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Director, Nuclear Regulatory Affairs and
Emergency Planning

10 CFR 50, Appendix E, Section V

April 9, 2012

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: **Docket Nos. 50-206, 50-361, 50-362, and 72-41**
Emergency Plan Implementing Procedures
San Onofre Nuclear Generating Station, Units 1, 2 and 3
and Independent Spent Fuel Storage Installation

Dear Sir or Madam:

Pursuant to 10 CFR 50, Appendix E, Section V, Attachment 1 of this letter provides copies of the following revised Emergency Plan Implementing Procedures:

Procedure	Rev.	TCN/EC	Effective Date
SO123-VIII-1 "RECOGNITION AND CLASSIFICATION OF EMERGENCIES"	36		March 21, 2012
EPSD-1 "EMERGENCY ACTION LEVEL TECHNICAL BASES"	4		March 21, 2012
EPSD-1 2.0 "SECTION 2.0 - DISCUSSION"	3		March 21, 2012
EPSD-1 4.0 "SECTION 4.0 - DEFINITIONS, ACRONYMS AND ABBREVIATIONS"	4		March 21, 2012
EPSD-1 5.1 "SECTION 5.1 - CATEGORY A -ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENT"	3		March 21, 2012
EPSD-1 5.2 "SECTION 5.2 - CATEGORY C - COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTION"	4		March 21, 2012
EPSD-1 5.3 "SECTION 5.3 - CATEGORY E - EVENTS RELATED TO INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS"	3		March 21, 2012

AX45
NMSS26
FSME20

P.O. Box 128
San Clemente, CA 92672

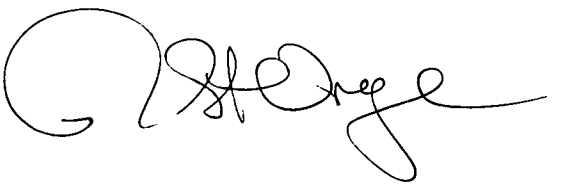
Procedure	Rev.	TCN/EC	Effective Date
EPSD-1 5.4 "SECTION 5.4 - CATEGORY F - FISSION PRODUCT BARRIER DEGRADATION"	4		March 21, 2012
EPSD-1 5.5 "SECTION 5.5 - CATEGORY H - HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY"	4		March 21, 2012
EPSD-1 5.6 "SECTION 5.6 - CATEGORY S - SYSTEM MALFUNCTION"	4		March 21, 2012
SO123-VIII-10.2 "CORPORATE EMERGENCY DIRECTOR DUTIES"	20		March 29, 2012
SO123-VIII-30.7 "EMERGENCY NOTIFICATIONS"	16		April 3, 2012

For your convenience, Attachment 2 provides an updated index listing titles, revisions, and temporary change notices (TCNs)/editorial corrections (ECs) of the San Onofre Nuclear Generating Station (SONGS) Emergency Plan Implementing Procedures. A bar in the right margin indicates items changed since our previous submittal.

Attachment 3 lists the current Emergency Plan Manuals, Orders and Training Procedures that are referenced in the Emergency Plan.

If you have any questions, please contact Mr. Ryan I. Treadway at (949) 368-9985.

Sincerely,



Attachments 1, 2, and 3

cc: Emergency Response Coordinator, NRC Region IV (2 copies of Attachment 1)
G. G. Warnick, NRC Senior Resident Inspector, San Onofre Units 2 and 3

Attachment 1

REVISED EMERGENCY PLAN IMPLEMENTING PROCEDURES

RECOGNITION AND CLASSIFICATION OF EMERGENCIES

PURPOSE

To specify the actions and criteria for classification of emergencies by Event Code, using the Recognition Categories.

ENTRY CONDITIONS

1. Upon recognition of existing or corrected abnormal plant conditions or off-normal events;

OR

2. Following a change in plant or event conditions since the previous emergency classification.

ATTACHMENTS

RECOGNITION AND CLASSIFICATION OF EMERGENCIES

STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
NOTE:	A momentary event such as an ATWS, an isolated CVCS leak, or a seismic event requires declaration even though the condition may have been resolved by the time the declaration is made.	
1.	<u>VERIFY Abnormal Plant or Off-Normal Event Conditions:</u>	
a.	VERIFY classifiable condition still exists at Unit 2, Unit 3, ISFSI or site-wide at time of recognition	a. <u>IF</u> A classifiable condition that exceeded an EAL was not recognized at the time of occurrence but is identified well after the condition no longer exists such that an emergency is not declared, <u>THEN</u> 1) Units 2/3 responsibility NOTIFY the Duty Manager 2) NOTIFY NRC of existence and closeout of emergency, specifying appropriate emergency class, per SO123-0-A7, Notification and Reporting of Significant Events. 3) EXIT this procedure.
b.	<u>IF</u> indications of Loss of Coolant Accident (LOCA) **<u>OR</u>** Excess Steam Demand Event (ESDE) inside Containment are present, <u>THEN</u> DIRECT Health Physics to implement SO123-VII-20.9.5, Alternate Pre-Planned Methods for Radiation Monitors.	

RECOGNITION AND CLASSIFICATION OF EMERGENCIES

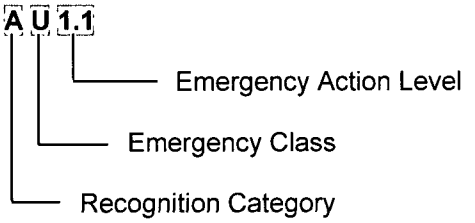
STEP	ACTION/EXPECTED RESPONSE	RESPONSE NOT OBTAINED
NOTE:	EP(123) 1, EMERGENCY CLASSIFICATION AND EVENT CODE CHART, may also be used for classifying events.	
NOTE:	SONGS EPSD-1, EMERGENCY ACTION LEVEL TECHNICAL BASES, may be referenced for detailed EAL technical information.	
2.	<u>CLASSIFY Emergency by Event Code:</u>	
a.	IDENTIFY Event Code using Attachment 1, EVENT CODES / MODE APPLICABILITY and Attachment 2, RECOGNITION CATEGORIES. 1) REVIEW applicable Recognition Categories and subcategories. 2) REVIEW applicable Emergency Action Levels. 3) CLASSIFY emergency using highest applicable Event Code based on Emergency Class.	a. <u>IF</u> Plant conditions are trending toward imminent exceedance of Emergency Action Level threshold, <u>THEN</u> CONSIDER classifying emergency using Event Code of imminent Emergency Action Level. <u>IF</u> No Emergency Action Level applies, <u>THEN</u> EXIT this procedure.
NOTE:	<u>IF</u> the Emergency Action Level entry criteria for a previously closed event are once again met, <u>THEN</u> a new event shall be declared.	
3.	<u>The Shift Manager/Station Emergency Director SHALL:</u>	
a.	DECLARE / RECLASSIFY emergency.	
b.	IMPLEMENT appropriate Emergency Plan Implementing Procedure: • SO123-VIII-10 (Emergency Coordinator Duties) • SO123-VIII-10.1 (Station Emergency Director Duties)	

- END -

EVENT CODES / MODE APPLICABILITY — ATTACHMENT 1

NOTE: Event Codes are comprised of four (or five for certain ISFSI events) characters which designate the Recognition Category, Emergency Class and Emergency Action Level.

Example:



1. DETERMINE Recognition Category designator from list below:

DESIGNATOR	RECOGNITION CATEGORY
A	Abnormal Rad Levels / Radiological Effluent
C	Cold Shutdown / Refueling System Malfunction
E-H	Events Related to Independent Spent Fuel Storage Installations
F	Fission Product Barrier Degradation
H	Hazards and Other Conditions Affecting Plant Safety
S	System Malfunction

2. DETERMINE Emergency Class designator from list below:

DESIGNATOR	EMERGENCY CLASS (Lowest to highest)
U	Notification of Unusual Event
A	Alert
S	Site Area Emergency
G	General Emergency

3. DETERMINE Emergency Action Level numerical designator as follows:

   a. MATCH event conditions with Emergency Action Levels listed in selected Recognition Categories and subcategories;

   b. Based on Emergency Class, FIND highest Emergency Action Level that is applicable **AND** NOTE two-digit Emergency Action Level designator.

MODE APPLICABILITY

Operating modes applicable to each EAL are indicated by numbers (1 through 6) or a letter (D). The modes are shown inside boxes above and to the right of the initiating condition(s) and EAL(s) to which they apply. Any mode that does not apply has a shaded box with no text. Operating modes are not applicable to ISFSI EALs, as indicated by "N/A" in the mode box.

RECOGNITION CATEGORIES

ATTACHMENT 2

Category A – Abnormal Rad Levels / Radiological Effluent

Effluents / Release Rates

GENERAL EMERGENCY

1 2 3 4 5 6 D

[AG1 IC] *Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology*

NOTE: 1

AG1.1 VALID reading on **ANY** radiation monitor greater than the reading shown in the "**GE**" column of Table A-1 (Gaseous) for 15 minutes or longer

NOTE: 1

The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AG1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

SITE AREA EMERGENCY

1 2 3 4 5 6 D

[AS1 IC] *Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release*

NOTE: 2

AS1.1 VALID reading on **ANY** radiation monitor greater than the reading shown in the "**SAE**" column of Table A-1 (Gaseous) for 15 minutes or longer

NOTE: 2

The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AS1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

ALERT

1 2 3 4 5 6 D

[AA1 IC] *Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than: Gaseous – Six Times the Offsite Dose Calculation Manual (ODCM) Limits for 15 Minutes or Longer, OR Liquid – 200 Times the Offsite Dose Calculation Manual (ODCM) Limits for 15 Minutes or Longer*

NOTES: 3 & 4

AA1.1 VALID reading on **ANY** radiation monitor greater than the reading shown in the "**Alert**" column of Table A-1 (Gaseous) or Table A-2 (Liquid) for 15 minutes or longer

AA1.2 VALID reading on **ANY** effluent monitor greater than:

- Gaseous - Six times the ODCM alarm setpoint (divided by the applicable administrative factor found in the ODCM) established by a current effluent release permit for 15 minutes or longer

  OR

- Liquid - 200 times the ODCM alarm setpoint (divided by the applicable administrative factor in the current release permit) established by a current effluent release permit for 15 minutes or longer

AA1.3 Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates greater than:

- Gaseous - Six times the ODCM limits for 15 minutes or longer

  OR

- Liquid - 200 times the ODCM limits for 15 minutes or longer

NOTE: 3

The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

NOTE: 4

The Shift Manager / Station Emergency Director should declare the event within the applicable EAL time limit. If the applicable time limit will be exceeded due to consideration of the applicable administrative factor, declaration should be based upon the EAL multiplier and the setpoint of the release permit as long as the release duration meets the EAL.

NOTIFICATION OF UNUSUAL EVENT

1 2 3 4 5 6 D

[AU1 IC] *Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 2 times the Offsite Dose Calculation Manual (ODCM) for 60 Minutes or Longer*

NOTES: 3 & 4

AU1.1 VALID reading on **ANY** radiation monitor greater than the reading shown in the "**NOUE**" column of Table A-1 (Gaseous) or Table A-2 (Liquid) for 60 minutes or longer

AU1.2 VALID reading on **ANY** effluent monitor greater than two times the ODCM alarm setpoint (divided by the applicable administrative factor in the ODCM for gaseous releases, or in the current release permit for liquid releases) established by a current effluent release permit for 60 minutes or longer

AU1.3 Confirmed sample analyses for gaseous or liquid releases indicates concentrations or release rates greater than two times the ODCM limits for 60 minutes or longer

RECOGNITION CATEGORIES

ATTACHMENT 2

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
Category A – Abnormal Rad Levels / Radiological Effluent				
Area Radiation			1 2 3 4 5 6 D **[AA2 IC]** *Damage to Irradiated Fuel or Loss of Water Level that Has Resulted or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel* **AA2.1** A water level drop in the Reactor Refueling Cavity, Spent Fuel Pool or Fuel Transfer Canal that will result in irradiated fuel becoming uncovered **AA2.2** A VALID alarm on **ANY** of the following due to damage to irradiated fuel or loss of water level: • High alarm on 2(3)RE7822G1 or 2(3)RE7823G2, Fuel Handling Building Airborne Radiation Monitor • High alarm on 2(3)RE7850, Fuel Handling Building Spent Fuel Cask Area Radiation Monitor • Containment Airborne Radiation Monitor 2(3)RE7804G1, or 2(3)RE7807G2, reading greater than 1.0 E-1 µCi/cc **OR** 2(3)RE7804P1 or 2(3)RE7807P2 reading greater than 1.0 E-4 µCi/cc **[AA3 IC]** *Rise in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Plant Safety Functions* **AA3.1** Dose rate greater than 15 mR/hr in **ANY** of the following areas requiring continuous occupancy to maintain plant safety functions: • Control Room • Central Alarm Station	1 2 3 4 5 6 D **[AU2 IC]** *UNPLANNED Rise in Plant Radiation Levels* **AU2.1** UNPLANNED water level lowering in the Reactor Refueling Cavity (as indicated by either RWLI / DLMS), Spent Fuel Pool (as indicated by local level indicator) or Fuel Transfer Canal **AND** VALID Area Radiation Monitor reading rise on **ANY** of the following: • 2(3)RE7804G1, P1, or 2(3)RE7807G2, P2, Containment Airborne Radiation Monitor • 2(3)RE7845, Containment Personnel Lock Area Radiation Monitor • 2(3)RE7850, Fuel Handling Building Spent Fuel Cask Area Radiation Monitor • 2(3)RE7822G1 or 2(3)RE7823G2, Fuel Handling Building Airborne Radiation Monitor **AU2.2** UNPLANNED VALID Area Radiation Monitor readings or survey results indicate a rise by a factor of 1,000 over normal* levels *Normal levels can be considered as the highest reading in the past twenty-four (24) hours excluding the current peak value.

RECOGNITION CATEGORIES

ATTACHMENT 2

Category A – Abnormal Rad Levels / Radiological Effluent

Dose Projections / Environmental Measurements

GENERAL EMERGENCY

1 | 2 | 3 | 4 | 5 | 6 | D

[AG1.IC] *Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology*

NOTE: 1

AG1.2 Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem Thyroid CDE at or beyond the Exclusion Area Boundary

AG1.4 Field survey results indicate closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer; or analyses of field survey samples indicate Thyroid CDE greater than 5,000 mrem for one hour of inhalation, at or beyond the Exclusion Area Boundary

NOTE: 1

The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AG1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

SITE AREA EMERGENCY

1 | 2 | 3 | 4 | 5 | 6 | D

[AS1.IC] *Off-site Dose Resulting from an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release*

NOTE: 2

AS1.2 Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem Thyroid CDE at or beyond the Exclusion Area Boundary

AS1.4 Field survey results indicate closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer, or analyses of field survey samples indicate Thyroid CDE greater than 500 mrem for one hour of inhalation, at or beyond the Exclusion Area Boundary

NOTE: 2

The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AS1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

ALERT

NOTIFICATION OF UNUSUAL EVENT

RECOGNITION CATEGORIES

ATTACHMENT 2

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT

Category A – Abnormal Rad Levels / Radiological Effluent

Table A-1 – Gaseous Effluent Radiation Monitor Classification Thresholds

Monitor No.	Monitor Description	GE	SAE	Alert	NOUE
2/3RE7808G	Plant Vent Stack Radiation Monitor	2.8E+07 µCi/sec from RDU numerical display (DAS greater than 1.0E+06 µCi/sec)	2.8E+06 µCi/sec from RDU numerical display (DAS greater than 1.0E+06 µCi/sec)	1.2E+06 µCi/sec from RDU numerical display (DAS greater than 1.0E+06 µCi/sec)	4.0E+05 µCi/sec
Sum of 2RE7865 and 3RE7865	Plant Vent Stack / Containment Purge Wide Range Gas Monitors	2.8E+07 µCi/sec from RM-23	2.8E+06 µCi/sec from RM-23	1.2E+06 µCi/sec	4.0E+05 µCi/sec
2(3)RE7870	Condenser Air Ejector Wide Range Gas Monitor	2.8E+07 µCi/sec from RM-23	2.8E+06 µCi/sec from RM-23	1.2E+06 µCi/sec	4.0E+05 µCi/sec

For an Alert or higher, the threshold values will be offscale high for 2/3RE7808G on DAS (1.0E+06 uCi/sec) and should not be used.

Table A-2 – Liquid Effluent Radiation Monitor Classification Thresholds

Monitor No.	Monitor Description	Dilution Flow	Alert	NOUE
2/3RE2101	North Industrial Area Yard Drain Sump Radiation Monitor (≤ 4,100 GPM release rate)	4 Circ. Pumps 3 Circ. Pumps 2 Circ. Pumps 1 Circ. Pump 2 Saltwater Pumps 1 Saltwater Pump	>1.0E-01 µCi/cc >1.0E-01 µCi/cc >1.0E-01 µCi/cc >1.0E-01 µCi/cc 3.3E-02 µCi/cc 1.7E-02 µCi/cc	7.2E-03 µCi/cc 5.4E-03 µCi/cc 3.6E-03 µCi/cc 1.8E-03 µCi/cc 3.3E-04 µCi/cc 1.7E-04 µCi/cc
2(3)RE6753 or 2(3)RE6759	Steam Generator Blowdown Radiation Monitor (≤ 200 GPM release rate)	4 Circ. Pumps 3 Circ. Pumps 2 Circ. Pumps 1 Circ. Pump 2 Saltwater Pumps 1 Saltwater Pump	>1.0E+06 CPM >1.0E+06 CPM >1.0E+06 CPM >1.0E+06 CPM >1.0E+06 CPM >1.0E+06 CPM	6.0E+05 CPM 4.5E+05 CPM 3.0E+05 CPM 1.5E+05 CPM 2.8E+04 CPM 1.4E+04 CPM
2(3)RE7817	Blowdown Processing System Neutralization Sump Discharge Radiation Monitor (≤ 1,000 GPM release rate)	4 Circ. Pumps 3 Circ. Pumps 2 Circ. Pumps 1 Circ. Pump 2 Saltwater Pumps 1 Saltwater Pump	2.4E-01 µCi/cc 1.8E-01 µCi/cc 1.2E-01 µCi/cc 5.9E-02 µCi/cc 1.1E-02 µCi/cc 5.4E-03 µCi/cc	2.4E-03 µCi/cc 1.8E-03 µCi/cc 1.2E-03 µCi/cc 5.9E-04 µCi/cc 1.1E-04 µCi/cc 5.4E-05 µCi/cc
2(3)RE7821	Turbine Plant Area Sump Radiation Monitor (≤ 200 GPM release rate)	4 Circ. Pumps 3 Circ. Pumps 2 Circ. Pumps 1 Circ. Pump 2 Saltwater Pumps 1 Saltwater Pump	>1.0E+00 µCi/cc 8.9E-01 µCi/cc 5.9E-01 µCi/cc 3.0E-01 µCi/cc 5.4E-02 µCi/cc 2.7E-02 µCi/cc	1.2E-02 µCi/cc 8.9E-03 µCi/cc 5.9E-03 µCi/cc 3.0E-03 µCi/cc 5.4E-04 µCi/cc 2.7E-04 µCi/cc

RECOGNITION CATEGORIES

ATTACHMENT 2

Category C – Cold Shutdown / Refueling System Malfunction

RCS Leakage

NOTIFICATION OF UNUSUAL EVENT

5

[CU1 IC] *RCS Leakage*

NOTE: 5

CU1.1 RCS leakage results in the inability to maintain level within or restore level within the Pressurizer or RCS / Reactor Vessel level target band for 15 minutes or longer

RCS Level

GENERAL EMERGENCY

5 6

[CG1 IC] *Loss of RCS / Reactor Vessel Inventory Affecting Fuel Clad Integrity With Containment Challenged*

NOTE: 5

CG1.1 RCS / Reactor Vessel level less than top of active fuel as indicated by RVLMS HJTC #8 uncovered for 30 minutes or longer

AND

Containment challenged as indicated by **ANY** of the following:

- CONTAINMENT CLOSURE **NOT** established
- Explosive mixture inside Containment
- UNPLANNED rise in Containment pressure

CG1.2 RCS / Reactor Vessel level **CANNOT** be monitored with core uncovery indicated by **ANY** of the following for 30 minutes or longer:

- Erratic Source Range Monitor indication
- Unexplained Containment Sump level rise

AND

Containment challenged as indicated by **ANY** of the following:

- CONTAINMENT CLOSURE **NOT** established
- Explosive mixture inside Containment
- UNPLANNED rise in Containment pressure

SITE AREA EMERGENCY

5 6

[CS1 IC] *Loss of RCS / Reactor Vessel Inventory Affecting Core Decay Heat Removal Capability*

CS1.1 **A.** With CONTAINMENT CLOSURE established or **NOT** established:

- RVLMS HJTC #8 uncovered

OR

NOTE: 5

B. RCS / Reactor Vessel level **CANNOT** be monitored for 30 minutes or longer with a loss of RCS / Reactor Vessel inventory as indicated by **EITHER** of the following:

- Erratic Source Range Monitor indication
- Unexplained Containment Sump level rise

ALERT

5 6

[CA1 IC] *Loss of RCS / Reactor Vessel Inventory*

CA1.1 Loss of RCS / Reactor Vessel inventory as indicated by level less than the bottom of the RCS Hot Leg as indicated by RWLI / DLMS WR less than minus 8.375 feet, **OR** RWLI LI1520N less than 4 inches **OR** RVLMS HJTC #7 uncovered

NOTE: 5

CA1.2 RCS / Reactor Vessel level **CANNOT** be monitored for 15 minutes or longer with a loss of RCS / Reactor Vessel inventory as indicated by an unexplained level rise in a Containment Sump

NOTIFICATION OF UNUSUAL EVENT

6

[CU2 IC] *UNPLANNED Loss of RCS / Reactor Vessel Inventory*

NOTE: 5

CU2.1 UNPLANNED RCS / Reactor Vessel level drop as indicated by **EITHER** of the following:

- RCS / Reactor Vessel water level drop below the Reactor Vessel flange for 15 minutes or longer when the RCS / Reactor Vessel level target band is established above the Reactor Vessel flange
- RCS / Reactor Vessel water level drop below the RCS level target band for 15 minutes or longer when the RCS / Reactor Vessel level target band is established below the Reactor Vessel flange

CU2.2 RCS / Reactor Vessel level **CANNOT** be monitored with a loss of RCS / Reactor Vessel inventory as indicated by an unexplained level rise in a Containment Sump

NOTE: 5

The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded or will likely exceed the applicable time.

