
  'A' Diesel Generator
  'B' Diesel Generator
  'SBO' Diesel Generator
  Main Turbine Generator (Load Rejection)

- A load rejection (separation from the grid with the main generator supplying station loads) meets this EAL.

- This EAL satisfies NESP-007 Unusual Event SU1.

A3.2 (Shutdown AC) (ALERT)
Station Blackout during Cold Shutdown or Refueling Shutdown as indicated by:

1) Loss of off-site power (LOOP) to both 1A and 1B Auxiliary Transformers for greater than 15 minutes.
AND
2) No emergency 4KV bus (1D or 1E) energized for greater than 15 minutes.

(1 **AND** 2)

APPLICABILITY: Cold Shutdown, Refueling Shutdown

BASIS:
Loss of AC power compromises all safety systems requiring electric power, including Decay Heat Removal, Spent Fuel Cooling, and closed/river water cooling systems. When in Cold Shutdown, refueling, or defueled, the event can be classified as an Alert because of the significantly reduced decay heat, temperature, and pressure, increasing the time to restore one of the emergency busses, relative to that specified for the Site Area Emergency EAL. Fifteen minutes was selected as a threshold to exclude transient or momentary losses.

- The 1D or 1E 4KV busses may be energized automatically or manually by their respective emergency diesel generators (EG-Y-1A or EG-Y-1B) or manually by the SBO diesel generator (EG-Y-4).

  Subsequent start and load of at least one on-site power source (EG-Y-1A, EG-Y-1B OR EG-Y-4) to energize the 1D or 1E 4K bus enables the event to be downgraded to an Unusual Event.

- Escalation to a Site Area Emergency, if appropriate, would be due to abnormal radiation levels/radiological effluent, or SM/ED judgement.

- This EAL satisfies NESP-007 Alert SA1.

EXHIBIT 3

S3.3 (DC) (SITE AREA EMERGENCY)
Unplanned loss of ALL on-site DC power for greater than 15 minutes as indicated by:

1) Receipt of all annunciators listed under the SYMPTOMS in EP 1202-9A (1A DC Distribution) or local meter < 105 volts.

AND

2) Receipt of all annunciators listed under the SYMPTOMS in EP 1202-9B (1B DC Distribution) or local meter < 105 volts.

(1 **AND** 2)

APPLICABILITY: Power Operations, Hot Standby, Hot Shutdown, Startup, Heatup/Cooldown

BASIS:
Extended loss of DC requires coordination of efforts for control of equipment. This has the potential to reduce capability of public protection. The 15 minute threshold was selected to exclude transient or momentary losses.

- Emergency Organization activation is necessary to mitigate the event to allow sufficient capability to operate equipment locally in the plant.

  The loss of DC compromises the ability to monitor and control the plant safely.

- This EAL satisfies NESP-007 Site Area Emergency SS3.

U3.3 (DC) (UNUSUAL EVENT)
Unplanned loss of ALL on-site DC power for greater than 15 minutes as indicated by:

1) Receipt of all annunciators listed under the SYMPTOMS in EP 1202-9A (1A DC Distribution) or local meter < 105 volts.

AND

2) Receipt of all annunciators listed under the SYMPTOMS in EP 1202-9B (1B DC Distribution) or local meter < 105 volts.

(1 **AND** 2)

APPLICABILITY: Cold Shutdown, Refueling Shutdown

BASIS:
Extended loss of DC requires coordination of efforts for control of equipment. This has the potential to reduce capability of public protection. The 15 minute threshold was selected to exclude transient or momentary losses.

- Emergency Organization activation is necessary to mitigate the event to allow sufficient capability to operate equipment locally in the plant.
- The loss of DC compromises the ability to monitor and control the plant safely.
- This EAL satisfies NESP-007 Site Area Emergency SU7.

4.0 INSTRUMENTATION, ACTUATION AND TECH SPECS

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
	S4.1 (Transient with Annunciator/Indicator Loss) 1) Loss of ALL safety system annunciators; **AND** 2) Loss of indicators needed to monitor safety functions **AND** 3) Loss of compensatory non-alarming indicators; **AND** 4) A significant plant transient is in progress. APPLICABILITY: Pwr Ops, Hot Stby, HSD, SU, HU/CD (BASIS Page 41)	A4.1 (Transient with Annunciator/Indicator Loss) 1a) Unplanned loss of majority of Safety System ANNUNCIATORS for ≥15 minutes; OR 1b) Unplanned loss of majority of Safety System INDICATORS for ≥15 minutes **AND** 2a) Compensatory non-alarming indicators are unavailable; OR 2b) A significant plant transient is in progress; **AND** 3) SM requires increased surveillance to safely operate the plant. APPLICABILITY: Pwr Ops, Hot Stby, HSD, SU, HU/CD (BASIS Page 42)	U4.1 (Annunciator/Indicator Loss) 1a) Unplanned loss of majority of Safety System ANNUNCIATORS for ≥15 minutes; OR 1b) Unplanned loss of majority of Safety System INDICATORS for ≥15 minutes **AND** 2) Compensatory non-alarming indicators are available; **AND** 3) SM requires increased surveillance to safely operate the plant. APPLICABILITY: Pwr Ops, Hot Stby, HSD, SU, HU/CD (BASIS Page 43)
			U4.1.1 (Communications) Unplanned loss of 1) All on-site communications; **OR** 2) All off-site communications APPLICABILITY: All Plant Conditions (BASIS Page 44)
G4.2 (ATWS Unsuccessful followup) 1) Failure of RPS to execute an auto reactor trip with Reactor power ≥ 5%; **AND** 2) Manual trip from Control Room was <u>NOT</u> successful **AND** 3a) T_{clad} > 1800°F OR 3b) All means of heat removal (MFW/EFW/HPI-PORV) lost APPLICABILITY: Pwr Ops, Hstby, HSD, SU, HU/CD (BASIS Page 45)	S4.2 (ATWS, unsuccessful followup) 1) Failure of RPS to execute an auto reactor trip with reactor power ≥ 5%; **AND** 2) Manual trip from Control Room was **NOT** successful. APPLICABILITY: Pwr Ops (BASIS Page 46)	A4.2 (ATWS, successful followup) 1) Failure of RPS to execute an auto reactor trip; **AND** 2) Manual trip from Control Room was successful. APPLICABILITY: Pwr Ops, Hstby, HSD, SU, HU/CD (BASIS Page 47)	U4.2 (TS SD) Failure to complete TS required shutdown or cooldown within LCO time limit. APPLICABILITY: Pwr Ops, Hstby, HSD, SU, HU/CD (BASIS Page 48)