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
Category C – Cold Shutdown / Refueling System Malfunction				
Loss of AC / DC Power Sources			5 6 D **[CA3 IC]** *Loss of All Off-site and All On-Site AC Power to Emergency Buses for 15 Minutes or Longer* **NOTES: 5 & 8** **CA3.1** Loss of **ALL** Off-site and **ALL** On-site AC power to 1E 4kV Buses 2(3)A04 and 2(3)A06 for 15 minutes or longer. **NOTE: 8** If any load necessary for removal of decay heat or makeup to the RCS is not operable, then refer to the Emergency Action level Technical Bases, EPSD-1.	5 6 **[CU3 IC]** *AC Power Capability to Emergency Buses Reduced to a Single Power Source For 15 Minutes or Longer Such That Any Additional Single Failure Would Result in Station Blackout* **NOTE: 5** **CU3.1** AC power capability to 1E 4kV Buses 2(3)A04 and 2(3)A06 reduced to a single power source for 15 minutes or longer **AND** Any additional single power source failure will result in station blackout **[CU7 IC]** *Loss of Required DC Power For 15 Minutes or Longer* **NOTE: 5** **CU7.1** Less than 105 VDC bus voltage indication on required Vital DC buses for 15 minutes or longer
			NOTE: 5 The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded or will likely exceed the applicable time.	
RCS Temperature and Pressure			5 6 **[CA4 IC]** *Inability to Maintain Plant in Cold Shutdown* **NOTE: 5** **CA4.1** An UNPLANNED event results in RCS temperature greater than 200°F (Technical Specification Cold Shutdown temperature limit) for greater than the specified duration on Table C-1: **Table C-1 : RCS Reheat Duration Thresholds** RCS: Intact (but not in an RCS Reduced Inventory Condition) — Containment Closure: N/A — Duration: 60 Minutes* RCS: Not intact or in an RCS Reduced Inventory Condition — Containment Closure: Established — Duration: 20 Minutes* RCS: Not intact or in an RCS Reduced Inventory Condition — Containment Closure: Not Established — Duration: 0 Minutes * If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable. **CA4.2** An UNPLANNED event results in RCS pressure rise greater than 10 PSI due to a loss of RCS cooling (This EAL does not apply in Solid Plant conditions.)	5 6 **[CU4 IC]** *UNPLANNED Loss of Decay Heat Removal Capability With Irradiated Fuel in the Reactor Vessel* **CU4.1** An UNPLANNED event results in RCS temperature greater than 200°F (Technical Specification Cold Shutdown temperature limit) **NOTE: 5** **CU4.2** Loss of **ALL** RCS temperature and RCS / Reactor Vessel level indication for 15 minutes or longer
			NOTE: 5 The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded or will likely exceed the applicable time.	

RECOGNITION CATEGORIES

ATTACHMENT 2

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
Category C – Cold Shutdown / Refueling System Malfunction				
Communication Loss			➡	5 6 D **[CU6 IC]** *Loss of All On-site or Off-site Communications Capabilities* **CU6.1** Loss of **ALL** Table C-2 On-site communication methods affecting the ability to perform routine operations **CU6.2** Loss of **ALL** Table C-2 Off-site communication methods affecting the ability to perform Off-site notifications
Inadvertent Criticality				5 6 **[CU8 IC]** *Inadvertent Criticality* **CU8.1** UNPLANNED sustained positive startup rate observed on nuclear instrumentation

Table C-2 – Communication Methods

System	On-site	Off-site
Sound-Powered Telephone System	X	
Public Address System	X	
Two-Way Radio System (800 MHz and 900 MHz)	X	
SCE Private Automatic Exchange (PAX) Telephone System	X	X
Emergency Notification System (ENS) - Red Phone		X
California State Warning Center (CSWC) - Blue Phone		X
Interagency Telephone (IAT) - Yellow Phone		X
Facsimile Machines		X
Emergency Satellite Phone		X

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
Category E – Events Related to Independent Spent Fuel Storage Installations				
Loss of Cask Confinement				**N/A** **[E-HU1 IC]** *Damage to a Loaded Cask CONFINEMENT BOUNDARY* **E-HU1.1** Damage to a loaded cask CONFINEMENT BOUNDARY **[Refer to HS4.1 if damage was due to hostile act]**

RECOGNITION CATEGORIES

ATTACHMENT 2

	GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
	Category F – Fission Product Barrier Degradation			
Fission Product Barriers	1 2 3 4 ■ ■ ■ **[FG1 IC]** *Loss of ANY Two Barriers AND Loss or Potential Loss of the Third Barrier.* **FG1.1** Loss of **ANY** two barriers **AND** Loss or Potential Loss of the third barrier (Table F-1)	1 2 3 4 ■ ■ ■ **[FS1 IC]** *Loss or Potential Loss of ANY Two Barriers.* **FS1.1** Loss or Potential Loss of **ANY** two barriers (Table F-1)	1 2 3 4 ■ ■ ■ **[FA1 IC]** *ANY Loss or ANY Potential Loss of EITHER Fuel Clad OR RCS.* **FA1.1** **ANY** Loss or **ANY** Potential Loss of **EITHER** Fuel Clad **OR** RCS (Table F-1)	1 2 3 4 ■ ■ ■ **[FU1 IC]** *ANY Loss or ANY Potential Loss of Containment.* **NOTE: 7** **FU1.1** **ANY** Loss or **ANY** Potential Loss of Containment (Table F-1) **NOTE: 7** Notification of Unusual Event Initiating Conditions associated with RCS and Fuel Clad Barriers are addressed under Category S – System Malfunction ICs.
Category F Notes	**SEE FOLLOWING PAGE FOR BARRIER LOSS AND POTENTIAL LOSS EALS**			

CATEGORY "F" NOTES :

1. Determine which combination of the three barriers are lost or have a potential loss and use the Category "F" EALs to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the Loss or Potential Loss thresholds is IMMINENT. In this IMMINENT loss situation, use judgment and classify as if the thresholds are exceeded.
2. The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment Barrier.

Table F-1 – Fission Product Barrier Matrix

Fuel Clad Barrier

LOSS	POTENTIAL LOSS
1) Critical Safety Function Status	
N/A	RCS Heat Removal safety function acceptance criteria **NOT** met **AND** Core Exit Saturation Margin sustained < 20°F **AND** safety function success path **NOT** identified following review of Resource Assessment Charts
2) Primary Coolant Activity Level	
A. Coolant activity greater than 300 µCi/gm Dose Equivalent I-131 **OR** **B.** VALID high alarm on 2/3RE7838 or 2/3RE7839, PASS Normal Sample Line Isolation Radiation Monitor, indicating fuel clad degradation	N/A
3) Core Exit Thermocouple Readings	
REP CET greater than 1,200°F	REP CET greater than 700°F
4) Reactor Vessel Water Level	
N/A	Reactor vessel level less than the top of active fuel as indicated by RVLMS HJTC #8 uncovered
5) Containment Radiation Monitoring	
VALID 2(3)RE7820-1(2), Containment High Range Area Radiation Monitor, reading greater than 2,000 R/hr	N/A
6) Shift Manager / Station Emergency Director Judgment	
ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the Fuel Clad Barrier	**ANY** condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the Fuel Clad Barrier

Reactor Coolant System Barrier

LOSS	POTENTIAL LOSS
1) Critical Safety Function Status	
N/A	**A.** Uncontrolled RCS cooldown **AND** RCS temperature and PZR pressure are to left of Appendix E limit line in SO23-12-11, Attachment for Post-Accident Pressure / Temperature Limits **OR** **B.** RCS Heat Removal safety function acceptance criteria **NOT** met **AND** Core Exit Saturation Margin sustained < 20°F **AND** safety function success path **NOT** identified following review of Resource Assessment Charts
2) RCS Leak Rate	
RCS leak rate greater than available makeup capacity as indicated by a loss of RCS subcooling and evidenced by Core Exit Saturation Margin less than 20°F	RCS leak, including Steam Generator Tube Leak, with leak rate indicated greater than 44 GPM with Letdown isolated
3) S/G Tube Rupture	
RUPTURED S/G that results in an ECCS (SI) actuation	N/A
4) Containment Radiation Monitoring	
VALID 2(3)RE7820-1(2), Containment High Range Area Radiation Monitor, reading greater than 10 R/hr	N/A
5) Shift Manager / Station Emergency Director Judgment	
ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the RCS Barrier	**ANY** condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the RCS Barrier

Containment Barrier

LOSS	POTENTIAL LOSS
1) Containment Pressure	
A. Containment pressure rise followed by a rapid unexplained drop in Containment pressure **OR** **B.** Containment pressure or Sump level response **NOT** consistent with LOCA conditions	**A.** Containment pressure greater than 60 PSIG and rising **OR** **B.** Explosive mixture exists inside Containment **OR** **C.** Containment pressure greater than 14 PSIG **AND** less than one full train of depressurization equipment operating
2) Core Exit Thermocouple Readings	
N/A	**A.** REP CET greater than 1,200°F **AND** restoration procedures **NOT** effective within 15 minutes **OR** **B.** **ALL** of the following: • REP CET greater than 700°F • RVLMS HJTC #8 uncovered • Restoration procedures **NOT** effective within 15 minutes
3) S/G Secondary Side Release with Primary-to-Secondary Leakage	
A. RUPTURED S/G is also FAULTED outside of Containment **OR** **B.** Primary-to-secondary leak rate greater than 10 GPM **AND** UNISOLABLE steam release from affected S/G to the environment	N/A
4) Containment Isolation Failure or Bypass	
Failure of all Containment Isolation valves in any one line to close **AND** direct downstream pathway to the environment exists after Containment Isolation Actuation Signal	N/A
5) Containment Radiation Monitoring	
N/A	VALID 2(3)RE7820-1(2), Containment High Range Area Radiation monitor, reading greater than 40,000 R/hr
6) Shift Manager / Station Emergency Director Judgment	
ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the Containment Barrier	**ANY** condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the Containment Barrier

RECOGNITION CATEGORIES

ATTACHMENT 2

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT

Category H – Hazards and Other Conditions Affecting Plant Safety

Natural / Destructive Events

Table H-1 – Vital Areas and Safe Shutdown Areas

- 2/3 Control Building
- 2(3) Containment
- 2/3 Radwaste Building, except for 68 ft. el. (Locker Rooms, Hot Tool Crib, Laundry Facility, Dress-out Area)
- 2(3) Fuel Handling Building
- 2(3) Safety Equipment Building
- 2(3) Penetration Building
- 2(3) Electrical & Piping Tunnels
- 2(3) MSIV Area & Tank Building
- 2(3) Salt Water Cooling Pump Rooms
- 2/3 Intake Structure
- 2(3) Diesel Generator Building & Diesel Fuel Storage Vaults
- 2(3) Turbine Building, except for Main Lube Oil Room, FFCPD and 70 ft. el. Turbine Deck
- 2(3) Yard Area (i.e., Condensate Transfer Pump 2(3) MP049 areas and exterior areas of Condensate Storage Tank 2(3) T-120 and 2(3) T-121 Enclosures)

1	2	3	4	5	6	D

[HA1 IC] *Natural or Destructive Phenomena Affecting VITAL AREAS*

HA1.1 Seismic event greater than Operating Basis Earthquake (OBE) as indicated by Control Room annunciator 2UA0061C22, "Operating Basis Earthquake Detected"
AND
Earthquake confirmed by **ANY** of the following:
- Earthquake felt in plant
- National Earthquake Information Center confirmation
- Control Room indication of degraded performance of systems required for the safe shut down of the plant

HA1.2 Tornado striking or high winds greater than 100 MPH resulting in VISIBLE DAMAGE to **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems

HA1.3 Internal flooding in **ANY** of the following areas resulting in an electrical shock hazard that precludes access to operate or monitor safety-related equipment required by Technical Specifications for the current operating mode **OR** Control Room indication of degraded performance of those safety systems:
- Units 2/3 Intake Structure
- Unit 2(3) Turbine Building Condenser and Main Feedwater Pump Area (7 ft. el.)

HA1.4 Turbine failure-generated PROJECTILES result in VISIBLE DAMAGE to or penetration of **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems

HA1.5 Vehicle crash resulting in VISIBLE DAMAGE to **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems **[Refer to HS4.1 if crash was due to hostile act]**

HA1.6 VISIBLE DAMAGE to **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems as a result of **ANY** of the following severe weather conditions:
- Tsunami warning with predicted wave height greater than +30 ft. MLLW level
- Rainfall greater than 6 inches in a 3 hour period
- Site is predicted to experience a hurricane with sustained wind speed greater than 73 MPH. in less than or equal to 12 hours as projected by the National Weather Service

1	2	3	4	5	6	D

[HU1 IC] *Natural or Destructive Phenomena Affecting Units 2/3 PROTECTED AREA*

HU1.1 Seismic event identified by **ANY TWO** of the following:
- Seismic event confirmed by Control Room annunciator 2UA0061C21, "Seismic Recording System Activated"
- Earthquake felt in plant
- National Earthquake Information Center confirmation

HU1.2 Tornado striking within Units 2/3 PROTECTED AREA or high winds greater than 100 MPH

HU1.3 Internal flooding that has the potential to affect safety-related equipment required by Technical Specifications for the current operating mode in **ANY** of the following areas:
- Units 2/3 Intake Structure
- Unit 2(3) Turbine Building Condenser and Main Feedwater Pump Area (7 ft. el.)

HU1.4 Turbine failure resulting in casing penetration or damage to Turbine or Generator Seals

HU1.5 Severe weather affecting the Units 2/3 PROTECTED AREA as indicated by **ANY** of the following:
- Tsunami warning with predicted wave height greater than +30 ft. MLLW level
- Rainfall greater than 6 inches in a 3 hour period
- Site is predicted to experience a hurricane with sustained wind speed greater than 73 MPH in less than or equal to 12 hours as projected by the National Weather Service

Category H – Hazards and Other Conditions Affecting Plant Safety

Fire or Explosion

ALERT

1 2 3 4 5 6 D

[HA2 IC] *FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown*

HA2.1 FIRE or EXPLOSION resulting in VISIBLE DAMAGE to **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems
[Refer to HS4.1 if fire or explosion was due to hostile act]

NOTIFICATION OF UNUSUAL EVENT

1 2 3 4 5 6 D

[HU2 IC] *FIRE Within Units 2/3 PROTECTED AREA Not Extinguished Within 15 Minutes of Detection Or EXPLOSION Within the Units 2/3 PROTECTED AREA*

NOTE: 5

HU2.1 FIRE **NOT** extinguished within 15 minutes of Control Room notification or verification of a Control Room FIRE alarm in buildings in actual contact or immediately adjacent to **ANY** Table H-1 Area
[Refer to HS4.1 if fire was due to hostile act]

> **NOTE: 5**
>
> The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded or will likely exceed the applicable time.

HU2.2 EXPLOSION within the Units 2/3 PROTECTED AREA with reports of evidence of VISIBLE DAMAGE to permanent structures or equipment
[Refer to HS4.1 if explosion was due to hostile act]

Toxic or Flammable Gas

ALERT

1 2 3 4 5 6 D

[HA3 IC] *Access To a VITAL AREA is Prohibited Due to Toxic, Corrosive, Asphyxiant or Flammable Gases Which Jeopardize Operation of Operable Equipment Required to Maintain Safe Operations or Safely Shut Down The Reactor*

NOTE: 6

HA3.1 Access to a Table H-1 Area is prohibited due to toxic, corrosive, asphyxiant or flammable gases which jeopardize operation of systems required to maintain safe operations or safely shut down the reactor

> **NOTE: 6**
>
> If the equipment in the stated area was already inoperable, or out of service, before the event occurred, then this EAL should not be declared as it will have no adverse impact on the ability of the plant to safely operate or safely shut down beyond that already allowed by Technical Specifications at the time of the event.

NOTIFICATION OF UNUSUAL EVENT

1 2 3 4 5 6 D

[HU3 IC] *Release of Toxic, Corrosive, Asphyxiant or Flammable Gases Deemed Detrimental to NORMAL PLANT OPERATIONS*

HU3.1 Toxic, corrosive, asphyxiant or flammable gases in amounts that have or could adversely affect NORMAL PLANT OPERATIONS

HU3.2 Report by local, county, state, or federal officials for evacuation or sheltering of site personnel based on an off-site event

Category H – Hazards and Other Conditions Affecting Plant Safety

Security Events

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
1 2 3 4 5 6 D	1 2 3 4 5 6 D	1 2 3 4 5 6 D	1 2 3 4 5 6 D
[HG1 IC] *HOSTILE ACTION Resulting in Loss of Physical Control of the Facility* **NOTE: 9** **HG1.1** A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions **HG1.2** A HOSTILE ACTION has caused failure of Spent Fuel Cooling Systems and IMMINENT fuel damage is likely for a freshly off-loaded reactor core in pool.	**[HS4 IC]** *HOSTILE ACTION Within the PROTECTED AREA* **HS4.1** A HOSTILE ACTION is occurring or has occurred within the Units 2/3 PROTECTED AREA or ISFSI PROTECTED AREA as reported by site Security Supervision	**[HA4 IC]** *HOSTILE ACTION Within the OWNER CONTROLLED AREA Or Airborne Attack Threat* **HA4.1** A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by site Security Supervision **HA4.2** A validated notification of an aircraft attack threat within 30 minutes of the site or time to impact unknown	**[HU4 IC]** *Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant* **HU4.1** A SECURITY CONDITION that does **NOT** involve a HOSTILE ACTION as reported by site Security Supervision **HU4.2** A credible site-specific security threat notification. **HU4.3** A validated notification of an aircraft threat greater than 30 minutes away

NOTE: 9

Containment status should be evaluated per Emergency Action Level Technical Bases, EPSD-1.