4.0 INSTRUMENTATION, ACTUATION AND TECH SPECS

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
	S4.3 (DHR) 1) Loss of ALL means of DHR (Core Heat Removal) per EP 1202-35 **AND** 2a) Indicated level < 0 inches OR 2b) Core exit temperature indicates > 25° SH APPLICABILITY: (CSD and RSD) (BASIS Page 49)	A4.3 (DHR) 1) Loss of ALL means of DHR (Core Heat Removal) per EP 1202-35 **AND** 2a) Temperature is ≥ 200°F OR 2b) Temperature is approaching 200°F in an uncontrolled manner APPLICABILITY: (CSD and RSD) (BASIS Page 50)	
	S4.4 (HSD Function) 1) Loss of all means to feed AND steam OTSGs **AND** 2) Loss of RCS makeup and Pzr level < 20" APPLICABILITY: Pwr Ops, HStby, SU, HSD (BASIS Page 51)		

EXHIBIT 4

S4.1 (Transient with Annunciator/Indicator Loss) (SITE AREA EMERGENCY)
Inability to monitor a significant transient in progress as indicated by:

1) Loss of ANNUNCIATORS associated with ALL safety systems
AND
2) Loss of indicators needed to monitor essential safety functions
AND
3) Loss of compensatory non-alarming indicators
AND
4) A significant plant transient is in progress

(1 **AND** 2 **AND** 3 **AND** 4)

APPLICABILITY: Power Operations, Hot Standby, Hot Shutdown, Startup, Heatup/Cooldown

BASIS:

This EAL addresses the inability of the control room staff to monitor plant response to a transient. A Site Area Emergency is considered to exist if the control room staff cannot monitor safety functions needed for the protection of the public.

- Planned and Unplanned losses are included in the EAL, (e.g., scheduled maintenance and testing activities) since the loss of this much instrumentation during a transient is a significant factor.
- Specific ANNUNCIATORS for this EAL include only those identified in ATOG, Abnormal and Emergency operating procedures, and in other EALs (e.g., area, process, and/or effluent radiation monitors).
- Specific INDICATORS needed to monitor safety functions necessary for protection of the public include control room indications and dedicated annunciation capability used to shutdown the reactor, maintain core cooling and a coolable core geometry, to maintain the integrity of the RCS and containment.
- "Compensatory non-alarming indications" may include computer based information and displays such as SPDS. This may include all other computer systems available for use.
- "Significant transient" includes response to automatic or manually initiated functions such as reactor trips, runbacks greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or more.
- This EAL satisfies NESP-007 Site Area Emergency SS6.

EXHIBIT 4

A4.1 (Transient with Annunciator/Indicator Loss) (ALERT)
Unplanned, sustained loss of Control Room ANNUNCIATORS or INDICATORS with a significant transient in progress or compensatory non-alarming INDICATORS unavailable as indicated by:

1a) Unplanned loss of the majority of safety system ANNUNCIATORS ≥ 15 minutes
OR
1b) Unplanned loss of the majority of safety system indications ≥ 15 minutes
AND
2a) Compensatory non-alarming indications are not available
OR
2b) A significant plant transient is in progress
AND
3) In the opinion of the Shift Manager, the loss of the ANNUNCIATORS or INDICATORS requires increased surveillance to safely operate the plant.

(1a OR 1b **AND** 2a OR 2b **AND** 3)

APPLICABILITY: Power Operations, Hot Standby, Hot Shutdown, Startup, Heatup/Cooldown

BASIS:

This EAL recognizes the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment.

- "Unplanned" losses exclude scheduled maintenance and testing activities. Fifteen minutes was selected as a threshold to exclude transient or momentary losses.

- Specific ANNUNCIATORS and INDICATORS for this EAL shall include those associated with:

  - ESAS
  - RPS
  - Radiation Monitors
  - Core Flood
  - BWST/NaOH
  - EFW/HSPS
  - ES Diesel Generators
  - ES Electrical
  - RBAT/BAMT

- "Compensatory non-alarming indications" may include computer based information and displays such as SPDS. This may include all other computer systems available for use.

- "Significant transient" includes response to automatic or manually initiated functions such as reactor trips, runbacks greater than 25% thermal power change, ECCS injections, or thermal power oscillations of 10% or more.

- This EAL satisfies NESP-007 Alert SA4.

U4.1 (Annunciator/Indicator Loss) (UNUSUAL EVENT)
Unplanned, sustained loss of Control Room ANNUNCIATORS or INDICATORS requiring increased surveillance to safely operate the plant as indicated by:

1a) Unplanned loss of the majority of safety system ANNUNCIATORS ≥ 15 minutes
OR
1b) Unplanned loss of the majority of safety system INDICATORS ≥ 15 minutes.
AND
2) Compensatory non-alarming indications are available.
AND
3) In the opinion of the Shift Manager, the loss of the ANNUNCIATORS or INDICATORS requires increased surveillance to safely operate the plant.

(1a OR 1b **AND** 2 **AND** 3)

APPLICABILITY: Power Operations, Hot Standby, Hot Shutdown, Startup, Heatup/Cooldown

BASIS:

This EAL is intended to recognize the difficulty associated with monitoring changing plant conditions without the use of a major portion of the annunciation or indication equipment.

"Unplanned" losses exclude scheduled maintenance and testing activities. Fifteen minutes was selected as a threshold to exclude transient or momentary losses.

- Specific ANNUNCIATORS and INDICATORS for this EAL shall include those associated with:
  - ESAS
  - RPS
  - Radiation Monitors
  - Core Flood
  - BWST/NaOH
  - EFW/HSPS
  - ES Diesel Generators
  - ES Electrical
  - RBAT/BAMT
- "Compensatory non-alarming indications" may include computer based information and displays such as SPDS. This may include all other computer systems available for use.
- If the majority of the safety system ANNUNCIATORS or INDICATORS are lost, there is increased risk that a degraded plant condition could go undetected. It is not intended that plant personnel perform a detailed count of the instrumentation lost but use the value as a judgement threshold for determining the severity of the plant conditions. This judgement is supported by the specific opinion of the Shift Manager that additional operating personnel will be required to provide increased monitoring of system operation to safely operate the plant.
- This EAL satisfies NESP-007 Unusual Event SU3.

U4.1.1 (Communications) (UNUSUAL EVENT)

1) Unplanned loss of **ALL** on-site communications capabilities affecting the ability to perform routine operations
OR
2) Unplanned loss of **ALL** off-site communications capabilities.

(1 **OR** 2)

APPLICABILITY: All Plant Conditions

BASIS:
The purpose of this EAL is to recognize a loss of communications capability that either defeats the plant operations staff ability to perform routine tasks necessary for plant operations or the ability to communicate problems to off-site authorities.

- "Unplanned" losses as specified in the EAL exclude scheduled maintenance and testing activities.
- On-site communications systems addressed in this EAL include all means of routine communications (plant page, telephones, sound powered phones, radios, etc.) Loss of all of these capabilities would severely hamper routine operations. This would degrade the level of safety of the plant.
- Off-site communications systems include those systems addressed in EPIP-TMI-.03, which also provides guidance for alternate methods of communications.
- This EAL satisfies NESP-007 Unusual Event SU6.

EXHIBIT 4

G4.2 (ATWS, unsuccessful followup) (GENERAL EMERGENCY)

1) Failure of the Reactor Protection System (RPS trip string) to; automatically INITIATE AND COMPLETE a reactor trip when any RPS trip set point has been exceeded with Reactor Power remaining ≥ 5%.

AND

2) The manual reactor trip from the Control Room was NOT successful

AND

3a) T_{clad} > 1800°.

OR

3b) All means of heat removal (Main Feedwater, Emergency Feedwater, PORV-HPI Cooling) have been lost.

(1 **AND** 2 **AND** 3a OR 1 **AND** 2 **AND** 3b)

APPLICABILITY: Power Operations, Hot Standby, Startup, Hot Shutdown, Heatup/Cooldown

BASIS:

- This meets the anticipatory criteria for a General Emergency because of the loss of coolant and failure of the CLAD.
- No RCS leakage is expected. However, the heatup will reduce RCS inventory.
- Under this condition the reactor is producing more heat than is being removed and a General Emergency is warranted because conditions exist for loss of fuel clad and RCS inventory.
- This EAL satisfies NESP-007 GENERAL EMERGENCY SG.2.

S4.2 (ATWS, unsuccessful followup) (SITE AREA EMERGENCY)

1) Failure of the Reactor Protection System (RPS trip string) to; automatically INITIATE AND COMPLETE a reactor trip when any RPS trip setpoint has been exceeded with Reactor Power remaining ≥ 5%.

AND

2) The manual reactor trip from the Control Room was **NOT** successful.

(1 **AND** 2)

APPLICABILITY: Power Operations

BASIS:

- Automatic and manual tripping of the reactor is not considered successful if action outside the control room was required to trip the reactor.

- Under this condition the reactor is producing more heat than the design decay heat load (5%) and a Site Area Emergency is warranted because conditions exist that lead to imminent loss or potential loss of both fuel clad and RCS inventory.

NOTE

It is recognized that this specific condition closely parallels the Fission Product Barrier EALs, but is provided for rapid declaration in the event that the Alert condition (ATWS) occurred.

- This EAL satisfies NESP-007 Site Area Emergency SS2.

A4.2 (ATWS, successful followup) (ALERT)

1) Failure of the Reactor Protection System (RPS trip string) to automatically INITIATE AND COMPLETE a reactor trip when any RPS trip setpoint has been exceeded

AND

2) The manual reactor trip from the Control Room was successful.

(1 **AND** 2)

APPLICABILITY: Power Operations, Hot Standby, Hot Shutdown, Startup, Heatup/Cooldown

BASIS:
Reactor Protection System (RPS) trip setpoints are designed and set to maintain the plant inside (less than) the Core Safety Limits.

- An Alert is warranted because conditions exist that lead to potential loss of fuel clad or RCS inventory.
- Successful followup to the ATWS means that the Control Personnel were able to de-energize the Control Rod drives from the control room. This may occur by depressing the main or backup trip pushbutton. Additionally, the electrical bus may be de-energized from the Control Room.
- The activation of the Emergency Organization is essential to evaluate and possibly mitigate the consequences of the event.
- This EAL satisfies NESP-007 Alert SA2.

U4.2 (TS SD) (UNUSUAL EVENT)
Failure to complete a Technical Specification plant shutdown or plant cooldown within the Limiting Condition for Operation (LCO) time limit.

APPLICABILITY: Power Operations, Hot Standby, Hot Shutdown, Startup, Heatup/Cooldown

BASIS:
This condition exceeds the normal Technical Specification envelope and the plant safety is in a potentially degraded condition. Declaration of an Unusual Event is based on the time at which the LCO specified action statement time period elapses under the Technical Specifications and is not related to how long a condition may have existed.

NOTE

A Technical Specification LCO has an associated time limit to allow continued operation while actions are taken to correct the deficiency. If during the LCO time limit, it becomes apparent that the time limit will be exceeded before repairs are effected then the required actions must be taken to shutdown and/or cooldown the plant. If ANY of the shutdown or cooldown times are NOT met then the EAL is met.

- This EAL satisfies NESP-007 Unusual Event SU2.

EXHIBIT 4

S4.3 (DHR) (SITE AREA EMERGENCY)

1) Loss of ALL means of Decay Heat Removal (Core Heat Removal) per EP 1202-35

AND

2a) Indicated RCS level is < 0 inches on draindown level indicator (RC-LT-1037 or RC-LT-1138)
OR

2b) Core exit temperature indicates ≥ 25° Superheat.