Control Room Evacuation

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
	1 2 3 4 5 6 D	1 2 3 4 5 6 D	
	[HS2 IC] *Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established* **HS2.1** Control Room evacuation has been initiated **AND** Control of the plant **CANNOT** be established per SO23-13-2, Shutdown from Outside the Control Room, within 15 minutes	**[HA5 IC]** *Control Room Evacuation Has Been Initiated* **HA5.1** Entry into SO23-13-2, Shutdown from Outside the Control Room, for Control Room evacuation	

Judgment

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
1 2 3 4 5 6 D	1 2 3 4 5 6 D	1 2 3 4 5 6 D	1 2 3 4 5 6 D
[HG2 IC] *Other Conditions Exist Which in the Judgment of the Shift Manager / Station Emergency Director Warrant Declaration of a General Emergency* **HG2.1** Other conditions exist which in the judgment of the Shift Manager / Station Emergency Director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of Containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels (1,000 mrem TEDE and 5,000 mrem Thyroid CDE) at or beyond the Exclusion Area Boundary.	**[HS3 IC]** *Other Conditions Exist Which in the Judgment of the Shift Manager / Station Emergency Director Warrant Declaration of a Site Area Emergency* **HS3.1** Other conditions exist which in the judgment of the Shift Manager / Station Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels (1,000 mrem TEDE and 5,000 mrem Thyroid CDE) at or beyond the Exclusion Area Boundary.	**[HA6 IC]** *Other Conditions Exist Which in the Judgment of the Shift Manager / Station Emergency Director Warrant Declaration of an Alert* **HA6.1** Other conditions exist which in the judgment of the Shift Manager / Station Emergency Director indicate that events are in progress or have occurred which involve actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels (1,000 mrem TEDE and 5,000 mrem Thyroid CDE).	**[HU5 IC]** *Other Conditions Exist Which in the Judgment of the Shift Manager / Station Emergency Director Warrant Declaration of a Notification of Unusual Event* **HU5.1** Other conditions exist which in the judgment of the Shift Manager / Station Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

RECOGNITION CATEGORIES

ATTACHMENT 2

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
Category S – System Malfunction			
Loss of AC / DC Power Sources 1 2 3 4 **[SG1 IC]** *Prolonged Loss of All Off-site and All On-site AC Power to Emergency Buses* **SG1.1** Loss of **ALL** Off-site and **ALL** On-site AC power to 1E 4kV buses 2(3)A04 and 2(3)A06 **AND** **EITHER** of the following: • Restoration of at least one 1E 4kV bus in less than 4 hours is **NOT** likely OR • Indication of continuing degradation of core cooling based on REP CET greater than 700°F	1 2 3 4 **[SS1 IC]** *Loss of All Off-site and All On-Site AC Power to Emergency Buses for 15 Minutes or Longer* **NOTES: 5 & 8** **SS1.1** Loss of **ALL** Off-site and **ALL** On-site AC power to 1E 4kV buses 2(3)A04 and 2(3)A06 for 15 minutes or longer. **[SS3 IC]** *Loss of All Vital DC Power for 15 Minutes or Longer* **NOTE: 5** **SS3.1** Less than 105 VDC bus voltage indication on **ALL** Vital DC buses 2(3)D1, 2(3)D2, 2(3)D3 and 2(3)D4 for 15 minutes or longer	1 2 3 4 **[SA5 IC]** *AC Power Capability to Emergency Buses Reduced to a Single Power Source for 15 Minutes or Longer Such That Any Additional Single Failure Would Result in Station Blackout* **NOTE: 5** **SA5.1** AC power capability to 1E 4kV buses 2(3)A04 or 2(3)A06 reduced to a single power source for 15 minutes or longer **AND** **ANY** additional single power source failure will result in Station Blackout	1 2 3 4 **[SU1 IC]** *Loss of All Off-site AC Power to Emergency Buses for 15 Minutes or Longer* **NOTE: 5** **SU1.1** Loss of **ALL** Off-site AC power to 1E 4kV buses 2(3)A04 and 2(3)A06 for 15 minutes or longer
	NOTE: 8 If any load necessary for removal of decay heat or makeup to the RCS is not operable, then refer to the Emergency Action Level Technical Bases, EPSD-1.		
Technical Specifications	**NOTE: 5** The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded or will likely exceed the applicable time.		1 2 3 4 **[SU2 IC]** *Inability to Reach Required Shutdown Within Technical Specification Limits* **SU2.1** Plant is **NOT** brought to required operating mode within Technical Specifications LCO action statement time
Loss of Indications / Alarms 1 2 3 4 **[SS6 IC]** *Inability to Monitor a SIGNIFICANT TRANSIENT in Progress* **NOTE: 5** **SS6.1** **A.** Loss of greater than approximately 75% of the following for 15 minutes or longer: • Control Room annunciator panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064 **OR** • Control Room safety system indicators on the following Control Room panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064 **AND** **B.** A SIGNIFICANT TRANSIENT is in progress **AND** **C.** Compensatory non-alarming indications on QSPDS, CFMS, and PCS are **NOT** available	1 2 3 4 **[SA4 IC]** *UNPLANNED Loss of Safety System Annunciation or Indication in the Control Room With EITHER (1) a SIGNIFICANT TRANSIENT in Progress, or (2) Compensatory Indicators Unavailable* **NOTE: 5** **SA4.1** **A.** UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer: • Control Room annunciator panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064 **OR** • Control Room safety system indicators on the following Control Room panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064 **AND** **B.** **EITHER** of the following: • A SIGNIFICANT TRANSIENT is in progress. • Compensatory non-alarming indications on QSPDS, CFMS and PCS are **NOT** available	1 2 3 4 **[SU3 IC]** *UNPLANNED Loss of Safety System Annunciation or Indication in the Control Room for 15 Minutes or Longer* **NOTE: 5** **SU3.1** UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer: • Control Room annunciator panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064 **OR** • Control Room safety system indicators on the following Control Room panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT

Category S – System Malfunction

Coolant Activity

1 2 3 4

[SU4 IC] *Fuel Clad Degradation*

SU4.2 Reactor coolant sample activity greater than 1.0 µCi/gm Dose Equivalent I-131 for greater than 48 hours

OR

Dose Equivalent Iodine I-131 in unacceptable region of Technical Specification LCO Figure 3.4.16-1

OR

Reactor coolant sample activity greater than 100/Ē µCi/gm indicating fuel clad degradation

[Also check Table F-1 – Fission Product Barrier Matrix]

RCS Leakage

1 2 3 4

[SU5 IC] *RCS Leakage*

SU5.1 Unidentified or pressure boundary leakage greater than 10 GPM

[Also check Table F-1 – Fission Product Barrier Matrix]

SU5.2 Identified leakage greater than 25 GPM

[Also check Table F-1 – Fission Product Barrier Matrix]

Communication Loss

1 2 3 4

[SU6 IC] *Loss of All On-site or Off-site Communications Capabilities*

SU6.1 Loss of **ALL** Table S-1 On-site communication methods affecting the ability to perform routine operations

SU6.2 Loss of **ALL** Table S-1 Off-site communication methods affecting the ability to perform Off-site notifications

Inadvertent Criticality

3 4

[SU8 IC] *Inadvertent Criticality*

SU8.1 UNPLANNED sustained positive startup rate observed on nuclear instrumentation

Table S-1 – Communication Methods

System	On-site	Off-site
Sound-Powered Telephone System	X	
Public Address System	X	
Two-Way Radio System (800 MHz and 900 MHz)	X	
SCE Private Automatic Exchange (PAX) Telephone System	X	X
Emergency Notification System (ENS) - Red Phone		X
California State Warning Center (CSWC) - Blue Phone		X
Interagency Telephone (IAT) - Yellow Phone		X
Facsimile Machines		X
Emergency Satellite Phone		X

RECOGNITION CATEGORIES

ATTACHMENT 2

GENERAL EMERGENCY	SITE AREA EMERGENCY	ALERT	NOTIFICATION OF UNUSUAL EVENT
Category S – System Malfunction			
ATWS 1 2	**[SS2 IC]** *Automatic Trip Fails to Shut Down the Reactor And Manual Actions Taken from the Control Room Control Panels are NOT Successful in Shutting Down the Reactor* **SS2.1** **A.** An automatic trip (RPS and ATWS / DSS) failed to shut down the reactor. **AND** **B.** Manual actions taken from the Control Room Control Panels **DO NOT** shut down the reactor as indicated by Reactor Power greater than 5.0% 1 2	**[SA2 IC]** *Automatic Trip Fails to Shut Down the Reactor And the Manual Actions Taken from the Control Room Control Panels are Successful in Shutting down the Reactor* **SA2.1** **A.** An automatic trip (RPS and ATWS / DSS) failed to shut down the reactor. **AND** **B.** Manual actions taken from the Control Room Control Panels successfully shut down the reactor as indicated by Reactor Power less than 5.0% 1 2	
[SG2 IC] *Automatic Trip and All Manual Actions Fail to Shut Down the Reactor And Indication of an Extreme Challenge to the Ability to Cool the Core Exists* **SG2.1** **A.** An automatic trip (RPS and ATWS / DSS) failed to shut down the reactor. **AND** **B.** All manual actions **DO NOT** shut down the reactor as indicated by Reactor Power greater than 5.0% **AND** **C.** **EITHER** of the following exist or have occurred due to continued power generation: • Indication exists that core cooling is extremely challenged based on REP CET at or approaching 1,200°F **OR** • Indication exists that heat removal is extremely challenged based on Core Heat Removal and RCS Heat Removal safety function acceptance criteria **NOT** met			

SAN ONOFRE NUCLEAR GENERATING STATION

EPSD-1

EMERGENCY ACTION LEVEL

TECHNICAL BASES

Revision 4

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2-7	3	5.1-12	3	5.2-11	4	5.4-9	4	5.5-10	4	5.5-48	4	5.6-31	4
2-8	3	5.1-13	3	5.2-12	4	5.4-10	4	5.5-11	4	5.5-49	4	5.6-32	4
2-9	3	5.1-14	3	5.2-13	4	5.4-11	4	5.5-12	4	5.5-50	4	5.6-33	4
2-10	3	5.1-15	3	5.2-14	4	5.4-12	4	5.5-13	4	5.5-51	4	5.6-34	4
2-11	3	5.1-16	3	5.2-15	4	5.4-13	4	5.5-14	4	5.5-52	4	5.6-35	4
		5.1-17	3	5.2-16	4	5.4-14	4	5.5-15	4	5.5-53	4	5.6-36	4
		5.1-18	3	5.2-17	4	5.4-15	4	5.5-16	4	5.5-54	4	5.6-37	4
3-1	2	5.1-19	3	5.2-18	4	5.4-16	4	5.5-17	4			5.6-38	4
		5.1-20	3	5.2-19	4	5.4-17	4	5.5-18	4	5.6-1	4	5.6-39	4
4-1	4	5.1-21	3	5.2-20	4	5.4-18	4	5.5-19	4	5.6-2	4		
4-2	4	5.1-22	3	5.2-21	4	5.4-19	4	5.5-20	4	5.6-3	4		
4-3	4	5.1-23	3	5.2-22	4	5.4-20	4	5.5-21	4	5.6-4	4		
4-4	4	5.1-24	3	5.2-23	4	5.4-21	4	5.5-22	4	5.6-5	4		
4-5	4	5.1-25	3	5.2-24	4	5.4-22	4	5.5-23	4	5.6-6	4		
4-6	4	5.1-26	3	5.2-25	4	5.4-23	4	5.5-24	4	5.6-7	4		
4-7	4	5.1-27	3	5.2-26	4	5.4-24	4	5.5-25	4	5.6-8	4		
4-8	4	5.1-28	3	5.2-27	4	5.4-25	4	5.5-26	4	5.6-9	4		
4-9	4	5.1-29	3	5.2-28	4	5.4-26	4	5.5-27	4	5.6-10	4		
4-10	4	5.1-30	3	5.2-29	4	5.4-27	4	5.5-28	4	5.6-11	4		
4-11	4	5.1-31	3	5.2-30	4	5.4-28	4	5.5-29	4	5.6-12	4		
4-12	4	5.1-32	3	5.2-31	4	5.4-29	4	5.5-30	4	5.6-13	4		
4-13	4	5.1-33	3	5.2-32	4	5.4-30	4	5.5-31	4	5.6-14	4		
4-14	4	5.1-34	3	5.2-33	4	5.4-31	4	5.5-32	4	5.6-15	4		
		5.1-35	3	5.2-34	4	5.4-32	4	5.5-33	4	5.6-16	4		
5-1	3	5.1-36	3	5.2-35	4	5.4-33	4	5.5-34	4	5.6-17	4		
		5.1-37	3	5.2-36	4	5.4-34	4	5.5-35	4	5.6-18	4		
5.1-1	3	5.1-38	3			5.4-35	4	5.5-36	4	5.6-19	4		
5.1-2	3			5.3-1	3	5.4-36	4	5.5-37	4	5.6-20	4		
		5.2-1	4	5.3-2	3			5.5-38	4	5.6-21	4		

SECTION 2.0 - DISCUSSION

2.0 DISCUSSION

2.1 Background

In 1992, the NRC endorsed NUMARC / NESP-007, Methodology for Development of Emergency Action Levels, as an alternative to NUREG-0654 EAL guidance.

NEI 99-01 Rev. 5 (NUMARC / NESP-007) represents the most recently accepted methodology. Enhancements over earlier revisions include:

- Consolidating the system malfunction initiating conditions and example emergency action levels which address conditions that may be postulated to occur during plant shutdown conditions.
- Addressing initiating conditions and example emergency action levels that fully address conditions that may be postulated to occur at permanently Defueled Stations and Independent Spent Fuel Storage Installations.

Using NEI 99-01 Rev. 5, SONGS conducted an EAL conversion project that produced the EALs discussed herein.

2.2 Fission Product Barriers

Many of the EALs derived from the NEI methodology are fission product barrier based. That is, the conditions that define the EALs are based upon loss or potential loss of one or more of the three fission product barriers. The terms "Loss" and "Potential Loss" signify the relative damage and threat of damage to the barrier. "Loss" means the barrier no longer assures containment of radioactive materials based on exceeding the plant design bases with no immediate certainty of recovery; "Potential Loss" infers an elevated probability of barrier loss and decreased certainty of maintaining the barrier.

The primary Fission Product Barriers are:

A. Fuel Clad: The tubes which house the ceramic fuel pellets along with the end plugs which are welded into each end of the fuel rods comprise the Fuel Clad Barrier.

B. Reactor Coolant System (RCS): The reactor vessel shell, vessel head, vessel nozzles and penetrations, plus piping, pumps and valves which are part of the RCS

and connected to the RCS, up to and including any and all of the following: the outermost Containment isolation valve in system piping that penetrates the Containment, the second of two valves normally closed during normal reactor operation in system piping that does not penetrate Containment and the RCS safety valves.

C. Containment: The Containment pressure vessel and all isolation valves required to maintain Containment integrity under accident conditions comprise the Containment Barrier. This barrier also includes the main steam, feedwater and blowdown line extensions outside Containment up to and including the outermost secondary side isolation valves.

2.3 Emergency Classification Based on Fission Product Barrier Degradation

The following criteria are the bases for event classification related to fission product barrier loss or potential loss:

Notification of Unusual Event:

Any loss or any potential loss of Containment

Alert:

Any loss or any potential loss of either Fuel Clad or RCS

Site Area Emergency:

Loss or potential loss of any two barriers

General Emergency:

Loss of any two barriers concurrent with the loss or potential loss of third barrier

2.4 EAL Relationship to EOIs and Safety Function Acceptance Criteria

Where possible, the EALs have been made consistent with and utilize the conditions defined in the SONGS Emergency Operating Instruction (EOI) network. While the symptoms that drive operator actions specified in the EOIs are not indicative of all possible conditions which warrant emergency classification, they define the symptoms, independent of initiating events, for which reactor plant safety and/or fission product barrier integrity are threatened. When these symptoms are clearly representative of one of the NEI initiating conditions, they have been utilized as an EAL. This permits rapid classification of

emergency situations based on plant conditions without the need for additional evaluation or event diagnosis. Although some of the EALs presented here are based on conditions defined in the EOIs, classification of emergencies using these EALs is not dependent upon EOI entry or execution. The EALs can be utilized independently or in conjunction with the EOIs.

2.5 Symptom-Based, Event-Based, or Barrier-Based EALs

To the extent possible, the EALs are symptom-based. That is, the action level threshold is defined by values of key plant operating parameters that identify emergency or potential emergency conditions. This approach is appropriate because it allows the full scope of variations in the types of events to be classified as emergencies. However, a purely symptom-based approach is not sufficient to address all events for which emergency classification is appropriate. Particular events to which no predetermined symptoms can be ascribed have also been utilized as EALs since they may be indicative of potentially more serious conditions not yet fully realized.

A review of the emergency classification level descriptions provided in Section 4, "DEFINITIONS, ACRONYMS AND ABBREVIATIONS" shows that NOUEs and Alerts deal primarily with sequences that are precursors to more serious emergencies or that may have taken a plant outside of its intended operating envelope, but currently poses no danger to the public. Observable indications in these classes can be events (e.g., natural phenomena), symptoms (e.g., high temperature, low water level), or barrier related (e.g., challenge to fission product barrier). As one escalates to Site Area Emergency and General Emergency, potential radiological impact to people (both on-site and off-site) increases. However, at this point the root cause event(s) leading to the emergency classification level escalation matter far less than the increased (potential for) radiological releases. Thus, EALs for these emergency classification levels should be primarily symptom and barrier based. It should be noted that barrier monitoring is a subset of symptom monitoring, i.e., what readings (symptoms) indicate a challenge to a fission product barrier.

2.6 EAL Organization

Planned evolutions involve preplanning to address the limitations imposed by the condition, the performance of required surveillance testing, and the implementation of specific controls prior to knowingly entering the condition in accordance with the specific requirements of the site's Technical Specifications. Activities which cause the site to operate beyond that allowed by the site's Technical Specifications, planned or unplanned, may result in an EAL threshold being met or exceeded. Planned evolutions to test, manipulate, repair, perform maintenance or modifications to systems and equipment that result in an EAL value being met or exceeded are not subject to classification and activation requirements as long as the evolution proceeds as planned and is within the operational limitations imposed by the specific operating license. However, these conditions may be subject to the reporting requirements of 10 CFR 50.72.

Classifications are based on evaluation of each Unit. All classifications are to be based upon valid indications, reports or conditions. Indications, reports or conditions are considered valid when they are verified by (1) an instrument channel check, or (2) indications on related or redundant indications, or (3) by direct observation by plant personnel, such that doubt related to the indication's operability, the condition's existence, or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

With the emergency classification levels defined, the thresholds that must be met for each EAL to be placed under the emergency classification level can be determined. There are two basic approaches to determining these EALs.

EALs and emergency classification level boundaries coincide for those continuously measurable, instrumented ICs, such as radioactivity, core temperature, coolant levels, etc. For these ICs, the EAL will be the threshold reading that most closely corresponds to the emergency classification level description using the best available information.

For discrete (discontinuous) events, the approach will have to be somewhat different. Typically, in this category are internal and external hazards such as FIRE or earthquake. The purpose for including hazards in EALs is to assure that station personnel and off-site emergency response organizations are prepared to deal with consequential damage these

hazards may cause. If, indeed, hazards have caused damage to safety functions or fission product barriers, this should be confirmed by symptoms or by observation of such failures. Therefore, it may be appropriate to enter an Alert status for events approaching or exceeding design basis limits such as Operating Basis Earthquake (OBE), design basis wind loads, FIRE within VITAL AREAS, etc. This would give the operating staff additional support and improved ability to determine the extent of plant damage. If damage to barriers or challenges to Safety Functions have occurred or are identified, then the additional support can be used to escalate or terminate the emergency classification level based on what has been found. Of course, security events must reflect potential for increasing security threat levels.

Plant emergency operating instructions (EOIs) are designed to maintain and/or restore a set of Safety Functions which are listed in the order of priority for restoration efforts during accident conditions. SONGS Safety Functions set includes:

- Reactivity Control
- Vital Auxiliaries
- RCS Inventory
- RCS Pressure Control
- Heat Removal
- Containment Isolation
- Containment Temperature/Pressure
- Containment Combustible Gas

There are diverse and redundant plant systems to support each Safety Function. By monitoring the Safety Functions instead of the individual system component status, the impact of multiple events is inherently addressed, e.g., the number of operable components available to maintain the critical safety functions.

The EOIs contain detailed instructions regarding the monitoring of these functions and provides a scheme for classifying the significance of the challenge to the functions. In providing EALs based on these schemes, the emergency classification level can flow from

the EOI assessment rather than being based on a separate EAL assessment. This is desirable as it reduces ambiguity and the time necessary to classify the event.

Although the majority of the EALs provide very specific thresholds, the Shift Manager / Station Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL is IMMINENT. If, in the judgment of the Shift Manager / Station Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded. While this is particularly prudent at the higher emergency classification levels (as the early classification may provide for more effective implementation of protective measures), it is nonetheless applicable to all emergency classification levels.

The SONGS EALs are divided into six broad categories consistent with NEI 99-01:

- Category A (Abnormal Rad Levels / Radiological Effluent) - EALs that are radiological in nature
- Category C (Cold Shutdown / Refueling System Malfunction) - EALs related to system malfunctions occurring while in the Cold Shutdown or Refueling mode
- Category E (Events Related to Independent Spent Fuel Storage Installations) - EALs associated with the Independent Spent Fuel Storage Installation (ISFSI)
- Category F (Fission Product Barrier Degradation) - EALs that are related to loss or potential loss of one or more fission product barriers
- Category H (Hazards and Other Conditions Affecting Plant Safety) - EALs that are related to external hazards such as security events, fires or natural events
- Category S (System Malfunction) - EALs that are related to system or equipment malfunctions

Some categories are broad and may contain several EALs. Further division of a category into subcategories helps promote association of existing plant conditions to the conditions requiring emergency classification.

The primary tool for determining the emergency classification level is procedure SO123-VIII-1, Recognition and Classification of Emergencies. Form EP(123) 1,

Emergency Classification and Event Code Chart, may also be used for classification. The user of SO123-VIII-1 or EP(123) 1 may (but is not required to) consult the EAL technical bases in order to obtain additional information concerning the EALs under consideration. The user should consult Sections 2.7, 2.8 and 5.1 – 5.6 of this document for such information.

2.7 Treatment of Multiple Events and Classification Level Upgrading

The above discussion deals primarily with simpler emergencies and events that may not escalate rapidly. However, usable EAL guidance must also consider rapidly evolving and complex events. Hence, emergency classification level upgrading and consideration of multiple events must be addressed.

When multiple simultaneous events occur, the emergency classification level is based on the highest EAL reached. For example, two Alerts remain in the Alert category. Or, an Alert and a Site Area Emergency is a Site Area Emergency. Further guidance is provided in RIS 2007-02, Clarification of NRC Guidance for Emergency Notifications During Quickly Changing Events.

Emergency classification level upgrading for multi-unit stations with shared safety-related systems and functions must also consider the effects of a loss of a common system on more than one unit (e.g. potential for radioactive release from more than one core at the same site). For example, many two-unit stations have their control panels for both units in close proximity within the same room. Thus, control room evacuation most likely would affect both units. There are a number of other systems and functions which may be shared at a given multi-unit station. This must be considered in the emergency classification level declaration and in the development of appropriate site specific ICs and EALs based on the generic EAL guidance.