(1 **AND** 2A OR 2b)

APPLICABILITY: Cold Shutdown, Refueling Shutdown

BASIS:
This EAL addresses prolonged boiling following a loss of Decay Heat Removal and is indicative of potential core damage without RCS boundary integrity being assured.

- This EAL addresses the special condition of Shutdown and the available inventory to maintain the integrity of the fuel clad. In these particular plant conditions it is possible to have the RCS open (Breached) and to not have Containment Integrity as it may not be required by Technical Specifications.

  This is an unexpected and potentially prolonged condition with normal and backup means of cooling not available.

- This level ensures that the Emergency Organization is activated to insure protection of the health and safety of the public.

- A core exit temperature of 25° Superheat is an indication that fuel is uncovered and is relied upon when level indication is not available. The loss of level indication is anticipatory because inventory is still available for some finite time. Conservatively core uncovery is assumed when the level indication is lost.

- Zero inches on the draindown level indicators (RC-LT-1037 or RC-LT-1138) is at the 314' elevation and the centerline of the cold legs.

- This EAL does not apply if all irradiated fuel has been removed from the Reactor vessel.

- This satisfies NESP-007 EAL SS5.

EXHIBIT 4

A4.3 (DHR) (ALERT)

1) Loss of ALL means of Decay Heat Removal (Core Heat Removal) per EP 1202-35
AND
2a) Temperature is ≥ 200°F
OR
2b) Temperature is approaching 200°F in an uncontrolled manner.

(1 **AND** 2a OR 2b)

APPLICABILITY: Cold Shutdown, Refueling Shutdown

BASIS:
This EAL addresses potential boiling following a loss of Decay Heat Removal and is indicative of potential core damage without RCS boundary integrity being assured.

- This EAL addresses the special condition of Shutdown and the available inventory to maintain the integrity of the fuel clad. In these particular plant conditions it is possible to have the RCS open (Breached) and to not have Containment Integrity as it may not be required by Technical Specifications.
- This is an unexpected and potentially prolonged condition with normal and backup means of cooling not available.
- This level ensures that the Emergency Organization is activated to insure protection of the health and safety of the public.
- The time to uncover the fuel is based on level before the loss of Decay Heat Removal and the time since reactor shutdown. The loss of Decay Heat Removal Emergency Procedure (1202-35) contains the information to predict core uncovery.
- This EAL satisfies NESP-007 Alert SA.3.

S4.4 (HSD Function) (SITE AREA EMERGENCY)

1) Loss of all means to feed AND steam the Once Through Steam Generators (OTSG)
AND
2) Loss of RCS makeup AND pressurizer level is less than 20".

(1 **AND** 2)

APPLICABILITY: Hot Shutdown, Hot Standby, Startup and Power Operations

BASIS:
Under the conditions listed there is an actual major failure of systems/components intended for the protection of the public.

- Loss of both functions that are necessary to achieve and maintain Hot Shut Down
- This is a case where functions needed for the protection of the health and safety of the public have been lost (Heat Sink, and RCS inventory).
- RCS makeup is "normal makeup" and HPI.
- The emergency organization is activated to monitor and control the situation to restore the lost protection. Accident mitigation is essential.
- This satisfies NESP-007 EAL SS4.

5.0 NATURAL PHENOMENA

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
		A5.1 (High River Water) Actual river water elevation ≥302 ft. APPLICABILITY: All Plant Conditions (BASIS Page 53)	U5.1 (High River Water) Actual river water elevation ≥ 300 ft. APPLICABILITY: All Plant Conditions (BASIS Page 54)
		A5.2 (High Wind) Wind Speeds > 80 mph sustained > 1 minute APPLICABILITY: All Plant Conditions (BASIS Page 55)	U5.2 (High Wind) Wind speed > 70 mph sustained > 1 minute APPLICABILITY: All Plant Conditions (BASIS Page 56)
		A5.3 (Tornado) Report of Tornado with damage to structures/equipment inside Vital Area APPLICABILITY: All Plant Conditions (BASIS Page 57)	U5.3 (Tornado) Report of Tornado inside Protected Area APPLICABILITY: All Plant Conditions (BASIS Page 58)
		A5.4 (Earthquake) **VALID** alarm PRF-1-3 "Operating Basis Earthquake" APPLICABILITY: All Plant Conditions (BASIS Page 59)	U5.4 (Earthquake) **VALID** alarm PRF-1-2 "Threshold Seismic Condition" APPLICABILITY: All Plant Conditions (BASIS Page 60)

EXHIBIT 5

A5.1 (High River Water) (ALERT)
High River Water Level, as indicated by:

Actual river water level elevation at the river water intake structure ≥ 302 ft.

APPLICABILITY: All Plant Conditions

BASIS:

- Portions of the site would be flooded at this level and there is a potential for damage to vital equipment.
- The design flood corresponds to river water level at 303 ft. elevation at the river water intake structure.
- Dike elevation at the intake structure is 305 ft.
- Southern dike elevation is 304 ft.
- This EAL partially satisfies NESP-007 Alert HA1.

EXHIBIT 5

U5.1 (High River Water) (UNUSUAL EVENT)
High River Water Level, as indicated by:

Actual river water level elevation at the river water intake structure ≥300 ft.

APPLICABILITY: All Plant Conditions

BASIS:

- The design flood corresponds to river water level at 303 ft. elevation at the river water intake structure.
- Dike elevation at the intake structure is 305 ft.
- Southern dike elevation is 304 ft.
- This EAL partially satisfies NESP-007 Unusual Event HU1.

A5.2 (High Wind) (ALERT)

High wind speeds, as indicated by:

Wind speed greater than 80 mph sustained for greater than 1 minute, indicated on Wind Speed Recorder NDS-501.

APPLICABILITY: All Plant Conditions

BASIS:

This EAL recognizes potential damage to vital equipment or structures due to exceeding structural design limits.

- The containment building is designed to withstand 80 mph sustained winds and 300 mph tangential tornado winds. Only F5 tornadoes have tangential winds in excess of 300 mph. There is a potential for damage to vital equipment.

- The wind speed may be determined by the strip chart in the Control Room or the PPC. These indications are from the weather tower located on the island. Failure of the weather tower requires alternate sources of data such as the Harrisburg Airport or the National Weather Service.

- Evaluate, as a minimum, the following areas for damage:
  Reactor Building, Intake Building, Intermediate Building, Control Tower, Aux. and Fuel Handling Building, and Diesel Generator Building.

This EAL partially satisfies NESP-007 Alert HA1.

EXHIBIT 5

U5.2 (High Wind) (UNUSUAL EVENT)
High wind speeds, as indicated by:

Wind speed greater than 70 mph sustained for greater than 1 minute, indicated on Wind Speed Recorder NDS-501.

APPLICABILITY: All Plant Conditions

BASIS:

This EAL recognizes potential damage to vital equipment or structures due to exceeding structural design limits.

- The containment building is designed to withstand 80 mph sustained winds and 300 mph tangential tornado winds. Only F5 tornadoes have tangential winds in excess of 300 mph. There is a potential for damage to vital equipment.

- The wind speed may be determined by the strip chart in the Control Room or the PPC. These indications are from the weather tower located on the island. Failure of the weather tower requires alternate sources of data such as the Harrisburg Airport or the National Weather Service.

- Evaluate, as a minimum, the following areas for damage:
  Reactor Building, Intake Building, Intermediate Building, Control Tower, Aux. & Fuel Handling Buildings, and Diesel Generator Building.

This EAL partially satisfies NESP-007 Unusual Event HU1.

A5.3 (Tornado) (ALERT)

Report by station personnel that a Tornado has touched down damaging structures/equipment inside the Vital Area.

APPLICABILITY: All Plant Conditions

BASIS:
Plant design is to be able to withstand severe winds on specific buildings (refer to EP 1202-33) and protect Safety equipment. This EAL addresses where equipment necessary for the protection of the public is damaged.

- Damage to equipment or structures inside the Vital Area that could impact on the ability of the plant to protect the health and safety of the public.

- Evaluate, as a minimum, the following areas for damage:
  Reactor Building, Intake Building, Intermediate Building, Control Tower, Aux. and Fuel Handling Building, and Diesel Generator Building.

- This EAL is meant to satisfy NESP-007 EAL HA1.

U5.3 (Tornado) (UNUSUAL EVENT)
Report by station personnel that a Tornado has touched down inside the Protected Area.

APPLICABILITY: All Plant Conditions

BASIS:
This EAL is a precursor to actual evaluation of damage and assumes that the tornado damages structures and components.

- Potential damage to equipment or structures inside the Protected Area that could impact on the safe shutdown of the plant.
- This EAL partially satisfies NESP-007 Alert HU1.

EXHIBIT 5

A5.4 (Earthquake) (ALERT)
VALID alarm PRF-1-3 "Operating Basis Earthquake".

APPLICABILITY: All Plant Conditions

BASIS:
An earthquake of this magnitude may cause damage to safety equipment and additional evaluation is warranted.

- The Operating Basis Earthquake assumes some minor damage has occurred to the plant, therefore the emergency organization is needed for evaluation and potential event mitigation.
- Evaluate, as a minimum, the following areas for damage:
  Reactor Building, Intake Building, Intermediate Building, Control Tower, Aux. and Fuel Handling Building, and Diesel Generator Building.
- This EAL is meant to satisfy NESP-007 EAL HA1.

EXHIBIT 5

U5.4 (Earthquake) (UNUSUAL EVENT)
VALID alarm PRF-1-2 "Threshold Seismic Condition".

APPLICABILITY: All Plant Conditions

BASIS:
An earthquake of this magnitude may cause damage to some portions of the plant but it is not expected to affect safety systems.

- This EAL insures that the emergency plan is implemented even though the Operating Basis Earthquake levels have not been reached or exceeded.
- The emergency organization is established if escalation is required.
- This EAL is meant to satisfy NESP-007 EAL HU1.

6.0 MAN-MADE PHENOMENA

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
		A6.1 (Fire) 1) Fire affects operability of 1 safety system train **OR** 2) Fire inside Protected Area requires off-site assistance APPLICABILITY: All Plant Conditions (BASIS Page 62)	U6.1 (Fire) **VALID** fire inside Protected Area which CANNOT be controlled within 15 minutes of verification. APPLICABILITY: All Plant Conditions (BASIS Page 63)
	S6.2 (Control Room Evacuation) Control Room evacuation initiated and plant control is NOT established within 15 minutes APPLICABILITY: All Plant Conditions (BASIS Page 64)	A6.2 (Control Room Evacuation) Control Room evacuation initiated APPLICABILITY: All Plant Conditions (BASIS Page 65)	
		A6.3 (Hazardous Gas) Report flammable/toxic gases detected in Vital Area in life threatening concentrations APPLICABILITY: All Plant Conditions (BASIS Page 66)	U6.3 (Hazardous Gas) Report of flammable/toxic gases potentially affecting normal plant operations APPLICABILITY: All Plant Conditions (BASIS Page 67)
		A6.4 (Equipment Failure) NON Bomb explosion inside Vital Area (Violent combustion/pressurized equipment failure) APPLICABILITY: All Plant Conditions (BASIS Page 68)	U6.4 (Equipment Failure) NON Bomb explosion inside Protected Area (Violent combustion/pressurized equipment failure) APPLICABILITY: All Plant Conditions (BASIS Page 69)
			U6.5 (Turbine Failure) 1) Turbine failure penetrating casing **OR** 2) Damage to generator seals APPLICABILITY: Pwr Ops, H Stby, HSD (BASIS Page 70)
		A6.6 (Vehicle Crash) Vehicle Crash inside Vital Area (Equipment/Structure damage) APPLICABILITY: All Plant Conditions (BASIS Page 71)	U6.6 (Vehicle Crash) Vehicle crash inside Protected Area (Potential Equipment/Structure damage) APPLICABILITY: All Plant Conditions (BASIS Page 72)

A6.1 (Fire) (ALERT)

1) Fire which affects the operability of one safety system train.