Although the majority of the EALs provide very specific thresholds, the Shift Manager / Station Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL is IMMINENT. If, in the judgment of the Shift Manager / Station Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded. While this is particularly prudent at the higher emergency classification levels (as the early classification may provide for more

effective implementation of protective measures), it is nonetheless applicable to all emergency classification levels.

2.8 Technical Bases Information

EAL technical bases are provided in a section for each EAL according to EAL recognition category (A, C, E, F, H and S). A summary explanation of each category and subcategory is given at the beginning of the technical bases discussion of the EALs included in the category. For each EAL, the following information is provided:

Subcategory

A grouping of EALs within a category to indicate those that are closely associated with each other in terms of similar plant conditions or events and classification progression.

Initiating Condition (IC)

Site-specific description of the generic IC given in NEI 99-01.

Mode Applicability

One or more of the following plant operating conditions comprising the mode(s) to which each EAL is applicable: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown, 5 - Cold Shutdown, 6 - Refueling, D – Defueled, All – Modes 1 - 6 plus Defueled or N/A - Not Applicable. See Section 2.9 for operating mode definitions.

EAL Number

Each EAL is uniquely identified with a number to support accurate communication of the emergency classification to on-site and off-site personnel. Four characters define each EAL number:

1. First character (letter): Corresponds to the EAL category as described above (A, C, F, H or S). Events related to the ISFSI are designated by two letters (E-H).
2. Second character (letter): The emergency classification level (U, A, S or G).
3. Third character (number): The numerical sequence of the IC as given in NEI 99-01.
4. Fourth character (number): The numerical sequence of the EAL within the NEI 99-01 IC. If the IC has only one EAL, it is given the number one (1).

Emergency Classification Level

Notification of Unusual Event (U), Alert (A), Site Area Emergency (S) or General Emergency (G).

Emergency Action Level (enclosed in rectangle)

Exact wording of the EAL as it appears in SO123-VIII-1, Recognition and Classification of Emergencies, and EP(123) 1, Emergency Classification and Event Code Chart.

Basis

Description of the rationale for the EAL.

2.9 Operating Mode Applicability

1 Power Operation

$K_{eff} \geq 0.99$ and rated thermal power > 5%.

2 Startup

$K_{eff} \geq 0.99$ and rated thermal power ≤ 5%.

3 Hot Standby

$K_{eff} < 0.99$ and average reactor coolant temperature $T_{avg} \geq 350°F$.

4 Hot Shutdown

$K_{eff} < 0.99$ and average reactor coolant temperature $350°F > T_{avg} > 200°F$

5 Cold Shutdown

$K_{eff} < 0.99$ and average reactor coolant temperature $T_{avg} \leq 200°F$ with all reactor vessel head closure bolts fully tensioned.

6 Refueling

One or more reactor vessel head closure bolts less than fully tensioned.

D Defueled

In addition to the modes listed above, "Defueled" is used to define the condition when the reactor vessel contains no fuel (full core off-load during refueling or extended outage). For EAL purposes, it is referenced as a "mode."

The plant operating mode that exists at the time that the event occurs, prior to any protective system or operator action is initiated in response to the condition, should be compared to the mode applicability of the EALs. If an event occurs, and a lower or higher

plant operating mode is reached before the emergency classification level can be declared, the emergency classification level shall be based on the mode that existed at the time the event occurred.

For events that occur in Cold Shutdown or Refueling, escalation is via EALs that have Cold Shutdown or Refueling for mode applicability, even if Hot Shutdown (or a higher mode) is entered during any subsequent heat-up. In particular, the fission product barrier EALs are applicable only to events that initiate in Hot Shutdown or higher.

2.10 Classifying Transient Events

For some events, the condition may be corrected before a declaration has been made. The key consideration in this situation is to determine whether or not further plant damage occurred while the corrective actions were being taken. In some situations, this can be readily determined, in other situations, further analyses (e.g., coolant radiochemistry sampling, may be necessary). Classify the event as indicated and terminate the emergency once assessment shows that there were no consequences from the event and other termination criteria are met.

Existing guidance for classifying transient events addresses the period of time of event recognition and classification (15 minutes). However, in cases when EAL declaration criteria may be met momentarily during the normal expected response of the plant, declaration requirements should not be considered to be met when the conditions are a part of the designed plant response, or result from appropriate Operator actions.

There may be cases in which a plant condition that exceeded an EAL was not recognized at the time of occurrence but is identified well after the condition has occurred (e.g., as a result of routine log or record review), and the condition no longer exists. In these cases, an emergency should not be declared.

Reporting requirements of 10 CFR 50.72 are applicable and the guidance of NUREG-1022, Event Reporting Guidelines 10 CFR 50.72 and 50.73, should be applied.

2.11 Imminent EAL Thresholds

Although the majority of the EALs provide very specific thresholds, the Shift Manager / Station Emergency Director must remain aware of events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Shift Manager / Station Emergency Director, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded. While this approach is particularly prudent at the higher emergency classes (the early classification may permit more effective implementation of protective measures), it is nonetheless applicable to all emergency classes.

SECTION 4.0 - DEFINITIONS, ACRONYMS AND ABBREVIATIONS

4.0 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

4.1 Definitions

Actuate

To put into operation; to move to action. Commonly used to refer to automated, multi-faceted operations (e.g., "actuate ECCS").

Affecting Safe Shutdown

Event in progress has adversely affected functions that are necessary to bring the plant to and maintain it in the applicable Hot or Cold Shutdown condition. Plant condition applicability is determined by Technical Specification LCOs in effect.

Example 1: Event causes damage that results in entry into an LCO that requires the plant to be placed in Hot Shutdown. Hot Shutdown is achievable, but Cold Shutdown is not. This event **is not** "Affecting Safe Shutdown."

Example 2: Event causes damage that results in entry into an LCO that requires the plant to be placed in Cold Shutdown. Hot Shutdown is achievable, but Cold Shutdown is not. This event **is** "Affecting Safe Shutdown."

Alert

Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

Available

The state or condition of being ready and able to be used (placed into operation) to accomplish the stated (or implied) action or function. As applied to a system, this requires the operability of necessary support systems (electrical power supplies, cooling water, lubrication, etc.).

Bomb

Refers to an explosive device suspected of having sufficient force to damage plant systems or structures.

Can / Cannot be determined (</>)

The current value or status of an identified parameter relative to that specified can / cannot be ascertained using all available indications (direct and indirect, singly or in combination).

Can / Cannot be maintained above / below (</>)

The value of the identified parameter(s) is / is not able to be kept above / below specified limits. This determination includes making an evaluation that considers both current and future system performance in relation to the current value and trend of the parameter(s). Neither implies that the parameter must actually exceed the limit before the action is taken nor that the action must be taken before the limit is reached.

Can / Cannot be restored above / below (</>)

The value of the identified parameter(s) is / is not able to be returned to above / below specified limits after having passed those limits. This determination includes making an evaluation that considers both current and future systems performances in relation to the current value and trend of the parameter(s). It does not imply any specific time interval, but does not permit prolonged operation beyond a limit without taking the specified action.

As applied to loss of electrical power sources (e.g., power cannot be restored to any vital bus in ≤ 4 hours), the specified power source cannot be returned to service within the specified time. This determination includes making an evaluation that considers both current and future restoration capabilities. It implies that the declaration should be made as soon as the determination is made that the power source cannot be restored within the specified time.

Civil Disturbance

A group of persons violently protesting station operations or activities at the site.

Close

To position a valve or damper so as to prevent flow of the process fluid. To make an electrical connection to supply power.

Confinement Boundary

The barrier(s) between areas containing radioactive substances and the environment.

Confirm / Confirmation

To validate, through visual observation or physical inspection, that an assumed condition is as expected or required, without taking action to alter the "as found" configuration.

Containment Closure

Containment closure is the action taken to secure Containment and its associated structures, systems and components as a functional barrier to fission product release under existing plant conditions. Containment closure control requirements are defined in SO23-5-1.8.1, Shutdown Nuclear Safety, Section 6.7, Containment Closure Control.

Control

Take action, as necessary, to maintain the value of a specified parameter within applicable limits; to fix or adjust the time, amount, or rate of; to regulate or restrict.

Discharge

Removal of a fluid / gas from a volume or system.

Emergency Action Level

A predetermined, site-specific, observable threshold for a plant initiating condition that places the plant in a given emergency class. An EAL can be an instrument reading, an equipment status indicator, a measurable parameter (on-site or off-site), a discrete, observable event, results of analyses, entry into specific emergency operating instructions or another phenomenon which, if it occurs, indicates entry into a particular emergency class.

Enter

To go into.

EPA PAGs

Environmental Protection Agency (EPA) Protective Action Guides (PAGs). The EPA PAGs are expressed in terms of dose commitment: 1,000 mrem TEDE and 5,000 mrem thyroid CDE. Actual or projected off-site exposures at or above a predetermined fraction of the EPA PAGs require SONGS to recommend protective actions for the general public to off-site emergency response agencies.

Establish

To perform actions necessary to meet a stated condition (e.g., "establish communication with the Control Room").

Evacuate

To remove the contents of; to remove personnel from an area.

Exceeds

To go or be beyond a stated or implied limit, measure or degree.

Exclusion Area Boundary (EAB)

The EAB is roughly formed by two semicircles with radii of 1967.5 ft. each, centered on the Unit 2 Containment dome and a point 134 ft. southeast of the Unit 3 Containment dome, with a tangent connecting the landward arcs and seaward arcs of the two semicircles. The EAB is depicted in UFSAR Figure 2.1-5.

Exist

To have being with respect to understood limitations or conditions.

Explosion

A rapid, violent, unconfined combustion or catastrophic failure of pressurized equipment that imparts energy of sufficient force to potentially damage permanent structures, systems or components.

Extinguished

Cessation of combustion and production of heat and emission of light, as determined by the Fire Department Shift Captain / Incident Commander.

Extortion

An attempt to cause an action at the station by threat of force.

Faulted

In a Steam Generator, the existence of secondary side leakage that results in an uncontrolled decrease in Steam Generator pressure or the Steam Generator being completely depressurized.

Failure

A state of inability to perform a normal function.

Fire

Combustion characterized by heat and light. Sources of smoke such as slipping drive belts or overheated electrical equipment do not constitute fires. Observation of flame is preferred, but is not required if large quantities of smoke and heat are observed.

Fission Product Barriers

Multiple physical barriers, any one of which if maintained intact, precludes the release of significant amounts of radioactive fission products to the environment. For radioactive materials that are contained within the reactor core, the Fission Product Barriers are the Fuel Clad, Reactor Coolant System pressure boundary and Containment.

General Emergency

Events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area.

Hostage

Person(s) held as leverage against the station to ensure that demands will be met by the station.

Hostile Action

An act toward SONGS or its personnel that includes the use of violent force to destroy equipment, take hostages and/or intimidate the licensee to achieve an end. This includes attack by air, land or water using guns, explosives, projectiles, vehicles or other devices used to deliver destructive force. Other acts that satisfy the overall intent may be included. HOSTILE ACTION should not be construed to include acts of civil disobedience or felonious acts that are not part of a concerted attack on SONGS. Non-terrorism-based EALs should be used to address such activities (i.e., this may include violent acts between individuals in the Owner Controlled Area).

Hostile Force

One or more individuals who are engaged in a determined assault, overtly or by stealth and deception, equipped with suitable weapons capable of killing, maiming or causing destruction.

If

Logic term which indicates that taking the action prescribed is contingent upon the current existence of the stated condition(s). If the identified conditions do not exist, the prescribed action is not to be taken and execution of operator actions must proceed promptly in accordance with subsequent instructions.

Immediately Dangerous to Life and Health (IDLH)

An atmospheric concentration of any toxic, corrosive or asphyxiant substance that poses an immediate threat to life or would cause irreversible or delayed adverse health effects or would interfere with an individual's ability to escape from a dangerous atmosphere.

Imminent

About to occur; impending, or mitigation actions have been ineffective, additional actions are not expected to be successful, and trended information indicates that the event or condition will occur. Where IMMINENT time frames are specified, they shall apply.

Independent Spent Fuel Storage Installation (ISFSI)

A complex that is designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage.

Indicate

To point out or point to; to display the value of a process variable; to be a sign or symbol.

Initiate

The act of placing equipment or a system into service, either manually or automatically. Activation of a function or protective feature (e.g., initiate a manual trip).

Initiating Condition

One of a predetermined subset of nuclear power plant conditions where either the potential exists for a radiological emergency, or such an emergency has occurred.

Injection

The act of forcing a fluid into a volume or vessel.

Inoperable

Not able to perform its intended function.

Intruder

Person(s) present in a specified area without authorization.

Leakage LEAKAGE shall be:

a. Identified LEAKAGE
   1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) leakoff), that is captured and conducted to collection systems or a sump or collecting tank;
   2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or
   3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE).

b. Unidentified LEAKAGE

   All LEAKAGE that is not identified LEAKAGE

c. Pressure Boundary LEAKAGE

   LEAKAGE (except primary to secondary LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

Loss

Failure of operability or lack of access to.

Lower

To become progressively less in size, amount, number or intensity.

Lower Flammability Limit

The minimum concentration of a combustible substance that is capable of propagating a flame through a homogenous mixture of the combustible substance and a gaseous oxidizer.

Maintain

Take action, as necessary, to keep the value of the specified parameter within the applicable limits.

Malevolent

Having, showing or arising from intense, often vicious, ill will, spite or hatred.

Monitor

Observe and evaluate at a frequency sufficient to remain apprised of the value, trend and rate of change of the specified parameter.

Normal Plant Operations

Activities at the plant site associated with routine testing, maintenance or equipment operations, in accordance with normal operating or administrative procedures. Entry into abnormal or emergency operating instructions, or deviation from normal security or radiological controls posture, is a departure from normal plant operations.

Notification of Unusual Event

Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

Notify

To give notice of or report the occurrence of; to make known to; to inform specified personnel; to advise; to communicate; to contact; to relay.

Open

To position a valve or damper so as to allow flow of the process fluid.
To break an electrical connection which removes a power supply from an electrical device.
To make available for entry or passage by turning back, removing or clearing away.

Operable

Able to perform its intended function.

Owner Controlled Area

SONGS facilities and parking lots located on the west side of the Interstate 5 freeway, extending westward from Old Highway 101 to the high-tide line, bordered on the north by the northernmost point of Parking Lot 4 and bordered on the south by the southernmost point of the South Yard Facility.

Perform

To carry out an action; to accomplish; to affect; to reach an objective.

Primary System

The pipes, valves and other equipment which connect directly to the Reactor Vessel or Reactor Coolant System such that a reduction in Reactor Vessel pressure will effect a lowering in the steam or water being discharged through an unisolated break in the system.

Projectile

An object directed toward SONGS that could cause concern for its continued operability, reliability, or personnel safety.

Protected Area

The Units 2/3 (plant) PROTECTED AREA is the property surrounding Units 2 and 3 that is encompassed by physical barriers to which access is controlled. This area is within the security isolation zone and is depicted on Drawing 21090, Vehicle Barrier System Plot Plan. The Independent Spent Fuel Storage Installation is designated as a separate PROTECTED AREA.

Reduced Inventory Condition

The condition existing whenever RCS water level is lower than 3 feet below the Reactor Vessel Flange with fuel in the core.

Remove

To change the location or position of.

Report

To describe as being in a specific state.

Require

To demand as necessary or essential.

Restore

Take the appropriate action required to return the value of an identified parameter to within applicable limits.

Rise

Describes an increase in a parameter as the result of an operator or automatic action. To become progressively greater in size, amount, number or intensity.

Ruptured

In a Steam Generator, the existence of primary-to-secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection.

Sabotage

Deliberate damage, misalignment or mis-operation of plant equipment with the intent to render the equipment inoperable. Equipment found tampered with or damaged due to malicious mischief may not meet the definition of sabotage until this determination is made by security supervision.

Safe Plant Shutdown

Hot or Cold Shutdown (reactor subcritical with regulatory required shutdown margin) with control of coolant inventory and decay heat removal.

Safe Shutdown System

Systems required for safe shutdown are defined as those essential for pressure and reactivity control, coolant inventory makeup and removal of residual heat once the reactor has been brought to a subcritical condition.

Sample

To perform an analysis on a specified media to determine its properties.

Security Condition

Any Security Event as listed in the approved security contingency plan that constitutes a threat/compromise to site security, threat/risk to site personnel, or a potential degradation to the level of safety of the plant. A SECURITY CONDITION does not involve a HOSTILE ACTION.

Shutdown Safety Functions

During shutdown, these functions are reactivity control (core and SFP), electric power availability, inventory control (core and SFP), RCS pressure control, decay heat removal (core and SFP), Containment isolation and Containment temperature and pressure control.

Shut Down

To perform operations necessary to cause equipment to cease or suspend operation; to stop (e.g., "shut down unnecessary equipment").

Significant Transient

An unplanned event involving any of the following:

- Automatic turbine runback greater than 25% thermal reactor power
- Electrical load rejection greater than 25% full electrical load
- Reactor trip
- Safety injection actuation
- Thermal power oscillations greater than 10%

Site Area Emergency

Events are in progress or have occurred which involve an actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels beyond the site boundary.

Site Boundary

The plant property line around the site, which is comprised of 83.63 acres on the west side of the Interstate 5 freeway. At the northeast and southeast site boundaries, the exclusion area is tangent to, but does not exceed, the site boundary.

Strike Action

A work stoppage within the PROTECTED AREA by a body of workers to enforce compliance with demands made on site management. The STRIKE ACTION must threaten to interrupt NORMAL PLANT OPERATIONS.

Sustained

Prolonged. Not intermittent or of a transitory nature.

Trip

To de-energize a pump or fan motor; to position a breaker so as to interrupt or prevent the flow of current in the associated circuit; to manually activate a semi-automatic feature.

Unavailable

Not able to perform its intended function.

Uncontrolled

An evolution lacking control, but that is not the result of operator action.

Unisolable

A breach or leak that cannot be promptly isolated.

Unplanned

A parameter change or an event that is not the result of an intended evolution and requires corrective or mitigative actions.

Until

Indicates that the associated prescribed action is to proceed only so long as the identified condition does not exist.

Valid

An indication, report or condition is considered to be valid when it is verified by (1) an instrument channel check, (2) indications on related or redundant indicators, or (3) by direct observation by plant personnel, such that doubt related to the indicator's operability, the condition's existence or the report's accuracy is removed. Implicit in this definition is the need for timely assessment.

Vent

To open an effluent (exhaust) flowpath from an enclosed volume; to reduce pressure in an enclosed volume.

Verify

To confirm a condition and take action to establish that condition if required (e.g., "verify reactor trip").

Visible Damage

Damage to equipment or structure that is readily observable without measurements, testing or analysis. Damage is sufficient to cause concern regarding the continued operability or reliability of the affected safety structure, system or component. Examples of damage include: deformation due to heat or impact, denting, penetration, rupture, cracking and paint blistering. Surface blemishes (e.g., paint chipping, scratches) should not be included.

Vital Area

Any plant area which contains vital equipment. Any area, normally within the Units 2/3 PROTECTED AREA, which contains equipment, systems, components or material, the failure, destruction or release of which could directly or indirectly endanger the public health and safety by exposure to radiation. SONGS Vital Areas are listed in SO123-XV-13, 1410 Access Authorization Process for Protected and Vital Area Entry.

4.2 Acronyms and Abbreviations

AC	Alternating Current
ARMS	Area Radiation Monitoring System
ASME	American Society of Mechanical Engineers
ATWS	Anticipated Transient Without Scram
BPS	Blowdown Processing System
BWR	Boiling Water Reactor
CAS	Central Alarm Station
CCW	Component Cooling Water
CDE	Committed Dose Equivalent
C-E	Combustion Engineering
CEA	Control Element Assembly
CET	Core Exit Thermocouple
CFMS	Critical Functions Monitoring System
CFR	Code of Federal Regulations
CPM	Counts Per Minute
CSS	Containment Spray System
DACS	Dose Assessment Computer System
DAS	Data Acquisition System
DBD	Design Basis Document
DC	Direct Current
DEDLS	Double-ended Discharge Leg Slot
DEI	Dose Equivalent Iodine
DLMS	Draindown Level Monitoring System
DNBR	Departure from Nucleate Boiling Ratio
DPM	Decades Per Minute
DSS	Diverse Scram System
EAB	Exclusion Area Boundary
EAL	Emergency Action Level
ECCS	Emergency Core Cooling System
ENS	Emergency Notification System
EOF	Emergency Operations Facility
EOI	Emergency Operating Instruction
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ESF	Engineered Safety Feature
FAA	Federal Aviation Administration
FBI	Federal Bureau of Investigation
FHB	Fuel Handling Building

GE	General Emergency
GPM	Gallons Per Minute
HJTC	Heated Junction Thermocouple
HPSI	High Pressure Safety Injection
HVAC	Heating, Ventilation, and Air Conditioning
IC	Initiating Condition
IDLH	Immediately Dangerous to Life and Health
ISFSI	Independent Spent Fuel Storage Installation
kV	Kilovolt
LCO	Limiting Condition for Operation
LCS	Licensee Controlled Specifications
LOCA	Loss of Coolant Accident
LPD	Local Power Density
LR	Low Range
MCC	Motor Control Center
MLLW	Mean Lower Low Water
MPH	Miles per Hour
MSIV	Main Steam Isolation Valve
MSLB	Main Steam Line Break
mrem	Millirem
NEI	Nuclear Energy Institute
NESP	National Environmental Studies Project
NOAA	National Oceanic and Atmospheric Administration
NORAD	North American Aerospace Defense Command
NOUE	Notification of Unusual Event
NR	Narrow Range
NRC	Nuclear Regulatory Commission
NSSS	Nuclear Steam Supply System
NUMARC	Nuclear Management and Resources Council
NUREG	U.S. Nuclear Regulatory Commission technical report
OBE	Operating Basis Earthquake
OCA	Owner Controlled Area
ODAC	Off-site Dose Assessment Center
ODCM	Offsite Dose Calculation Manual
ORO	Off-site Response Organization
OSC	Operations Support Center
PA	Protected Area
PAG	Protective Action Guide(line)
PASS	Post Accident Sampling System

PCS	Plant Computer System
PIC	Pressurized Ion Chamber
PRA	Probabilistic Risk Assessment
PSIA	Pounds Per Square Inch Absolute
PSIG	Pounds Per Square Inch Gauge
PTS	Pressurized Thermal Shock
PWR	Pressurized Water Reactor
PZR	Pressurizer
QSPDS	Qualified Safety Parameter Display System
R	Roentgen
RCDT	Reactor Coolant Drain Tank
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RDU	Remote Display Unit
REP	Representative
RNO	Response Not Obtained
RPS	Reactor Protection System
RVLMS	Reactor Vessel Level Monitoring System
RWLI	Refueling Water Level Indicator
SAE	Site Area Emergency
SBO	Station Blackout
SCP	Safeguards Contingency Plan
SE	Security Event
SFP	Spent Fuel Pool
S/G	Steam Generator
SGTR	Steam Generator Tube Rupture
SI	Safety Injection
SIAS	Safety Injection Actuation Signal
SONGS	San Onofre Nuclear Generating Station
SRM	Source Range Monitor
SUR	Startup Rate
TEDE	Total Effective Dose Equivalent
TMI	Three Mile Island
TS	Technical Specifications
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
UPS	Uninterruptible Power Supply
V	Volt
VBPS	Vital Bus Power Supply

PCS	Plant Computer System
PIC	Pressurized Ion Chamber
PRA	Probabilistic Risk Assessment
PSIA	Pounds Per Square Inch Absolute
PSIG	Pounds Per Square Inch Gauge
PTS	Pressurized Thermal Shock
PWR	Pressurized Water Reactor
PZR	Pressurizer
QSPDS	Qualified Safety Parameter Display System
R	Roentgen
RCDT	Reactor Coolant Drain Tank
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RDU	Remote Display Unit
REP	Representative
RNO	Response Not Obtained
RPS	Reactor Protection System
RVLMS	Reactor Vessel Level Monitoring System
RWLI	Refueling Water Level Indicator
SAE	Site Area Emergency
SBO	Station Blackout
SCP	Safeguards Contingency Plan
SE	Security Event
SFP	Spent Fuel Pool
S/G	Steam Generator
SGTR	Steam Generator Tube Rupture
SI	Safety Injection
SIAS	Safety Injection Actuation Signal
SONGS	San Onofre Nuclear Generating Station
SRM	Source Range Monitor
SUR	Startup Rate
TEDE	Total Effective Dose Equivalent
TMI	Three Mile Island
TS	Technical Specifications
TSC	Technical Support Center
UFSAR	Updated Final Safety Analysis Report
UPS	Uninterruptible Power Supply
V	Volt
VBPS	Vital Bus Power Supply

SECTION 5.1 - CATEGORY A – ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENT

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Many EALs are based on actual or potential degradation of fission product barriers because of the elevated potential for off-site radioactivity release. However, degradation of fission product barriers is not always apparent via non-radiological symptoms. Therefore, direct indication of elevated radiological effluents or area radiation levels are appropriate symptoms for emergency classification.

At lower levels, abnormal radioactivity releases may be indicative of a failure of containment systems or precursors to more significant releases. At higher release rates, off-site radiological conditions may result which require off-site protective actions. Elevated area radiation levels in-plant may also be indicative of the failure of containment systems or preclude access to plant vital equipment necessary to ensure plant safety.

Events of this category pertain to:

Effluents / Release Rates

Direct indication of liquid effluent or gaseous radiation monitoring systems provides a rapid assessment mechanism to determine releases in excess of classifiable limits. Measured release rates determined by sample analyses that warrant emergency classification are also included.

Area Radiation

Sustained general area radiation levels in excess of those indicating loss of control of radioactive materials or those levels which may preclude access to vital plant areas also warrant emergency classification.

Dose Projections / Environmental Measurements

Projected off-site doses or actual off-site field measurements indicate doses or dose rates above classifiable limits.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Effluents / Release Rates

Initiating Condition: [AU1] Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 2 Times the Offsite Dose Calculation Manual (ODCM) for 60 Minutes or Longer.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

AU1.1 Notification of Unusual Event
VALID reading on **ANY** radiation monitor greater than the reading shown in the "**NOUE**" column of Table A-1 (Gaseous) or Table A-2 (Liquid) for 60 minutes or longer

Basis:

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of a degradation in these features and/or controls.

The ODCM multiples are specified in ICs AU1 and AA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate.

This EAL includes any release for which an effluent release permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm set points, etc.) on the applicable release permit. The final integrated dose (which is very low in the Notification of Unusual Event emergency class) is not the primary concern here; it is the degradation in plant control implied by the fact that the release was not

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

isolated within 60 minutes. Releases should not be prorated or averaged. For example, a release exceeding 4x ODCM for 30 minutes does not meet the threshold for this IC. Further, the Shift Manager / Station Emergency Director should not wait until 60 minutes have elapsed, but should declare the event as soon as it is determined that the release duration has exceeded or will likely exceed 60 minutes. If an ongoing release is detected and the starting time for that release is unknown, the Shift Manager / Station Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

The values for the "**NOUE**" column of Table A-1 (Gaseous) are determined in evaluations entitled, "Gaseous ODCM / RETS EAL Threshold Value Determination at SONGS". These evaluations were developed using ODCM setpoint methodology.

Release rate limits for the Alert classifications of Table A-2 (Liquid) are direct multiples of the Notification of Unusual Event limits. The thresholds are applicable up to the effluent discharge flow rates (prior to dilution) shown with a "less than or equal to" symbol next to each effluent radiation monitor in Table A-2. The values represent the liquid effluent flow rates used in the calculation of the EAL thresholds. Since the effluent monitor thresholds are based on these flow values, they bound all lower flow rates.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Effluents / Release Rates

Initiating Condition: [AU1] Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 2 Times the Offsite Dose Calculation Manual (ODCM) for 60 Minutes or Longer.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

Note: The Shift Manager / Station Emergency Director should declare the event within the applicable EAL time limit. If the applicable time limit will be exceeded due to consideration of the applicable administrative factor, declaration should be based upon the EAL multiplier and the setpoint of the release permit as long as the release duration meets the EAL.

AU1.2 Notification of Unusual Event
VALID reading on **ANY** effluent monitor greater than two times the ODCM alarm setpoint (divided by the applicable administrative factor in the ODCM for gaseous releases, or in the current release permit for liquid releases) established by a current effluent release permit for 60 minutes or longer

Basis:

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of degradation in these features and/or controls.

The ODCM multiples are specified in ICs AU1 and AA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

This EAL addresses liquid or gaseous releases that, for whatever reason, cause effluent radiation monitor readings to exceed two times the ODCM limit and releases are not terminated within 60 minutes. This EAL includes any release for which an effluent release permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm set points, etc.) on the applicable release permit.

The final integrated dose (which is very low in the Notification of Unusual Event emergency class) is not the primary concern here; it is the degradation in plant control implied by the fact that the release was not isolated within 60 minutes. Therefore, it is not intended that the release be averaged over 60 minutes. Releases should not be prorated or averaged. For example, a release of 4 x ODCM limits for 30 minutes does not meet the threshold for this IC. Further, the Shift Manager / Station Emergency Director should not wait until 60 minutes have elapsed, but should declare the event as soon as it is determined that the release duration has exceeded or will likely exceed 60 minutes. If an ongoing release is detected and the starting time for that release is unknown, the Shift Manager / Station Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

When generating release permit radiation monitor alarm setpoints, an administrative factor is used to allow simultaneous releases from different sources. Therefore, using a setpoint value that incorporates an administrative limit as the basis for an EAL trigger would be overly conservative. The ODCM alarm setpoint value should be divided by the administrative limit from the release permit to provide an appropriate value representing the calculated ODCM limit.

Due to multiple release points at SONGS, the ODCM Max. Limit on a Release Permit for a given release point is only a portion of the allowed ODCM maximum limit for the site. This portion of the allowed ODCM Max. Limit is controlled by the Administrative Factor for the release point. Administrative Factors for liquid release points are variables and are identified in the Release Permit. Administrative Factors for gaseous release points are identified in the ODCM.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

To make the most accurate determination of whether an EAL multiple of an ODCM Max. Limit has been exceeded, perform the following:

- If any release exceeds the installed setpoint and is not automatically or manually terminated, and the EAL time duration is met, operators should use the Annunciator Response Procedure to determine if the EAL value was actually exceeded.
- Use the Annunciator Response Procedure direction to divide the ODCM Max. Limit on the SONGS Release Permit by the applicable Administrative Factor (as described above).
- Multiply this number by two times the ODCM max. Limit (for a NOUE), six times the ODCM Max. Limit (for a Gaseous Alert) or 200 times the ODCM Max. Limit (for a Liquid Alert).
- Compare this value to the highest radiation monitor reading.

If dividing the SONGS ODCM alarm setpoint by the applicable Administrative Factor, along with multiplying the radiation monitor reading by the applicable EAL multiple, cannot be completed in 15 minutes, operators should conservatively determine if any effluent monitor reading has exceded the EAL multiple listed (two times the ODCM Max Limit, six times the ODCM Limit, or 200 times the ODCM Max Limit) and compare this reading to the radiation monitor reading to determine if the EAL threshold was exceeded. Time durations apply in each EAL and if a time limit is unknown, then the time threshold should be assumed to be met.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Effluents / Release Rates

Initiating Condition: [AU1] Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than 2 Times the Offsite Dose Calculation Manual (ODCM) for 60 minutes or Longer.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

AU1.3 Notification of Unusual Event
Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates greater than two times the ODCM limits for 60 minutes or longer

Basis:

This IC addresses a potential or actual decrease in the level of safety of the plant as indicated by a radiological release that exceeds regulatory commitments for an extended period of time. Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of degradation in these features and/or controls.

The ODCM multiples are specified in ICs AU1 and AA1 only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate.

This EAL addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways (e.g., spills of radioactive liquids into storm drains). This EAL includes any release for which an effluent release permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm set points, etc.) on the applicable release permit.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

The final integrated dose (which is very low in the Notification of Unusual Event emergency class) is not the primary concern here; it is the degradation in plant control implied by the fact that the release was not isolated within 60 minutes. Therefore, it is not intended that the release be averaged over 60 minutes. For example, a release of 4 x ODCM limits for 30 minutes does not meet the threshold for this IC. Further, the Shift Manager / Station Emergency Director should not wait until 60 minutes have elapsed, but should declare the event as soon as it is determined that the release duration has exceeded or will likely exceed 60 minutes. If an ongoing release is detected and the starting time for that release is unknown, the Shift Manager / Station Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 60 minutes.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Area Radiation

Initiating Condition: [AU2] UNPLANNED Rise in Plant Radiation Levels.

Mode Applicability: All

Emergency Action Level:

AU2.1 Notification of Unusual Event

UNPLANNED water level lowering in the Reactor Refueling Cavity (as indicated by either RWLI / DLMS), Spent Fuel Pool (as indicated by local level indicator) or Fuel Transfer Canal

AND

VALID Area Radiation Monitor reading rise on **ANY** of the following:

- 2(3)RE7804G1, P1, or 2(3)RE7807G2, P2, Containment Airborne Radiation Monitor
- 2(3)RE7845, Containment Personnel Lock Area Radiation Monitor
- 2(3)RE7850, Fuel Handling Building Spent Fuel Cask Area Radiation Monitor
- 2(3)RE7822G1 or 2(3)RE7823G2, Fuel Handling Building Airborne Radiation Monitor

Basis:

This IC addresses elevated radiation levels as a result of water level reductions above irradiated fuel or events that have resulted, or may result, in UNPLANNED rises in radiation dose rates within plant buildings. These radiation rises represent a loss of control over radioactive material and may represent a potential degradation in the level of safety of the plant.

In light of Reactor Cavity Seal failure incidents at two different PWRs and loss of water in the Spent Fuel Pit / Fuel Transfer Canal at a BWR, explicit coverage of these types of events via this EAL is appropriate given their potential for elevated doses to plant staff. Classification as a Notification of Unusual Event is warranted as a precursor to a more serious event.

The Spent Fuel Pool (SFP) low level alarm setpoint is 26 ft. 6.5 in. SFP level (59 ft. 6 in. el.), which corresponds to 22 ft. on the Refueling Water Level Indicator (RWLI) in the Refueling Cavity. SFP water level at 23 ft. (49 ft. 4 in. el.) is the Technical Specification LCO limit (LCO 3.7.16) that requires 23 ft. of water above irradiated fuel seated in the SFP storage racks. A minimum depth of 23 ft. of water over the irradiated fuel assemblies is

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

maintained to ensure that the off-site dose consequences due to a postulated fuel handling accident are acceptable. Elevated area radiation levels due to reduced shielding from water cover over irradiated fuel would not be expected until a considerable amount of water was lost, lowering the water level above the fuel to less than 10 ft.

Loss of SFP water inventory results from either a rupture of the pool or transfer canal liner, or failure of the Spent Fuel Cooling System and the subsequent boil-off. Allowing SFP water level to lower could result in spent fuel being uncovered, reducing spent fuel decay heat removal and creation of an extremely hazardous radiation environment. The movement of irradiated fuel assemblies within Containment requires a minimum water level of 23 ft. above the top of the Reactor Vessel Flange. During Refueling mode, this maintains sufficient water level in the Containment, Fuel Transfer Canal, Refueling Cavity and SFP. Therefore, this EAL is applicable for conditions in which irradiated fuel is being transferred to and from the Reactor Vessel and the SFP.

While a radiation monitor could detect a rise in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered. For example, the reading on an Area Radiation Monitor located near the Reactor Refueling Cavity may rise due to planned evolutions such as head lift, or even a fuel assembly being raised in the manipulator mast. Generally, elevated radiation monitor indications will need to be combined with another indicator (or personnel report) of water loss.

For refueling events where the water level drops below the Reactor Vessel Flange, classification would be via IC CU2. This event escalates to an Alert per IC AA2 if irradiated fuel outside the Reactor Vessel is uncovered. For events involving irradiated fuel in the Reactor Vessel, escalation would be via Table F-1, Fission Product Barrier Matrix, for events in operating modes 1-4.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Area Radiation

Initiating Condition: [AU2] UNPLANNED Rise in Plant Radiation Levels.

Mode Applicability: All

Emergency Action Level:

AU2.2 Notification of Unusual Event
UNPLANNED VALID Area Radiation Monitor readings or survey results indicate a rise by a factor of 1,000 over normal* levels *Normal levels can be considered as the highest reading in the past twenty-four (24) hours excluding the current peak value.

Basis:

This EAL addresses unplanned rises in plant radiation levels that represent a loss of control of radioactive material resulting in a potential degradation in the level of safety of the plant.

Valid elevated area radiation levels usually have long lead times relative to the potential for radiological release beyond the Exclusion Area Boundary, thus impact to public health and safety is very low. This event escalates to an Alert per IC AA3 if the rise in dose rates impedes personnel access necessary for safe operation.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Effluents / Release Rates

Initiating Condition: [AA1] Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than: Gaseous – Six Times the Offsite Dose Calculation Manual (ODCM) Limits for 15 Minutes or Longer, OR Liquid – 200 Times the Offsite Dose Calculation Manual (ODCM) Limits for 15 Minutes or Longer.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

AA1.1 Alert

VALID reading on **ANY** radiation monitor greater than the reading shown in the "**Alert**" column of Table A-1 (Gaseous) or Table A-2 (Liquid) for 15 minutes or longer

Basis:

This IC addresses a potential or actual reduction in the level of safety of the plant as indicated by a radiological release that exceeds, by a factor of six for gaseous effluents, and by a factor of 200 for liquid effluents, regulatory commitments for an extended period of time. Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of degradation in these features and/or controls.

The ODCM multiples are specified in ICs AU1 (and AA1) only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

This EAL includes any release for which an effluent release permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable release permit.

The Shift Manager / Station Emergency Director should not wait until 15 minutes have elapsed, but should declare the event as soon as it is determined that the release duration has exceeded or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Shift Manager / Station Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

This EAL is similar to EAL AU1.1, but is intended to address effluent or accident radiation monitors on non-routine release pathways (i.e., for which a release permit would not normally be prepared). This event escalates from the Notification of Unusual Event by raising the magnitude of the release by a factor of three for gaseous, and a factor of 100 for liquid. Therefore, the values in the "**Alert**" columns of Table A-2 (Liquid) are two decades higher than the corresponding "**NOUE**" column values. The values for Table A-1 and A-2 were determined in evaluations entitled, "Gaseous ODCM / RETS EAL Threshold Value Determination at SONGS" and "Liquid ODCM / RETS EAL Threshold Value Determination at SONGS". These evaluations were developed using ODCM setpoint methodology.

For Steam Generator Blowdown Radiation Monitors 2(3)RE6753 and 2(3)RE6759 the maximum scale reading is 1.0E+06 CPM, therefore Alert EAL threshold values are listed as 1.0E+06 CPM.

Release rates, concentration limits, dose rates and exposure rates for higher classifications are direct multiples of the Notification of Unusual Event limits. For an Alert or higher, the threshold values will be off-scale high on the Data Acquisition System (DAS) for 2/3RE7808G Plant Vent Stack Radiation Monitor. Readings must be obtained from the Remote Display Unit (RDU) on Radiation Monitoring Panel, 2/3L104 directly outside of the Control Room within the Control Room envelope. For a Site Area Emergency or General Emergency, the threshold values will be off-scale high on DAS for 2(3)RE7865 Plant Vent Stack / Containment Purge Wide Range (WR) Gas Monitors and 2(3)RE7870 Condenser

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Air Ejector WR Radiation Monitors. Readings at or above the Site Area Emergency or General Emergency threshold values for these monitors must be read from the Wide Range Radiation Monitoring System Panel, 2(3)L405 directly outside of the Control Room within the Control Room envelope.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Effluents / Release Rates

Initiating Condition: [AA1] Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than: Gaseous – Six Times the Offsite Dose Calculation Manual (ODCM) Limits for 15 Minutes or Longer, OR Liquid – 200 Times the Offsite Dose Calculation Manual (ODCM) Limits for 15 Minutes or Longer.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

Note: The Shift Manager / Station Emergency Director should declare the event within the applicable EAL time limit. If the applicable time limit will be exceeded due to consideration of the applicable administrative factor, declaration should be based upon the EAL multiplier and the setpoint of the release permit as long as the release duration meets the EAL.

AA1.2 Alert

VALID reading on **ANY** effluent monitor greater than:

- Gaseous – Six times the ODCM alarm setpoint (divided by the applicable administrative factor found in the ODCM) established by a current effluent release permit for 15 minutes or longer

  OR

- Liquid – 200 times the ODCM alarm setpoint (divided by the applicable administrative factor in the current release permit) established by a current effluent release permit for 15 minutes or longer

Basis:

This IC addresses a potential or actual reduction in the level of safety of the plant as indicated by a radiological release that exceeds, by a factor of six for gaseous effluents, and by a factor of 200 for liquid effluents, regulatory commitments for an extended period of time. Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM). The

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

occurrence of extended, uncontrolled radioactive releases to the environment is indicative of degradation in these features and/or controls.

The ODCM multiples are specified in ICs AA1 (and AU1) only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged.

The Shift Manager / Station Emergency Director should not wait until 15 minutes have elapsed, but should declare the event as soon as it is determined that the release duration has exceeded or will likely exceed 15 minutes. Also, if an ongoing release is detected and the starting time for that release is unknown, the Shift Manager / Station Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

This EAL addresses radioactivity releases that for whatever reason cause effluent radiation monitor readings that exceed six times the gaseous alarm setpoint or 200 times the liquid alarm setpoint established by the effluent release permit. This alarm setpoint may be associated with a planned batch release or a continuous release path.

This EAL includes any release for which an effluent release permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable release permit.

The setpoints are established to ensure the ODCM release limits are not exceeded. When generating release permit radiation monitor alarm setpoints, an administrative factor is used to allow simultaneous releases from different sources. Therefore, using a setpoint value that incorporates an administrative limit as the basis for an EAL trigger would be overly conservative. For liquid effluent monitors, if the value of 200 times the ODCM alarm setpoint is greater than the top of scale for the applicable instrument, and the instrument reading is greater than the top of scale, assume that the EAL threshold has been met and declare the EAL.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Due to multiple release points at SONGS, the ODCM Max. Limit on a Release Permit for a given release point is only a portion of the allowed ODCM maximum limit for the site. This portion of the allowed ODCM Max. Limit is controlled by the Administrative Factor for the release point. Administrative Factors for liquid release points are variables and are identified in the Release Permit. Administrative Factors for gaseous release points are identified in the ODCM.