OR

2) A fire inside the Protected Area which requires off-site fire fighting assistance, as determined by the Shift Manager/Emergency Director,

(1 **OR** 2)

APPLICABILITY: All Plant Conditions

BASIS:

The purpose of this EAL is to identify when the level of safety of the plant is in question because of a fire. The fire may be impacting safety systems directly (Fire in a Vital Area) or indirectly (Fire in the Protected Area) but it is challenging a Vital Area (Area where vital equipment for Safe Shutdown is located).

- Evaluate, as a minimum, the following areas (TMI-1) for damage based on fire location:
  Reactor Building, Intake Building, Intermediate Building, Control Tower, Aux. and Fuel Handling Building, and Diesel Generator Building.

- Part **one** is considered to be met if a single Emergency Diesel Generator or Engineered Safeguards system string is rendered inoperable AND it is required to be operable for present plant conditions for event mitigation.

- Part **two** considers that extensive damage to a structure inside the Protected Area may affect normal day to day operations. This is especially true for the TMI-2 buildings that do not have water and off-site assistance is required to extinguish a fire.

- This EAL is meant to satisfy NESP-007 EAL HA2.

U6.1 (Fire) (UNUSUAL EVENT)

A **VALID** fire inside the Protected Area which CANNOT be controlled by the Fire Brigade within 15 minutes from the time of verification.

APPLICABILITY: All Plant Conditions

BASIS:
The purpose of this EAL is to address fires whose extent and magnitude may be potentially significant precursors to damage to safety systems.

- This condition is considered met if the Fire Brigade cannot bring the fire under control within 15 minutes of verification that a fire exists.
- This excludes fires in administrative buildings, trash containers and other small fires with NO safety consequences.
- Verification is confirmatory alarms or visual indication.
- This EAL is meant to satisfy NESP-007 EAL HU2.

EXHIBIT 6

S6.2 (Control Room Evacuation) (SITE AREA EMERGENCY)

Evacuation of the Control Room has been INITIATED and all of the following have NOT been performed within 15 minutes of the evacuation as determined by the Shift Manager/Emergency Director:

- protected supply of electrical power established or available
- protected supply of RCS make-up, letdown and seal injection is established
- primary to secondary heat transfer is established and controlled.

APPLICABILITY: All Plant Conditions

BASIS:

- The level of safety of the plant is further degraded and thus warrants additional Emergency Organization personnel to assist in evaluation and event mitigation. This level of commitment is essential for the protection of the health and safety of the public.
- The concern of this EAL is when the plant is above Cold Shutdown to maintain plant safety by following ATOG guidance.

  When the plant is in Cold Shutdown or colder the main concern is for keeping the core cooled.
- This EAL is meant to satisfy NESP-007 EAL HS2.

A6.2 (Control Room Evacuation) (ALERT)
Evacuation of the Control Room is initiated.

APPLICABILITY: All Plant Conditions

BASIS:

- The level of safety of the plant is uncertain and thus warrants activation of the Emergency Organization to assist in evaluation and event mitigation.
- Control Room evacuation warrants additional support, monitoring, and direction from the TSC and other facilities essential for event mitigation.
- This EAL is meant to satisfy NESP-007 EAL HA5.

A6.3 (Hazardous Gas) (ALERT)

Report (On-Site personnel) that flammable/toxic gases have been detected within the Vital Area in concentrations that are life threatening and will affect the safe operation of the plant.

APPLICABILITY: All Plant Conditions

BASIS:
Hazardous materials (toxic/flammable) inside the Vital Area places operation of equipment and safety of personnel in great danger, substantially degrading the safety of the plant.

- Detectable concentrations of toxic/flammable gases inside the Vital Area could be life threatening (Plant personnel) and affect the safe operation of the plant.
- Additionally, it could jeopardize the ability to establish and maintain Cold Shutdown.
- This EAL is meant to satisfy NESP-007 EAL HA3.

U6.3 (Hazardous Gas) (UNUSUAL EVENT)

Report (On-Site personnel or Off-Site) that flammable/toxic gases could enter within the Site Area potentially affecting normal plant operation or requiring evacuation per DOT Emergency Response.

APPLICABILITY: All Plant Conditions

BASIS:

Certain Hazardous Materials, if released off-site, can impact plant personnel safety and equipment operation on-site.

- Concentrations of toxic/flammable gases are projected on the site because the site is within an evacuation zone. Hazardous materials evacuation zone guidance is published by the Department of Transportation (DOT). Environmental Controls has a current document with the recommended evacuation zones for all hazardous materials.
- Hazardous materials (toxic/flammable) may impact the safety and health of plant personnel.
- Hazardous materials could impact the operation of safety related equipment, potentially degrading in the level of safety of the plant.
- This EAL is meant to satisfy NESP-007 EAL HU3.

A6.4 (Equipment Failure) (ALERT)
Unanticipated NON Bomb explosion detected inside the Vital Area.

APPLICABILITY: All Plant Conditions

BASIS:
This EAL addresses violent unconfined combustion or a catastrophic failure of pressurized equipment.

- Evaluate, as a minimum, the following areas (TMI-1) for damage based on the explosion location: Reactor Building, Intake Building, Intermediate Building, Control Tower, Aux. and Fuel Handling Building, and Diesel Generator Building.

- Damage to equipment or structures inside Vital Area that could impact on the ability of the plant to protect the health and safety of the public.

- This EAL is meant to satisfy NESP-007 EAL HA2.

U6.4 (Equipment Failure) (UNUSUAL EVENT)
Unanticipated NON Bomb explosion detected inside the Protected Area.

APPLICABILITY: All Plant Conditions

BASIS:
This EAL addresses violent unconfined combustion or a catastrophic failure of pressurized equipment.

- This EAL does not attempt to assess the actual magnitude of damage.
- The occurrence of the explosion with reports of damage is sufficient for event declaration.
- Potential damage to equipment or structures inside Protected Area that could impact on the safe shutdown of the plant.
- This EAL is meant to satisfy NESP-007 EAL HU1.

EXHIBIT 6

U6.5 (Turbine Failure) (UNUSUAL EVENT)
1)Turbine failure resulting in casing penetration
OR
2)Damage to generator seals

(1 **OR** 2)

APPLICABILITY: Power Operations, Hot Standby, Hot Shutdown

BASIS:

- The hazard of projectiles from the turbine and penetration of the casing decreases the level of plant safety.
- An additional concern is for the release of combustible fluids (lubricating oils) and gases (hydrogen).
- Any fires resulting from this event would be classified via U6.1 or A6.1.
- This EAL is meant to satisfy NESP-007 EAL HU1.