To make the most accurate determination of whether an EAL multiple of an ODCM Max. Limit has been exceeded, perform the following:

- If any release exceeds the installed setpoint and is not automatically or manually terminated, and the EAL time duration is met, operators should use the Annunciator Response Procedure to determine if the EAL value was actually exceeded.
- Use the Annunciator Response Procedure direction to divide the ODCM Max. Limit on the SONGS Release Permit by the applicable Administrative Factor (as described above).
- Multiply this number by two times the ODCM alarm setpoint (for a NOUE), six times the ODCM (for a Gaseous Alert) or 200 times the ODCM alarm setpoint (for a Liquid Alert).
- Compare this value to the highest radiation monitor reading.

If dividing the SONGS ODCM alarm setpoint by the applicable Administrative Factor, along with multiplying the radiation monitor reading by the applicable EAL multiple, cannot be completed in 15 minutes, operators should conservatively determine if any effluent monitor reading has exceded the EAL multiple listed (two times the ODCM Limit, six times the ODCM Limit, or 200 times the ODCM Limit) and compare this reading to the radiation monitor reading to determine if the EAL threshold was exceeded.

Time durations apply in each EAL and if a time limit is unknown, then the time threshold should be assumed to be met.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Effluents / Release Rates

Initiating Condition: [AA1] Any Release of Gaseous or Liquid Radioactivity to the Environment Greater Than: Gaseous – Six Times the Offsite Dose Calculation Manual (ODCM) Limits for 15 Minutes or Longer, OR Liquid – 200 Times the Offsite Dose Calculation Manual (ODCM) Limits for 15 Minutes or Longer.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded, or will likely exceed, the applicable time. In the absence of data to the contrary, assume that the release duration has exceeded the applicable time if an ongoing release is detected and the release start time is unknown.

AA1.3 Alert

Confirmed sample analyses for gaseous or liquid releases indicate concentrations or release rates greater than:

- Gaseous - Six times the ODCM limits for 15 minutes or longer

  OR

- Liquid - 200 times the ODCM limits for 15 minutes or longer

Basis:

This IC addresses a potential or actual reduction in the level of safety of the plant as indicated by a radiological release that exceeds, by a factor of six for gaseous effluents, and by a factor of 200 for liquid effluents, regulatory commitments for an extended period of time. Nuclear power plants incorporate features intended to control the release of radioactive effluents to the environment. Further, there are administrative controls established to prevent unintentional releases, or control and monitor intentional releases. These controls are located in the Offsite Dose Calculation Manual (ODCM). The occurrence of extended, uncontrolled radioactive releases to the environment is indicative of degradation in these features and/or controls.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

The ODCM multiples are specified in ICs AA1 (and AU1) only to distinguish between non-emergency conditions, and from each other. While these multiples obviously correspond to an off-site dose or dose rate, the emphasis in classifying these events is the degradation in the level of safety of the plant, not the magnitude of the associated dose or dose rate. Releases should not be prorated or averaged.

This EAL addresses uncontrolled releases that are detected by sample analyses, particularly on unmonitored pathways, e.g., spills of radioactive liquids into storm drains.

This EAL includes any release for which an effluent release permit was not prepared, or a release that exceeds the conditions (e.g., minimum dilution flow, maximum discharge flow, alarm setpoints, etc.) on the applicable release permit.

The Shift Manager / Station Emergency Director should not wait until 15 minutes have elapsed, but should declare the event as soon as it is determined that the release duration has exceeded or will likely exceed 15 minutes.

Confirmed sample analyses in excess of six times the site ODCM limits for gaseous, and 200 times the site ODCM limits for liquid, that continue for 15 minutes or longer represent an uncontrolled situation and hence, a potential degradation in the level of safety. This event escalates from the Notification of Unusual Event by raising the magnitude of the liquid release by a factor of 100 over the Notification of Unusual Event level (i.e., 200 times ODCM limits for liquids), and raising the magnitude of the gaseous release by a factor of three (six times the ODCM limits for gaseous). The required release duration was reduced to 15 minutes in recognition of the raised severity. For liquid effluent monitors, if the value of 200 times the ODCM alarm setpoint is greater than the top of scale for the applicable instrument, and the instrument reading is greater than the top of scale, assume that the EAL threshold has been met and declare the EAL.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Area Radiation

Initiating Condition: [AA2] Damage to Irradiated Fuel or Loss of Water Level that Has Resulted or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel.

Mode Applicability: All

Emergency Action Level:

AA2.1 Alert
A water level drop in the Reactor Refueling Cavity, Spent Fuel Pool or Fuel Transfer Canal that will result in irradiated fuel becoming uncovered

Basis:

This IC addresses specific events that have resulted, or may result, in unexpected rises in radiation dose rates within plant buildings, and may be a precursor to a radioactivity release to the environment. These events represent a loss of control over radioactive material and represent a degradation in the level of safety of the plant. These events escalate from IC AU2 in that fuel activity has been released, or is anticipated to be released due to fuel heatup. This IC applies to spent fuel requiring water coverage, and is not intended to address spent fuel which is licensed for dry storage.

When considering escalation, information may come from:

- Radiation monitor readings
- Sampling and surveys
- Dose projections / calculations
- Reports from the scene regarding the extent of damage (e.g., refueling crew, Health Physics technicians)

This EAL is defined by the specific areas where irradiated fuel is located such as the Refueling Cavity, Reactor Vessel or Spent Fuel Pool (SFP).

In light of Reactor Cavity Seal failure incidents at two different PWRs and loss of water in the Spent Fuel Pit / Fuel Transfer Canal at a BWR, explicit coverage of these types of events via this EAL is appropriate given their potential for elevated doses to plant staff.

For this EAL, there is no direct level indication that water level in the SFP or Refueling Cavity has dropped to the level of the fuel other than by visual observation. Since there is

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

no level indicating system in the Fuel Transfer Canal, visual observation of loss of water level would also be required. Depending on available level indication, the declaration threshold may need to be based on indications of water makeup rate or lowering in Refueling Water Storage Tank level.

Escalation, if appropriate, would occur via IC AS1 or AG1, or Shift Manager / Station Emergency Director judgment.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Area Radiation

Initiating Condition: [AA2] Damage to Irradiated Fuel or Loss of Water Level that Has Resulted or Will Result in the Uncovering of Irradiated Fuel Outside the Reactor Vessel.

Mode Applicability: All

Emergency Action Level:

AA2.2 Alert

A VALID alarm on **ANY** of the following due to damage to irradiated fuel or loss of water level:

- High alarm on 2(3)RE7822G1 or 2(3)RE7823G2, Fuel Handling Building Airborne Radiation Monitor
- High alarm on 2(3)RE7850, Fuel Handling Building Spent Fuel Cask Area Radiation Monitor
- Containment Airborne Radiation Monitor 2(3)RE7804G1, or 2(3)RE7807G2, reading greater than 1.0 E-1 µCi/cc **OR** 2(3)RE7804P1 or 2(3)RE7807P2 reading greater than 1.0 E-4 µCi/cc.

Basis:

This IC addresses specific events that have resulted, or may result, in unexpected rises in radiation dose rates within plant buildings, and may be a precursor to a radioactivity release to the environment. These events represent a loss of control over radioactive material and represent a degradation in the level of safety of the plant. These events escalate from IC AU2 in that fuel activity has been released, or is anticipated to be released due to fuel heatup. This IC applies to spent fuel requiring water coverage, and is not intended to address spent fuel which is licensed for dry storage.

When considering escalation, information may come from:

- Radiation monitor readings
- Sampling and surveys
- Dose projections / calculations
- Reports from the scene regarding the extent of damage (e.g., refueling crew, Health Physics technicians)

This EAL is defined by the specific areas where irradiated fuel is located, such as the Refueling Cavity, Reactor Vessel or Spent Fuel Pool (SFP).

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

This EAL addresses radiation monitor indications of fuel uncovery and/or fuel damage. Elevated readings on ventilation monitors may be an indication of a radioactivity release from the fuel, confirming that damage has occurred. Elevated background at the monitor, due to water level lowering, may mask elevated ventilation exhaust airborne activity and should be considered. While a radiation monitor could detect a rise in dose rate due to a drop in the water level, it might not be a reliable indication of whether or not the fuel is covered. For example, the monitor could in fact be properly responding to a known event involving transfer or relocation of a source stored in or near the SFP or responding to a planned evolution such as removal of the Reactor Vessel Head. Generally, increased radiation monitor indications will need to be combined with another indicator (or personnel report) of water loss. Application of these EAL thresholds requires understanding of the actual radiological conditions present in the vicinity of the monitor.

The high alarm setpoints for 2(3)RE7822G1 and 2(3)RE7823G2, Fuel Handling Building (FHB) Airborne Radiation Monitors, 2(3)RE7850, FHB Spent Fuel Cask Area Radiation Monitor, and greater than top of scale indication on 2(3)RE7804G1 and 2(3)RE7807G2, Containment Airborne Radiation Monitors, is appropriate for indicating a spent fuel handling accident. In the Fuel Handling Building, a fuel assembly could be dropped in the Fuel Transfer Canal or in the SFP. Should a fuel assembly be dropped in the Fuel Transfer Canal or in the SFP and release radioactivity above a prescribed level, the airborne radiation monitors sound an alarm, alerting personnel to the problem. Airborne radiation monitors in the exhaust ducts from the FHB isolate the normal FHB ventilation system and automatically initiate the recirculation and filtration systems. 2(3) RE7804G1, P1, and 2(3) RE7807G2, P2 alarm setpoints are ideally chosen according to Containment background activity or RCS activity to detect a one gallon per minute RCS leak. These monitors would be indicating off-scale high in the event of damage to irradiated fuel.

Escalation, if appropriate, would occur via IC AS1 or AG1, or Shift Manager / Station Emergency Director judgment.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Area Radiation

Initiating Condition: [AA3] Rise in Radiation Levels Within the Facility That Impedes Operation of Systems Required to Maintain Plant Safety Functions.

Mode Applicability: All

Emergency Action Level:

AA3.1 Alert

Dose rate greater than 15 mR/hr in **ANY** of the following areas requiring continuous occupancy to maintain plant safety functions:

- Control Room
- Central Alarm Station

Basis:

This IC addresses elevated radiation levels that impact continued operation in areas requiring continuous occupancy to maintain safe operation or to perform a safe shutdown. The only areas that meet this threshold are the Control Room and Central Alarm Station adjacent to the Control Room. The Radwaste Control Room is neither continuously manned nor required to maintain safe operation or perform a safe shutdown.

The value of 15 mrem/hr is derived from the General Design Criteria 19 value of 5 rem in 30 days with adjustment for expected occupancy times. Although Section III.D.3 of NUREG-0737, "Clarification of Three Mile Island (TMI) Action Plan Requirements", provides that the 15 mrem/hr value can be averaged over the 30 days, the value is used here without averaging. The 30-day duration implies an event potentially more significant than an Alert.

It is the impaired ability to operate the plant that results in the actual or potential substantial degradation of the level of safety of the plant. The cause and/or magnitude of the rise in radiation levels is not a concern of this IC. The Shift Manager / Station Emergency Director must consider the source or cause of the elevated radiation levels and determine if any other IC may be involved. For example, a Control Room dose rate of 15 mrem/hr may be a problem in itself. However, the rise may also be indicative of high dose rates in the Containment due to a LOCA. In this latter case, a Site Area Emergency or a General Emergency may be indicated by other EAL categories.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

This IC is not meant to apply to rises in the Containment radiation monitors as these events are addressed in other EALs. Nor is it intended to apply to anticipated temporary radiation rises due to planned events (e.g., radwaste container movement, depleted resin transfers, etc.).

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Effluents / Release Rates

Initiating Condition: [AS1] Off-site Dose Resulting From an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AS1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

AS1.1 Site Area Emergency
VALID reading on **ANY** radiation monitor greater than the reading shown in the "**SAE**" column of Table A-1 (Gaseous) for 15 minutes or longer

Basis:

This IC addresses radioactivity releases that can result in doses at or beyond the Exclusion Area Boundary (EAB) that exceed a small fraction of the EPA Protective Action Guides (PAGs). Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone (e.g., fuel handling accident in Fuel Handling Building).

The Shift Manager / Station Emergency Director should not wait until 15 minutes has elapsed, but should declare the event as soon as it is determined that the release duration has exceeded or will likely exceed 15 minutes. If an ongoing release is detected and the starting time for that release is unknown, the Shift Manager / Station Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

For an Alert or higher, the threshold values will be off-scale high on the Data Acquisition System (DAS) for 2/3RE7808G, Plant Vent Stack Radiation Monitor. Readings must be obtained from the Remote Display Unit (RDU) on Radiation Monitoring Panel, 2/3L104, directly outside of the Control Room within the Control Room envelope. For a Site Area

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Emergency or General Emergency, the threshold values will be off-scale high on DAS for 2(3)RE7865, Plant Vent Stack / Containment Purge Wide Range (WR) Gas Monitors and 2(3)RE7870 Condenser Air Ejector WR Radiation Monitors. Readings at or above the Site Area Emergency or General Emergency threshold values for these monitors must be read from the Wide Range Radiation Monitoring System Panel, 2(3)L405, directly outside of the Control Room within the Control Room envelope.

The values for Table A-1 and A-2 were determined in evaluations entitled, "Gaseous ODCM / RETS EAL Threshold Value Determination at SONGS", and "Liquid ODCM / RETS EAL Threshold Value Determination at SONGS". These evaluations were developed using ODCM setpoint methodology.

Since dose assessment is based on actual meteorology, whereas the monitor reading EAL is not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted. For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor readings listed in Table A-1.

The EPA PAGs are expressed in terms of the sum of the *Effective Dose Equivalent (EDE)* and the *Committed Effective Dose Equivalent (CEDE)*, or as the thyroid *Committed Dose Equivalent (CDE).* For the purpose of these IC/EALs, the dose quantity *Total Effective Dose Equivalent (TEDE),* as defined in 10 CFR 20, is used in lieu of *"...sum of EDE and CEDE...."* The EPA PAG guidance provides for the use adult thyroid dose conversion factors. Utility IC/EALs need to be consistent with those of the states involved in the facility's emergency planning zone.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Dose Projections / Environmental Measurements

Initiating Condition: [AS1] Off-site Dose Resulting From an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AS1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

AS1.2	**Site Area Emergency**
Dose assessment using actual meteorology indicates doses greater than 100 mrem TEDE or 500 mrem Thyroid CDE at or beyond the Exclusion Area Boundary	

Basis:

This IC addresses radioactivity releases that can result in doses at or beyond the Exclusion Area Boundary (EAB) that exceed a small fraction of the EPA Protective Action Guides (PAGs). Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone (e.g., fuel handling accident in Fuel Handling Building).

The EPA PAGs are expressed in terms of the sum of the *Effective Dose Equivalent (EDE)* and the *Committed Effective Dose Equivalent (CEDE)*, or as the thyroid *Committed Dose Equivalent (CDE).* For the purpose of these IC/EALs, the dose quantity *Total Effective Dose Equivalent (TEDE),* as defined in 10 CFR 20, is used in lieu of *"...sum of EDE and CEDE...."* The EPA PAG guidance provides for the use adult thyroid dose conversion factors. Utility IC/EALs need to be consistent with those of the states involved in the facility's emergency planning zone.

The 100 mrem integrated TEDE dose is set at 10% of the EPA PAG of 1,000 mrem TEDE. This value also provides a desirable gradient (one order of magnitude) between the Alert,

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Site Area Emergency and General Emergency classes. The 500 mrem integrated Thyroid CDE dose was established in consideration of the 1:5 ratio of the EPA PAGs for TEDE and Thyroid CDE. Thyroid dose calculations by SONGS and ODAC are based on adult thyroid dose conversion factors. Actual meteorology is specifically identified since it gives the most accurate dose assessment. Actual meteorology (including forecasts) should be used whenever possible.

The Exclusion Area Boundary (EAB) is roughly formed by two semicircles with radii of 0.37 miles (1967.5 ft.) each around the Units 2 and 3 Containment domes. The EAB is depicted in UFSAR Figure 2.1-5.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Dose Projections / Environmental Measurements

Initiating Condition: [AS1] Off-site Dose Resulting From an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 100 mrem TEDE or 500 mrem Thyroid CDE for the Actual or Projected Duration of the Release.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AS1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

AS1.4 Site Area Emergency
Field survey results indicate closed window dose rates greater than 100 mR/hr expected to continue for 60 minutes or longer, or analyses of field survey samples indicate Thyroid CDE greater than 500 mrem for one hour of inhalation, at or beyond the Exclusion Area Boundary

Basis:

This IC addresses radioactivity releases that can result in doses at or beyond the Exclusion Area Boundary (EAB) that exceed a small fraction of the EPA Protective Action Guides (PAGs). Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone (e.g., fuel handling accident in Fuel Handling Building).

The EPA PAGs are expressed in terms of the sum of the *Effective Dose Equivalent (EDE)* and the *Committed Effective Dose Equivalent (CEDE)*, or as the thyroid *Committed Dose Equivalent (CDE)*. For the purpose of these IC/EALs, the dose quantity *Total Effective Dose Equivalent (TEDE),* as defined in 10 CFR 20, is used in lieu of *"...sum of EDE and CEDE...."* The EPA PAG guidance provides for the use adult thyroid dose conversion factors. Utility IC/EALs need to be consistent with those of the states involved in the facility's emergency planning zone.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

The 100 mrem integrated TEDE dose in this EAL is set at 10% of the EPA PAG of 1,000 mrem TEDE. This value also provides a desirable gradient (one order of magnitude) between the Alert, Site Area Emergency and General Emergency classes. The 500 mrem integrated Thyroid CDE dose was established in consideration of the 1:5 ratio of the EPA PAGs for TEDE and Thyroid CDE. In establishing the dose rate emergency action levels, a duration of one hour is assumed. Therefore, the dose rate EALs are based on an Exclusion Area Boundary dose rate of 100 mrem/hr TEDE or 500 mrem/hr Thyroid CDE, whichever is more limiting.

The Exclusion Area Boundary (EAB) is roughly formed by two semicircles with radii of 0.37 miles (1967.5 ft.) each around the Units 2 and 3 Containment domes. The EAB is depicted in UFSAR Figure 2.1-5.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Effluents / Release Rates

Initiating Condition: [AG1] Off-site Dose Resulting From an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AG1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

AG1.1 General Emergency
VALID reading on **ANY** radiation monitor greater than the reading shown in the "**GE**" column of Table A-1 (Gaseous) for 15 minutes or longer

Basis:

This IC addresses radioactivity releases that can result in doses at or beyond the Exclusion Area Boundary (EAB) that exceed the EPA Protective Action Guides (PAGs). Public protective actions will be necessary. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public and likely involve fuel damage. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone. It is important to note that, for the more severe accidents, the release may be unmonitored or there may be large uncertainties associated with the source term and/or meteorology.

The Shift Manager / Station Emergency Director should not wait until 15 minutes have elapsed, but should declare the event as soon as it is determined that the release duration has exceeded or will likely exceed 15 minutes. If an ongoing release is detected and the starting time for that release is unknown, the Shift Manager / Station Emergency Director should, in the absence of data to the contrary, assume that the release has exceeded 15 minutes.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

The Table A-1 column "**GE**" effluent monitor readings are one decade greater than the "**SAE**" values. For an Alert or higher, the threshold values will be off-scale high on the Data Acquisition System (DAS) for 2/3RE7808G, Plant Vent Stack Radiation Monitor. Readings must be obtained from the Remote Display Unit (RDU) on Radiation Monitoring Panel, 2/3L104, directly outside of the Control Room within the Control Room envelope. For a Site Area Emergency or General Emergency, the threshold values will be off-scale high on DAS for 2(3)RE7865, Plant Vent Stack / Containment Purge Wide Range (WR) Gas Monitors and 2(3)RE7870, Condenser Air Ejector WR Radiation Monitors. Readings at or above the Site Area Emergency or General Emergency threshold values for these monitors must be read from the Wide Range Radiation Monitoring System Panel, 2(3)L405, directly outside of the Control Room within the Control Room envelope.

The values for Table A-1 and A-2 were determined in evaluations entitled, "Gaseous ODCM / RETS EAL Threshold Value Determination at SONGS", and "Liquid ODCM / RETS EAL Threshold Value Determination at SONGS". These evaluations were developed using ODCM setpoint methodology.

Since dose assessment is based on actual meteorology, whereas the monitor reading EALs are not, the results from these assessments may indicate that the classification is not warranted, or may indicate that a higher classification is warranted (if not already at a General Emergency). For this reason, emergency implementing procedures call for the timely performance of dose assessments using actual meteorology and release information. If the results of these dose assessments are available when the classification is made (e.g., initiated at a lower classification level), the dose assessment results override the monitor readings listed in Table A-1.

The EPA PAGs are expressed in terms of the sum of the *Effective Dose Equivalent (EDE)* and the *Committed Effective Dose Equivalent (CEDE)*, or as the thyroid *Committed Dose Equivalent (CDE).* For the purpose of these IC/EALs, the dose quantity *Total Effective Dose Equivalent (TEDE),* as defined in 10 CFR 20, is used in lieu of *"...sum of EDE and CEDE...."* The EPA PAG guidance provides for the use adult thyroid dose conversion factors. Utility IC/EALs need to be consistent with those of the states involved in the facility's emergency planning zone.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Dose Projections / Environmental Measurements

Initiating Condition: [AG1] Off-site Dose Resulting From an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AG1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

AG1.2 General Emergency
Dose assessment using actual meteorology indicates doses greater than 1,000 mrem TEDE or 5,000 mrem Thyroid CDE at or beyond the Exclusion Area Boundary

Basis:

This IC addresses radioactivity releases that can result in doses at or beyond the Exclusion Area Boundary (EAB) that exceed the EPA Protective Action Guides (PAGs). Public protective actions will be necessary. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public and likely involve fuel damage. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone. It is important to note that, for the more severe accidents, the release may be unmonitored or there may be large uncertainties associated with the source term and/or meteorology.

The EPA PAGs are expressed in terms of the sum of the *Effective Dose Equivalent (EDE)* and the *Committed Effective Dose Equivalent (CEDE)*, or as the thyroid *Committed Dose Equivalent (CDE).* For the purpose of these IC/EALs, the dose quantity *Total Effective Dose Equivalent (TEDE),* as defined in 10 CFR 20, is used in lieu of *"...sum of EDE and CEDE...."* The EPA PAG guidance provides for the use adult thyroid dose conversion factors. Utility IC/EALs need to be consistent with those of the states involved in the facility's emergency planning zone.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

The General Emergency values are based on the Exclusion Area Boundary boundary dose resulting from an actual or imminent release of gaseous radioactivity that exceeds 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the actual or projected duration of the release. The 1,000 mrem TEDE and the 5,000 mrem Thyroid CDE integrated dose are based on the EPA protective action guidance which indicates that public protective actions are warranted if the dose exceeds 1,000 mrem TEDE or 5,000 mrem Thyroid CDE. Actual meteorology is specifically identified since it gives the most accurate dose assessment. Actual meteorology (including forecasts) should be used whenever possible. In establishing the dose rate emergency action levels, a duration of one hour is assumed. Therefore, the dose rate EALs are based on an Exclusion Area Boundary dose rate of 1,000 mrem/hr TEDE or 5,000 mrem/hr Thyroid CDE, whichever is more limiting. Thyroid dose calculations by SONGS and the Off-site Dose Assessment Center (ODAC) are based on adult thyroid dose conversion factors (Reference 2).

The EAB is roughly formed by two semicircles with radii of 0.37 miles (1967.5 ft.) each around the Units 2 and 3 Containment domes. The EAB is depicted in UFSAR Figure 2.1-5.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Subcategory: Dose Projections / Environmental Measurements

Initiating Condition: [AG1] Off-site Dose Resulting From an Actual or IMMINENT Release of Gaseous Radioactivity Greater Than 1,000 mrem TEDE or 5,000 mrem Thyroid CDE for the Actual or Projected Duration of the Release Using Actual Meteorology.

Mode Applicability: All

Emergency Action Level:

Note: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time. If dose assessment results are available, declaration should be based on dose assessment (AG 1.2) instead of radiation monitor values. Do not delay declaration awaiting dose assessment results.

AG1.4 General Emergency
Field survey results indicate closed window dose rates greater than 1,000 mR/hr expected to continue for 60 minutes or longer; or analyses of field survey samples indicate Thyroid CDE greater than 5,000 mrem for one hour of inhalation, at or beyond the Exclusion Area Boundary

Basis:

This IC addresses radioactivity releases that can result in doses at or beyond the Exclusion Area Boundary (EAB) that exceed the EPA Protective Action Guides (PAGs). Public protective actions will be necessary. Releases of this magnitude are associated with the failure of plant systems needed for the protection of the public and likely involve fuel damage. While these failures are addressed by other ICs, this IC provides appropriate diversity and addresses events which may not be able to be classified on the basis of plant status alone. It is important to note that, for the more severe accidents, the release may be unmonitored or there may be large uncertainties associated with the source term and/or meteorology.

The EPA PAGs are expressed in terms of the sum of the *Effective Dose Equivalent (EDE)* and the *Committed Effective Dose Equivalent (CEDE)*, or as the thyroid *Committed Dose Equivalent (CDE).* For the purpose of these IC/EALs, the dose quantity *Total Effective Dose Equivalent (TEDE),* as defined in 10 CFR 20, is used in lieu of *"...sum of EDE and CEDE...."* The EPA PAG guidance provides for the use adult thyroid dose conversion

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

factors. Utility IC/EALs need to be consistent with those of the states involved in the facility's emergency planning zone.

The 1,000 mrem integrated TEDE dose in this EAL is based on the EPA PAG. This value also provides a desirable gradient (one order of magnitude) between the Site Area Emergency and General Emergency classes. The 5,000 mrem integrated Thyroid CDE dose was established in consideration of the 1:5 ratio of the EPA Protective Action Guidelines for TEDE and thyroid exposure. In establishing the dose rate emergency action levels, a duration of one hour is assumed.

The EAB is roughly formed by two semicircles with radii of 0.37 miles (1967.5 ft.) each around the Units 2 and 3 Containment domes. The EAB is depicted in UFSAR Figure 2.1-5.

5.1 Category A – Abnormal Rad Levels / Radiological Effluent

Table A-1 – Gaseous Effluent Radiation Monitor Classification Thresholds

Monitor No.	Monitor Description	GE	SAE	Alert	NOUE
2/3RE7808G	Plant Vent Stack Radiation Monitor	2.8E+07 µCi/sec from RDU numerical display (DAS greater than1.0E+06 µCi/sec)	2.8E+06 µCi/sec from RDU numerical display (DAS greater than1.0E+06 µCi/sec)	1.2E+06 µCi/sec from RDU numerical display (DAS greater than1.0E+06 µCi/sec)	4.0E+05 µCi/sec
Sum of 2RE7865 and 3RE7865	Plant Vent Stack / Containment Purge Wide Range Gas Monitors	2.8E+07 µCi/sec from RM-23	2.8E+06 µCi/sec from RM-23	1.2E+06 µCi/sec	4.0E+05 µCi/sec
2(3)RE7870	Condenser Air Ejector Wide Range Gas Monitor	2.8E+07 µCi/sec from RM-23	2.8E+06 µCi/sec from RM-23	1.2E+06 µCi/sec	4.0E+05 µCi/sec

Table A-2 – Liquid Effluent Radiation Monitor Classification Thresholds

Monitor No.	Monitor Description	Dilution Flow	Alert	NOUE
2/3RE2101	North Industrial Area Yard Drain Sump Radiation Monitor (≤ 4,100 GPM release rate)	4 Circ. Pumps 3 Circ. Pumps 2 Circ. Pumps 1 Circ. Pump 2 Saltwater Pumps 1 Saltwater Pump	>1.0E-01 µCi/cc >1.0E-01 µCi/cc >1.0E-01 µCi/cc >1.0E-01 µCi/cc 3.3E-02 µCi/cc 1.7E-02 µCi/cc	7.2E-03 µCi/cc 5.4E-03 µCi/cc 3.6E-03 µCi/cc 1.8E-03 µCi/cc 3.3E-04 µCi/cc 1.7E-04 µCi/cc
2(3)RE6753 or 2(3)RE6759	Steam Generator Blowdown Radiation Monitor (≤ 200 GPM release rate)	4 Circ. Pumps 3 Circ. Pumps 2 Circ. Pumps 1 Circ. Pump 2 Saltwater Pumps 1 Saltwater Pump	>1.0E+6 CPM >1.0E+6 CPM >1.0E+6 CPM >1.0E+6 CPM >1.0E+6 CPM >1.0E+6 CPM	6.0E+05 CPM 4.5E+05 CPM 3.0E+05 CPM 1.5E+05 CPM 2.8E+04 CPM 1.4E+04 CPM
2(3)RE7817	Blowdown Processing System Neutralization Sump Discharge Radiation Monitor (≤ 1,000 GPM release rate)	4 Circ. Pumps 3 Circ. Pumps 2 Circ. Pumps 1 Circ. Pump 2 Saltwater Pumps 1 Saltwater Pump	2.4E-01 µCi/cc 1.8E-01 µCi/cc 1.2E-01 µCi/cc 5.9E-02 µCi/cc 1.1E-02 µCi/cc 5.4E-03 µCi/cc	2.4E-03 µCi/cc 1.8E-03 µCi/cc 1.2E-03 µCi/cc 5.9E-04 µCi/cc 1.1E-04 µCi/cc 5.4E-05 µCi/cc
2(3)RE7821	Turbine Plant Area Sump Radiation Monitor (≤ 200 GPM release rate)	4 Circ. Pumps 3 Circ. Pumps 2 Circ. Pumps 1 Circ. Pump 2 Saltwater Pumps 1 Saltwater Pump	>1.0E+00 µCi/cc 8.9E-01 µCi/cc 5.9E-01 µCi/cc 3.0E-01 µCi/cc 5.4E-02 µCi/cc 2.7E-02 µCi/cc	1.2E-02 µCi/cc 8.9E-03 µCi/cc 5.9E-03 µCi/cc 3.0E-03 µCi/cc 5.4E-04 µCi/cc 2.7E-04 µCi/cc

SECTION 5.2 - CATEGORY C – COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTION

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Category C EALs are directly associated with Cold Shutdown or Refueling safety functions. Given the variability of plant configurations (e.g., systems out–of–service for maintenance, Containment open, reduced AC power redundancy, time since shutdown) during these periods, the consequences of any given initiating event can vary greatly. For example, a loss of decay heat removal capability that occurs at the end of an extended outage has less significance than a similar loss occurring during the first week after shutdown. Compounding these events is the likelihood that instrumentation necessary for assessment may also be inoperable. The Cold Shutdown and Refueling EALs are based on performance capability to the extent possible with consideration given to RCS integrity, CONTAINMENT CLOSURE and fuel clad integrity for the applicable operating modes (5 - Cold Shutdown, 6 - Refueling, D – Defueled).

The events of this category pertain to:

RCS Leakage

The Reactor Vessel provides a volume for the coolant that covers the reactor core. The Reactor Vessel and associated pressure piping (i.e., Reactor Coolant System) together provide a barrier to limit the release of radioactive material should the reactor fuel clad integrity fail.

Excessive RCS leakage greater than Technical Specification limits is utilized to indicate potential pipe cracks that may propagate to an extent threatening fuel clad, RCS and Containment integrity.

RCS Level

Reactor Vessel or RCS water level is directly related to the status of adequate core cooling and, therefore, fuel clad integrity.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Loss of AC / DC Power Sources

Loss of vital plant electrical power can compromise plant safety system operability including decay heat removal and emergency core cooling systems which may be necessary to ensure fission product barrier integrity.

RCS Temperature and Pressure

Uncontrolled or inadvertent temperature or pressure rises are indicative of a potential loss of safety functions.

Communication Loss

Certain events that degrade plant operator ability to effectively communicate with essential personnel within or external to the plant warrant emergency classification.

Inadvertent Criticality

Inadvertent criticalities pose potential personnel safety hazards as well being indicative of losses of reactivity control.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Leakage

Initiating Condition: [CU1] RCS Leakage.

Mode Applicability: 5 - Cold Shutdown

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CU1.1 Notification of Unusual Event
RCS leakage results in the inability to maintain level within or restore level within the Pressurizer or RCS / Reactor Vessel level target band for 15 minutes or longer

Basis:

This IC is considered to be a potential degradation of the level of safety of the plant. The inability to maintain or restore level is indicative of loss of RCS inventory.

Relief valve normal operation should be excluded from this IC. However, a relief valve that operates and fails to close per design should be considered applicable to this IC if the relief valve cannot be isolated.

Prolonged loss of RCS Inventory may result in escalation to the Alert emergency classification level via either CA1 or CA4.

The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling modes. In the refueling mode the RCS is not intact and Reactor Vessel level and inventory are monitored by different means. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Level

Initiating Condition: [CU2] UNPLANNED Loss of RCS / Reactor Vessel Inventory.

Mode Applicability: 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CU2.1 Notification of Unusual Event

UNPLANNED RCS / Reactor Vessel level drop as indicated by **EITHER** of the following:

- RCS / Reactor Vessel water level drop below the Reactor Vessel flange for 15 minutes or longer when the RCS / Reactor Vessel level target band is established above the Reactor Vessel flange
- RCS / Reactor Vessel water level drop below the RCS level target band for 15 minutes or longer when the RCS / Reactor Vessel level target band is established below the Reactor Vessel flange

Basis:

This IC is a Notification of Unusual Event because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. Refueling evolutions that lower RCS water level below the Reactor Vessel Flange are carefully planned and procedurally controlled. An UNPLANNED event that results in water level lowering below the Reactor Vessel Flange, or below the planned RCS water level for the given evolution (if the planned RCS water level is already below the Reactor Vessel Flange), warrants declaration of a Notification of Unusual Event due to the reduced RCS inventory that is available to keep the core covered. The 15-minute interval was chosen because it is reasonable to assume that level can be restored within this timeframe using one or more of the redundant means of refill that should be available. If level cannot be restored in this timeframe, a more serious condition may exist.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

The Reactor Vessel Flange is at 37 ft. 6 in. el. (152.5 in. above the fuel) and can be monitored by:

- RWLI WR, at less than 0.0 ft.
- DLMS WR, at less than 0.0 ft.
- RWLI-WR sight glass, at 0.0 ft.

SO23-5-1.8.1, Shutdown Nuclear Safety, Attachment for RCS Level Correlation Chart, provides a cross-reference of indicated water levels and key plant elevations.

This EAL involves a lowering in RCS level below the top of the Reactor Vessel Flange that continues for 15 minutes due to an UNPLANNED event. This EAL is not applicable to drops in flooded Reactor Refueling Cavity water level, which is addressed by lowering Spent Fuel Pool water level in EAL AU2.1, until such time as the level lowers to the level of the Reactor Vessel Flange. If level continues to lower and reaches the bottom inside diameter of the RCS hot leg loop, escalation to the Alert level under EAL CA1.1 would be appropriate. If the level lowering is accompanied by RCS heatup, escalation to the Alert level under IC CA4 may also be appropriate.

The difference between CU1 and CU2 deals with the RCS conditions that exist between cold shutdown and refueling modes. In cold shutdown the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the refueling mode the RCS is not intact and Reactor Vessel level and inventory are monitored by different means. In the Refueling mode, normal means of core temperature indication and RCS level indication may not be available. Redundant means of Reactor Vessel level indication will normally be installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Level

Initiating Condition: [CU2] UNPLANNED Loss of RCS / Reactor Vessel Inventory.

Mode Applicability: 6 - Refueling

Emergency Action Level:

CU2.2 Notification of Unusual Event
RCS / Reactor Vessel level **CANNOT** be monitored with a loss of RCS / Reactor Vessel inventory as indicated by an unexplained level rise in a Containment Sump

Basis:

This IC is a Notification of Unusual Event because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant.

Typically when entering or exiting Cold Shutdown mode, the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the Refueling mode, the RCS is not intact and Reactor Vessel level and inventory are monitored by different means. In the Refueling mode, normal means of core temperature indication and RCS level indication may not be available. Redundant means of Reactor Vessel level indication will normally be installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted.

Containment Sump level changes may be indicative of Reactor Vessel inventory loss. Calculation of RCS leakage can be performed using the CFMS or the Technical Team Notebook. Containment Sump level rises must be evaluated against other potential sources of leakage, such as cooling water sources inside the Containment, to ensure they are indicative of RCS leakage. Escalation to an Alert would be via either IC CA1.2 or RCS heatup via IC CA4.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: Loss of AC / DC Power Sources

Initiating Condition: [CU3] AC Power Capability to Emergency Buses Reduced to a Single Power Source For 15 Minutes or Longer Such That Any Additional Single Failure Would Result in Station Blackout.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CU3.1 Notification of Unusual Event
AC power capability to 1E 4kV Buses 2(3)A04 and 2(3)A06 reduced to a single power source for 15 minutes or longer
AND
Any additional single power source failure will result in station blackout

Basis:

The condition indicated by this IC is the degradation of the off-site and on-site AC power systems such that any additional single failure would result in a station blackout. This condition could occur due to a loss of off-site power with a concurrent failure of all but one emergency generator to supply power to its emergency busses. The subsequent loss of this single power source would escalate the event to an Alert in accordance with CA3.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of power.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Temperature and Pressure

Initiating Condition: [CU4] UNPLANNED Loss of Decay Heat Removal Capability With Irradiated Fuel in the Reactor Vessel.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

CU4.1 Notification of Unusual Event
An UNPLANNED event results in RCS temperature greater than 200°F (Technical Specification Cold Shutdown temperature limit)

Basis:

This IC is a Notification of Unusual Event because it may be a precursor of more serious conditions and, as a result, is considered to be a potential degradation of the level of safety of the plant. In Cold Shutdown, the ability to remove decay heat relies primarily on forced cooling flow. Operation of the systems that provide this forced cooling may be jeopardized due to the unlikely loss of electrical power or RCS inventory. Since the RCS usually remains intact in the Cold Shutdown mode, a large inventory of water is available to keep the core covered. In Cold Shutdown, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the Refueling mode. Thus, the heatup threat and therefore the threat to damaging the fuel clad will be lower for events that occur in the Refueling mode with irradiated fuel in the Reactor Vessel (note that the heatup threat could be lower for Cold Shutdown conditions if the entry into Cold Shutdown followed a refueling). In addition, the operators should be able to monitor RCS temperature and Reactor Vessel level so that escalation to the Alert level via IC CA4 will occur if required.

During refueling operations, the level in the Reactor Vessel will normally be maintained above the Reactor Vessel flange. Refueling evolutions that lower water level below the Reactor Vessel Flange are carefully planned and procedurally controlled. Loss of forced decay heat removal at reduced inventory may result in more rapid rises in RCS / Reactor Vessel temperatures depending on the time since shutdown. Escalation to Alert would be via CA1 based on an inventory loss or CA4 based on exceeding its temperature criteria.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specification Cold Shutdown temperature limit (200°F). Refer to the appropriate Operations procedure for a list of temperature monitoring instruments.

The Shift Manager / Station Emergency Director must remain attentive to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Shift Manager / Station Emergency Director, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Temperature and Pressure

Initiating Condition: [CU4] UNPLANNED Loss of Decay Heat Removal Capability With Irradiated Fuel in the Reactor Vessel.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CU4.2 Notification of Unusual Event
Loss of **ALL** RCS temperature and RCS / Reactor Vessel level indication for 15 minutes or longer

Basis:

This IC is a Notification of Unusual Event because instrumentation to ensure conditions remain normal or have become unacceptable are lost and is considered to be a potential degradation of the level of safety of the plant. In Cold Shutdown, the ability to remove decay heat relies primarily on forced cooling flow. Operation of the systems that provide this forced cooling may be jeopardized due to the unlikely loss of electrical power or RCS inventory. Since the RCS usually remains intact in the Cold Shutdown mode, a large inventory of water is available to keep the core covered. In Cold Shutdown, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the Refueling mode. Thus, the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the Reactor Vessel (note that the heatup threat could be lower for Cold Shutdown conditions if the entry into Cold Shutdown was following a refueling). In addition, the operators should be able to monitor RCS temperature and Reactor Vessel level so that escalation to the Alert level via IC CA1 or CA4 will occur if required.

During refueling operations, the level in the Reactor Vessel will normally be maintained above the vessel flange. Refueling evolutions that lower water level below the Reactor Vessel Flange are carefully planned and procedurally controlled. Loss of forced decay heat removal at reduced inventory may result in more rapid rises in RCS / Reactor Vessel temperatures depending on the time since shutdown. Escalation directly to the Alert level

5.2 Category C – Cold Shutdown / Refueling System Malfunction

under IC CA4 is provided should an unplanned event result in RCS temperature exceeding the Technical Specification Cold Shutdown temperature limit with CONTAINMENT CLOSURE not established.

Unlike the Cold Shutdown mode, normal means of RCS temperature indication and Reactor Vessel level indication may not be available in the Refueling mode. Redundant means of Reactor Vessel level indication are therefore procedurally installed to assure that the ability to monitor level will not be interrupted. However, if all level and temperature indication were to be lost in either the Cold Shutdown or Refueling modes, this EAL would result in declaration of a Notification of Unusual Event if both temperature and level indication cannot be restored within 15 minutes from the loss of both means of indication. Escalation to Alert would be via IC CA1 based on an inventory loss or IC CA4 based on exceeding the temperature criterion (200°F).

Reactor Vessel water level is monitored using the appropriate instruments, and appropriate Operations procedures provide a cross-reference of indicated water levels and key plant elevations.

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specification Cold Shutdown temperature limit (200°F). Refer to the appropriate Operations procedure for a list of temperature monitoring instruments.