EXHIBIT 6

A6.6 (Vehicle Crash) (ALERT)
Vehicle crash inside the Vital Area (Equipment/Structure damage).

APPLICABILITY: All Plant Conditions

BASIS:

- Damage to equipment or structures inside Vital Area that could impact the ability of the plant to protect the health and safety of the public.
- This EAL is limited to vehicles (train, airplane, helicopter, etc.) which can inadvertently enter the Vital Area. Other vehicles entering the Vital Area by crashes are covered under Security events.
- This EAL is meant to satisfy NESP-007 EAL HA1.

EXHIBIT 6

U6.6 (Vehicle Crash) (UNUSUAL EVENT)
Vehicle crash inside the Protected Area (Potential Equipment/Structure Damage).

APPLICABILITY: All Plant Conditions

BASIS:

- Potential damage to equipment or structures inside Protected Area that could impact the safe shutdown of the plant.
- The EAL is limited to those vehicles (train, airplane, helicopter, etc.) which can inadvertently enter the Protected Area. Other vehicles entering the Protected Area by crashes are covered under Security events.
- This EAL is meant to satisfy NESP-007 EAL HU1.

7.0 SECURITY

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
G7.1 (Security) Security Event resulting in inability to reach or maintain Cold Shutdown as indicated by: 1) Loss of physical control of the Control Room. **OR** 2) Loss of physical control of remote shutdown capability. APPLICABILITY: All Plant Conditions (BASIS Page 74)	S7.1 (Security) Security Event in the VA indicated by: 1) Bomb explosion inside the VA. **OR** 2) Hostile force inside the VA. APPLICABILITY: All Plant Conditions (BASIS Page 75)	A7.1 (Security) Security Event degrading Plant safety indicated by: 1) Bomb discovered inside the VA. **OR** 2) Hostile force inside the PA. APPLICABILITY: All Plant Conditions (BASIS Page 76)	U7.1 (Security) Confirmed Security Event indicated by: 1) Bomb discovered inside the PA. **OR** 2) Hostile force inside the OCA. APPLICABILITY: All Plant Conditions (BASIS Page 77)

EXHIBIT 7

G7.1 (Security) (GENERAL EMERGENCY)

Security Event resulting in loss of ability to reach and maintain Cold Shutdown as indicated by:

1) Loss of physical control of the control room due to security event.
OR
2) Loss of physical control of remote shutdown capability due to security event.

(1 **OR** 2)

APPLICABILITY: All Plant Conditions

BASIS:

This class of security event represents conditions under which a hostile force has taken physical control of vital area(s) required to reach and maintain Cold Shutdown.

- A hostile force is defined as one or more persons that have entered the site, without the company's permission, for the purpose of committing an illegal act against the plant.
- Bomb explosions in the control room or remote shutdown control areas are included in this EAL. Bomb damage represents loss of physical control in the effected area.
- This EAL satisfies NESP-007 General Emergency HG1.

EXHIBIT 7

S7.1 (Security) (SITE AREA EMERGENCY)

Security Event in a Vital Area (VA) as indicated by:

1) Bomb device exploding inside the Vital Area (VA).
OR
2) Hostile Force inside the Vital Area (VA).

(1 **OR** 2)

APPLICABILITY: All Plant Conditions

BASIS:

This class of security event represents an escalated threat to plant safety above that contained in the Alert.

- A hostile force is defined as one or more persons that have entered the site, without the company's permission, for the purpose of committing an illegal act against the plant.

- A civil disturbance that penetrates the Vital Area can be considered a hostile force.

  A bomb exploding inside the Vital Area represents a significant threat to plant safety. Equipment essential for protection of the health and safety of the public is located here. Damage to this equipment raises a doubt on insuring the health and safety of the public. Timely classification activates assistance to assess the magnitude of damage and mitigate the consequences.

- This EAL satisfies NESP-007 Site Area Emergency HS1.

EXHIBIT 7

A7.1 (Security) (ALERT)

Security Event degrading level of plant safety as indicated by:

1) Bomb device discovered inside a Vital Area (VA).
OR
2) Hostile Force inside the Protected Area (PA).

(1 **OR** 2)

APPLICABILITY: All Plant Conditions

BASIS:

This class of security event represents an escalated threat to plant safety above that contained in the Unusual Event.

- A hostile force is defined as one or more persons that have entered the site, without the company's permission, for the purpose of committing an illegal act against the plant.

- A civil disturbance that penetrates the Protected Area can be considered a hostile force.

  A bomb inside the Vital Area represents a significant threat to plant safety even though it has not exploded. A Vital Area is where equipment essential for protection of the health and safety of the public is located. Damage to this equipment places a greater risk on insuring the health and safety of the public.

- This EAL satisfies NESP-007 Alert HA-4.

EXHIBIT 7

U7.1 (Security) (UNUSUAL EVENT)

Confirmed Security Event which represents a potential degradation in the level of safety of the plant as indicated by:

1) Bomb device discovered inside the Protected Area (PA).
OR
2) Hostile Force inside the Owner Controlled Area (OCA).

(1 **OR** 2)

APPLICABILITY: All Plant Conditions

BASIS:

This is based upon the TMI Physical Security Contingency Plan.

- A hostile force is defined as one or more persons that have entered the site, without the company's permission, for the purpose of committing an illegal act against the plant.
- A civil disturbance that penetrates the Owner Controlled Area can be considered a hostile force.

  A bomb inside the Protected Area represents a threat to plant safety even though it has not exploded. The threat to the safety of the plant is by damaging equipment or employees responsible for plant operations and maintenance.

NOTE

Security events that do not represent potential degradation in the level of safety of the plant not included in the EAL are still reported under 10 CFR 73.71 or 10 CFR 50.72.

- This EAL satisfies NESP-007 Unusual Event HU-4.

8.0 JUDGEMENT

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	UNUSUAL EVENT
G8.1 (Judgement) Actual or imminent substantial core damage and potential uncontrolled release that exceeds EPA PAG levels at the Site Area Boundary (SM/ED judgement)	S8.1 (Judgement) Actual or likely failures of functions needed for the protection of the public (SM/ED judgement)	A8.1 (Judgement) Actual or potential substantial degradation of the level of safety of the plant (SM/ED judgement)	U8.1 (Judgement) Potential degradation of the level of safety of the plant (SM/ED judgement)
APPLICABILITY: All Plant Conditions (Basis Page 79)	APPLICABILITY: All Plant Conditions (Basis Page 80)	APPLICABILITY: All Plant Conditions (Basis Page 81)	APPLICABILITY: All Plant Conditions (BASIS Page 82)

EXHIBIT 8

G8.1 (Judgement) (GENERAL EMERGENCY)

Other conditions existing which may indicate actual or imminent substantial core damage and potential uncontrolled radionuclide release such that the EPA PAG levels are exceeded at the Site Area Boundary as determined by the judgement of the Shift Manager/Emergency Director.

NOTE

In exercising the judgement as to the need for declaring a General Emergency, uncertainty concerning the status of plant functions needed for the protection of the public, the length of time the uncertainty exists, and the prospects for resolution of ambiguities in a reasonable time period is sufficient basis for declaring a General Emergency.

APPLICABILITY: All Plant Conditions

BASIS:
This provides the Shift Manager/Emergency Director the flexibility to declare an event, within the bounds of accident analysis, when it is believed to be necessary based on conditions not specifically covered by an EAL.

The inability to monitor the parameters to make a proper EAL classification.

- EAL criteria is not presently met, but there are no foreseen possible actions that would prevent meeting or exceeding the criteria.
- A Fission Product Barrier may be assumed to be lost if there are no indicators available to determine its status.
- If it is known or expected that an action can not be taken to prevent exceeding Fission Product Barrier criteria, the Fission Product Barrier is to be regarded as LOST.
- This relies heavily on the judgement of the Shift Manager/Emergency Director and it is not feasible to give specific guidance.
- This EAL satisfies NESP-007 Alert HG2 item 1.

EXHIBIT 8

S8.1 (Judgement) (SITE AREA EMERGENCY)
Other conditions existing which may indicate an actual or likely failure of plant functions needed for the protection of the public as determined by the judgement of the Shift Manager/Emergency Director.

NOTE

In exercising the judgement as to the need for declaring a Site Area Emergency, uncertainty concerning the status of plant functions needed for the protection of the public, the length of time the uncertainty exists, and the prospects for resolution of ambiguities in a reasonable time period is sufficient basis for declaring a Site Area Emergency.

APPLICABILITY: All Plant Conditions

BASIS:
This provides the Shift Manager/Emergency Director the flexibility to declare an event, within the bounds of accident analysis, when it is believed to be necessary based on conditions not specifically covered by an EAL.

- The inability to monitor the parameters to make a proper EAL classification.

  EAL criteria is not presently met, but there are no foreseen possible actions that would prevent meeting or exceeding the criteria.

- A Fission Product Barrier may be assumed to be lost if there are no indicators available to determine its status.

- If it is known or expected that an action can not be taken to prevent exceeding Fission Product Barrier criteria, the Fission Product Barrier is to be regarded as LOST.

- This relies heavily of the judgement of the Shift Manager/Emergency Director and it is not feasible to give specific guidance.

- This EAL satisfies NESP-007 Alert HS3 item 1.

EXHIBIT 8

A8.1 (Judgement) (ALERT)
Other conditions existing which may indicate an actual or potential substantial degradation in the level of safety of the plant as determined by the judgement of the Shift Manager/Emergency Director.

NOTE

In exercising the judgement as to the need for declaring an Alert, uncertainty concerning the safety of the plant, the length of time the uncertainty exists, and the prospects for resolution of ambiguities in a reasonable time period is sufficient basis for declaring an Alert.

APPLICABILITY: All Plant Conditions

BASIS:
This provides the Shift Manager/Emergency Director the flexibility to declare an event, within the bounds of accident analysis, when it is believed to be necessary based on conditions not specifically covered by an EAL.

- The inability to monitor the parameters to make a proper EAL classification.
- EAL criteria is not presently met, but there are no foreseen possible actions that would prevent meeting or exceeding the criteria.

  A Fission Product Barrier may be assumed to be lost if there are no indicators available to determine its status.
- If it is known or expected that an action can not be taken to prevent exceeding Fission Product Barrier criteria, the Fission Product Barrier is to be regarded as LOST.
- This EAL relies heavily on the judgement of the Shift Manager/Emergency Director, it is difficult to give very specific guidance.
- This EAL satisfies NESP-007 Alert HA6.

EXHIBIT 8

U8.1 (Judgement) (UNUSUAL EVENT)
Other conditions existing which may indicate a potential degradation in the level of safety of the plant as determined by the judgement of the Shift Manager/Emergency Director.

NOTE

In exercising the judgement as to the need for declaring an Unusual Event, uncertainty concerning the safety of the plant, the length of time the uncertainty exists, and the prospects for resolution of ambiguities in a reasonable time period is sufficient basis for declaring an Unusual Event.

APPLICABILITY: All Plant Conditions

BASIS:
This provides the Shift Manager/Emergency Director the flexibility to declare an event when it is believed to be necessary based on conditions not specifically covered by an EAL. Since this relies heavily of the judgement of the Shift Manager/Emergency Director, it is difficult to give very specific guidance.

The inability to monitor the parameters to make a proper EAL classification.

- EAL criteria is not presently met, but there are no foreseen possible actions that would prevent meeting or exceeding the criteria.

- However, examples of conditions that may require the judgement of the Shift Manager/Emergency Director are as follows:
  - Aircraft crash on-site (not in the Protected Area)
  - Train derailment on-site
  - Explosion near the site which may adversely affect normal site activities
  - Uncontrolled RCS cooldown due to secondary depressurization

  This list is NOT intended to be all inclusive or limit the discretion of the Shift Manager/Emergency Director.

- This EAL satisfies NESP-007 Unusual Event HU5 item 1.