The Shift Manager / Station Emergency Director must remain attentive to events or conditions that lead to the conclusion that exceeding the EAL threshold is imminent. If, in the judgment of the Shift Manager / Station Emergency Director, an imminent situation is at hand, the classification should be made as if the threshold has been exceeded.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: Communication Loss

Initiating Condition: [CU6] Loss of All On-site or Off-site Communications Capabilities.

Mode Applicability: 5 - Cold Shutdown, 6 – Refueling, D - Defueled

Emergency Action Level:

CU6.1 Notification of Unusual Event

Loss of **ALL** Table C-2 On-site communication methods affecting the ability to perform routine operations

Table C-2 – Communication Methods

System	On-site	Off-site
Sound-Powered Telephone System	X	
Public Address System	X	
Two-Way Radio System (800 MHz and 900 MHz)	X	
SCE Private Automatic Exchange (PAX) Telephone System	X	X
Emergency Notification System (ENS) - Red Phone		X
California State Warning Center (CSWC) - Blue Phone		X
Interagency Telephone (IAT) - Yellow Phone		X
Facsimile Machines		X
Emergency Satellite Phone		X

Basis:

This EAL addresses a loss of communications capability that prevents the plant Operations staff from performing routine tasks necessary for on-site plant operations.

Loss of on-site communications means that all of the systems listed in the "On-site" column of Table C-2 are not functioning.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: Communication Loss

Initiating Condition: [CU6] Loss of All On-site or Off-site Communications Capabilities.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling, D - Defueled

Emergency Action Level:

CU6.2 Notification of Unusual Event

Loss of **ALL** Table C-2 Off-site communication methods affecting the ability to perform Off-site notifications

Table C-2 – Communication Methods

System	On-site	Off-site
Sound-Powered Telephone System	X	
Public Address System	X	
Two-Way Radio System (800 MHz and 900 MHz)	X	
SCE Private Automatic Exchange (PAX) Telephone System	X	X
Emergency Notification System (ENS) - Red Phone		X
California State Warning Center (CSWC) - Blue Phone		X
Interagency Telephone (IAT) - Yellow Phone		X
Facsimile Machines		X
Emergency Satellite Phone		X

Basis:

This EAL addresses a loss of communications capability that defeats the ability to communicate problems with off-site authorities from the Control Room. The loss of off-site communications ability encompasses the loss of all means of communications with off-site authorities and is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary off-site communications is sufficient to inform federal, state and local authorities of plant problems. This should include ENS, FAX

5.2 Category C – Cold Shutdown / Refueling System Malfunction

transmissions and dedicated phone systems. This EAL is applicable only when extraordinary means are being utilized to make communications possible (e.g., relaying of information from radio transmissions, individuals being sent to off-site locations, etc.).

Loss of off-site communications means that all of the systems listed in the "Off-site" column of Table C-2 are not functioning.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: Loss of AC / DC Power Sources

Initiating Condition: [CU7] Loss of Required DC Power For 15 Minutes or Longer.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CU7.1 Notification of Unusual Event
Less than 105 VDC bus voltage indication on required Vital DC buses for 15 minutes or longer

Basis:

The purpose of this EAL is to recognize a loss of DC power compromising the ability to monitor and control the removal of decay heat during Cold Shutdown or Refueling operations. This EAL is intended to be anticipatory in as much as the operating crew may not have necessary indication and control of equipment needed to respond to the loss.

The DC power supply systems capabilities for both units are described in UFSAR section 8.3.2.

Plants will routinely perform maintenance on a Train related basis during shutdown periods. The required busses are the minimum allowed by Technical Specifications for the mode of operation. It is intended that the loss of the operating (operable) train is to be considered. If this loss results in the inability to maintain cold shutdown, the escalation to an Alert will be per CA4. This EAL is the cold condition equivalent of the hot condition loss of DC power EAL SS3.1.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: Inadvertent Criticality

Initiating Condition: [CU8] Inadvertent Criticality.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

CU8.1 Notification of Unusual Event
UNPLANNED sustained positive startup rate observed on nuclear instrumentation

Basis:

This IC addresses criticality events that occur in Cold Shutdown or Refueling modes [(NUREG 1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States)] such as fuel mis-loading events and inadvertent dilution events. This IC indicates a potential degradation of the level of safety of the plant, warranting a NOUE classification.

This condition can be identified using startup rate monitors. The term "sustained" is used in order to allow exclusion of expected short term positive startup rates from planned fuel bundle or control rod movements during core alterations. These short term positive startup rates are the result of the increase in neutron population due to subcritical multiplication.

Escalation would be by Shift Manager / Station Emergency Director Judgment.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Level

Initiating Condition: [CA1] Loss of RCS / Reactor Vessel Inventory.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

CA1.1 Alert
Loss of RCS / Reactor Vessel inventory as indicated by level less than the bottom of the RCS Hot Leg as indicated by RWLI / DLMS WR less than minus 8.375 feet, **OR** RWLI LI1520N less than 4 inches **OR** RVLMS HJTC #7 uncovered

Basis:

This EAL serves as a precursor to a loss of ability to adequately cool the fuel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further Reactor Vessel level decrease and potential core uncovery. This condition will result in a minimum classification of an Alert. The inability to restore and maintain level after reaching this setpoint infers a failure of the RCS barrier.

When Reactor Vessel water level decreases to 29 ft. 1.5 in. el. (52 in. above the fuel), the bottom of the RCS hot leg is uncovered.

The bottom inner diameter of the RCS hot leg (HJTC #7) was chosen because at HJTC #8, remote RCS level indication is lost and loss of suction to decay heat removal systems may occur. In Cold Shutdown, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event is likely to be greater than in the Refueling mode. Entry into Cold Shutdown mode may be attained within hours of operating at power or after refueling is completed. Thus, the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the Reactor Vessel. Note that the heatup threat could be lower for Cold Shutdown conditions if the entry into Cold Shutdown was immediately following a refueling.

Typically when entering or exiting the Cold Shutdown mode, the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the Refueling mode, the RCS is not intact and Reactor Vessel level and inventory are monitored by different means. SO23-5-1.8.1, Shutdown Nuclear Safety, Attachment for

5.2 Category C – Cold Shutdown / Refueling System Malfunction

RCS Level Correlation Chart, provides a cross-reference of indicated water levels and key plant elevations.

If RCS / Reactor Vessel level continues to drop, then escalation to Site Area Emergency will be via IC CS1.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Level

Initiating Condition: [CA1] Loss of RCS / Reactor Vessel Inventory.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CA1.2 Alert
RCS / Reactor Vessel level **CANNOT** be monitored for 15 minutes or longer with a loss of RCS / Reactor Vessel inventory as indicated by an unexplained level rise in a Containment Sump

Basis:

This EAL serves as a precursor to a loss of ability to adequately cool the fuel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further Reactor Vessel water level decrease and potential core uncovery. This condition will result in a minimum classification of an Alert.

In Cold Shutdown, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event is likely to be greater than in the Refueling mode. Entry into Cold Shutdown mode may be attained within hours of operating at power or after refueling is completed. Thus, the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the Reactor Vessel. Note that the heatup threat could be lower for Cold Shutdown conditions if the entry into Cold Shutdown was immediately following a refueling.

Typically when entering or exiting Cold Shutdown mode, the RCS will normally be intact and standard RCS inventory and level monitoring means are available. In the Refueling mode, the RCS is not intact and Reactor Vessel level and inventory are monitored by different means. Redundant means of Reactor Vessel level indication will normally be installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. In this EAL however, all level indication would be unavailable, and the Reactor Vessel inventory loss must be detected by Containment Sump level changes. Calculation of RCS leakage can be performed using the CFMS or the Technical

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Team Notebook. Containment Sump level rise must be evaluated against other potential sources of leakage, such as cooling water sources inside Containment, to ensure they are indicative of RCS leakage.

The 15-minute interval for the loss of level indication was chosen because it is half of the Site Area Emergency EAL duration. The interval allows this EAL to be an effective precursor to the Site Area Emergency IC CS1. Significant fuel damage is not expected to occur until the core has been uncovered for greater than one hour. Therefore this EAL meets the definition for an Alert. If Reactor Vessel level continues to drop, then escalation to Site Area Emergency will be via IC CS1.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: Loss of AC / DC Power Sources

Initiating Condition: [CA3] Loss of All Off-site and All On-Site AC Power to Emergency Buses for 15 Minutes or Longer.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling, D - Defueled

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

NOTE: If any load necessary for removal of decay heat or makeup to the RCS is not operable, then refer to the Emergency Action Level Technical Bases, EPSD-1.

CA3.1 Alert
Loss of **ALL** Off-site and **ALL** On-site AC power to 1E 4kV Buses 2(3)A04 and 2(3)A06 for 15 minutes or longer.

Basis:

Loss of all AC power compromises all plant safety systems requiring electrical power, including shutdown cooling, ECCS, Containment heat removal, Spent Fuel Pool cooling and the ultimate heat sink. This EAL is indicated by the loss of all off-site and on-site AC power to the 1E 4kV (emergency) buses. Several separate power sources are provided to the 1E 4kV buses while in the Cold Shutdown, Refueling or Defueled mode:

Consideration should be given to operable loads necessary to remove decay heat or provide RCS makeup capability when evaluating loss of AC power to 1E 4kV buses. Even though a 1E 4kV bus may be energized, if necessary loads ARE lost and have caused failure of the RCS Heat Removal safety function or the RCS Inventory Control safety function, then the bus should not be considered operable. If this bus is the only energized bus, then an Alert per this EAL should be declared.

The 15-minute interval was selected as a threshold to exclude transient or momentary power losses. When in Cold Shutdown, Refueling or Defueled mode, the event can be classified as an Alert because of the significantly reduced decay heat, lower temperature and pressure, raising the time to restore one of the emergency buses relative to that specified for the Site Area Emergency EAL SS1.1. EAL SS1.1 is the hot condition equivalent to EAL CA3.1.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Temperature and Pressure

Initiating Condition: [CA4] Inability to Maintain Plant in Cold Shutdown.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager/Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CA4.1 Alert

An UNPLANNED event results in RCS temperature greater than 200°F (Technical Specification Cold Shutdown temperature limit) for greater than the specified duration on Table C-1:

Table C-1 : RCS Reheat Duration Thresholds

RCS	Containment Closure	Duration
Intact (but not in an RCS Reduced Inventory Condition)	N/A	60 Minutes*
Not intact or in an RCS Reduced Inventory Condition	Established	20 Minutes*
	Not Established	0 Minutes

* If an RCS heat removal system is in operation within this time frame and RCS temperature is being reduced, the EAL is not applicable.

Basis:

This IC and its associated EALs are based on concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal. A number of phenomena such as pressurization, vortexing, Steam Generator U-tube draining, RCS level differences when operating at a mid-loop condition, decay heat removal system design and level instrumentation problems can lead to conditions in which decay heat removal is lost and core uncovery can occur. NRC analyses show there are sequences that can cause core uncovery in 15 to 20 minutes and severe core damage within an hour after decay heat removal is lost.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Several instruments are capable of providing indication of RCS temperature with respect to the Technical Specification Cold Shutdown temperature limit (200°F). Refer to the appropriate Operations procedure for a list of temperature monitoring instruments.

CONTAINMENT CLOSURE is the action taken to secure Containment and its associated structures, systems and components as a functional barrier to fission product release under existing plant conditions. Refer to the appropriate Operations procedure for CONTAINMENT CLOSURE Control requirements.

The RCS Reheat Duration Threshold table addresses complete loss of functions required for core cooling for greater than 60 minutes during refueling and cold shutdown modes when RCS integrity is established. [RCS integrity should be considered to be in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., no freeze seals or nozzle dams). The status of CONTAINMENT CLOSURE in this condition is immaterial given that the RCS is providing a high pressure barrier to fission product release to the environment.] The 60 minute time frame should allow sufficient time to restore cooling without there being a substantial degradation in plant safety.

The RCS Reheat Duration Threshold table also addresses the complete loss of functions required for core cooling for greater than 20 minutes during refueling and cold shutdown modes when CONTAINMENT CLOSURE is established but RCS integrity is not established or RCS inventory is reduced (e.g., mid-loop operation). [As discussed above, RCS integrity should be assumed to be in place when the RCS pressure boundary is in its normal condition for the cold shutdown mode of operation (e.g., no freeze seals or nozzle dams).] The allowed 20 minute time frame was included to allow operator action to restore the heat removal function, if possible. The allowed time frame is consistent with the guidance provided by Generic Letter 88-17, "Loss of Decay Heat Removal" and is believed to be conservative given that a low pressure Containment barrier to fission product release is established.

This EAL addresses complete loss of functions required for core cooling during Refueling and Cold Shutdown modes when neither CONTAINMENT CLOSURE nor RCS integrity

5.2 Category C – Cold Shutdown / Refueling System Malfunction

are established. Reduced Inventory Condition is the condition existing whenever RCS water level is lower than 3 feet below the Reactor Vessel Flange with fuel in the core. RCS integrity should be assumed to be in place when the RCS pressure boundary is in its normal condition for the Cold Shutdown mode of operation (e.g., no freeze seals or nozzle dams). No delay time is allowed for this condition because the evaporated reactor coolant that may be released into the Containment during this heatup condition could also be directly released to the environment.

The note (*) indicates that this EAL is not applicable if actions are successful in restoring an RCS heat removal system to operation and RCS temperature is being reduced within the specified time frame.

Escalation to a Site Area Emergency would be under IC CS1 should boiling result in significant Reactor Vessel level loss leading to core uncovery.

A loss of Technical Specification components alone is not intended to constitute an Alert. The same is true of a momentary UNPLANNED excursion above the Technical Specification cold shutdown temperature limit of 200°F when the heat removal function is available.

The Shift Manager / Station Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is IMMINENT. If, in the judgment of the Shift Manager / Station Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Temperature and Pressure

Initiating Condition: [CA4] Inability to Maintain Plant in Cold Shutdown.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

CA4.2 Alert
An UNPLANNED event results in RCS pressure rise greater than 10 PSI due to a loss of RCS cooling (This EAL does not apply in Solid Plant conditions.)

Basis:

This IC is based on concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal. A number of phenomena such as pressurization, vortexing, Steam Generator U-tube draining, RCS level differences when operating at a mid-loop condition, decay heat removal system design and level instrumentation problems can lead to conditions in which decay heat removal is lost and core uncovery can occur. NRC analyses show there are sequences that can cause core uncovery in 15 to 20 minutes and severe core damage within an hour after decay heat removal is lost.

CONTAINMENT CLOSURE is the action taken to secure Containment and its associated structures, systems and components as a functional barrier to fission product release under existing plant conditions. Refer to the appropriate Operations procedure for CONTAINMENT CLOSURE Control requirements.

Escalation to a Site Area Emergency would be under IC CS1 should boiling result in significant Reactor Vessel level loss leading to core uncovery.

A loss of Technical Specification components alone is not intended to constitute an Alert. The same is true of a momentary UNPLANNED excursion above the Technical Specification cold shutdown temperature limit of 200°F when the heat removal function is available.

The 10 PSI pressure rise addresses situations where, due to high decay heat loads, the time provided to restore temperature control should be less than 60 minutes.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

The Shift Manager / Station Emergency Director must remain alert to events or conditions that lead to the conclusion that exceeding the EAL threshold is IMMINENT. If, in the judgment of the Shift Manager / Station Emergency Director, an IMMINENT situation is at hand, the classification should be made as if the threshold has been exceeded.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Level

Initiating Condition: [CS1] Loss of RCS / Reactor Vessel Inventory Affecting Core Decay Heat Removal Capability.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CS1.1 Site Area Emergency

A. With CONTAINMENT CLOSURE established or **NOT** established:

- RVLMS HJTC #8 uncovered

OR

B. RCS / Reactor Vessel level **CANNOT** be monitored for 30 minutes or longer with a loss of RCS / Reactor Vessel inventory as indicated by **EITHER** of the following:

- Erratic Source Range Monitor indication
- Unexplained Containment Sump level rise

Basis:

Under the conditions specified by this IC, continued lowering in Reactor Vessel level is indicative of a loss of inventory control. Inventory loss may be due to a Reactor Vessel breach, RCS pressure boundary leakage or continued boiling in the Reactor Vessel. The magnitude of this loss of water indicates that makeup systems have not been effective and may not be capable of preventing further RCS or Reactor Vessel level lowering and potential core uncovery. The inability to restore and maintain level after reaching this setpoint implies a failure of the RCS Barrier and Potential Loss of the Fuel Clad Barrier. Thus, declaration of a Site Area Emergency is warranted under the conditions specified by the IC. Escalation to a General Emergency is via IC CG1 or radiological effluent IC AG1.

CONTAINMENT CLOSURE is the action taken to secure Containment and its associated structures, systems and components as a functional barrier to fission product release under existing plant conditions. CONTAINMENT CLOSURE is initiated by the Shift Manager if plant conditions change that could raise the risk of a fission product release as

5.2 Category C – Cold Shutdown / Refueling System Malfunction

a result of a loss of decay heat removal. Refer to the appropriate Operations procedure for CONTAINMENT CLOSURE Control requirements.

In Cold Shutdown, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly greater than in the Refueling mode. Entry into Cold Shutdown mode may be attained within hours of operating at power or after refueling is completed. Thus, the heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the Reactor Vessel. Note that the heatup threat could be lower for Cold Shutdown conditions if the entry into Cold Shutdown was following a refueling. The 30-minute interval associated with the inability to monitor Reactor Vessel water level recognizes that the RCS is normally intact while in the Cold Shutdown mode.

In the Refueling mode, the decay heat available to raise RCS temperature during a loss of inventory or heat removal event may be significantly less than in the Cold Shutdown mode. Entry into Cold Shutdown mode may be attained within hours of operating at power or after refueling is completed. The heatup threat and therefore the threat to damaging the fuel clad may be lower for events that occur in the Refueling mode with irradiated fuel in the Reactor Vessel than for events that occur in the Cold Shutdown mode. The reduced RCS heatup rate lowers boil-off and may slow the loss of vessel inventory. When in the Refueling mode, the Reactor Vessel inventory loss is therefore allowed to challenge core uncovery before a Site Area Emergency declaration is warranted.

In the cold shutdown mode, normal RCS level and RPV level instrumentation systems will usually be available. In the refueling mode, normal means of RPV level indication may not be available. Redundant means of RPV level indication will usually be installed (including the ability to monitor level visually) to assure that the ability to monitor level will not be interrupted. However, if all level indication were to be lost during a loss of RCS inventory event, the operators would need to determine that RPV inventory loss was occurring by observing sump and tank level changes. Sump and tank level increases must be evaluated against other potential sources of leakage such as cooling water sources inside the containment to ensure they are indicative of RCS leakage.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

This EAL is based on concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal, SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues, NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States, and NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables, such as mid-loop, reduced level / flange level, head in place, or cavity flooded, RCS venting strategy, decay heat removal system design, vortexing predisposition and Steam Generator U-tube draining) can have a significant impact on heat removal capability challenging the Fuel Clad Barrier. NRC analyses indicate that core damage may occur within an hour following continued core uncovery, and therefore 30 minutes was conservatively chosen.

When Reactor Vessel water level drops significantly below the bottom of the RCS Hot Leg, all sources of RCS injection have failed or are incapable of making up for the inventory loss. When Reactor Vessel water level drops below RVLMS HJTC #8, core uncovery is about to occur. RVLMS is the only remotely indicating level monitoring system capable of indicating water level in the Reactor Vessel between the bottom of the RCS Hot Leg and the top of active fuel. In Refueling mode however, normal means of Reactor Vessel level indication may not be available.

Since there is no SONGS level instrumentation to measure level 6" below the bottom inner diameter of the RCS loop and if level monitoring capability is unavailable, the Reactor Vessel inventory loss must be detected by Containment Sump level changes. Calculation of RCS leakage can be performed using the CFMS or the Technical Team Notebook. Containment Sump level rises must be evaluated against other potential sources of leakage, such as cooling water sources inside the Containment, to ensure they are indicative of RCS leakage.

In the Refueling mode, Reactor Vessel level indication from the RVLMS may be unavailable, but alternate means of level indication are normally installed (including visual observation) to assure that the ability to monitor level will not be interrupted. The Reactor Vessel inventory loss may be detected by unexplained Containment Sump level rise or erratic Source Range Monitor (SRM) indication.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Post-TMI studies indicate that the installed nuclear instrumentation will operate erratically when the core is uncovered and Source Range Monitors (SRMs) can be used as a tool for making such determinations. SRM count rate can be indicated in the Control Room by Source Range Count Rate recorders and lumigraphs, Startup Channel audible count rate, Wide Range Log Power lumigraphs, Plant Computer System, and QSPDS. The 30-minute duration allows sufficient time for actions to be performed to recover inventory control equipment.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Level

Initiating Condition: [CG1] Loss of RCS / Reactor Vessel Inventory Affecting Fuel Clad Integrity With Containment Challenged.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CG1.1 General Emergency

RCS / Reactor Vessel level less than top of active fuel as indicated by RVLMS HJTC #8 uncovered for 30 minutes or longer

AND

Containment challenged as indicated by **ANY** of the following:

- CONTAINMENT CLOSURE **NOT** established
- Explosive mixture inside Containment
- UNPLANNED rise in Containment pressure

Basis:

This EAL is based on concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal, SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues, NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States, and NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables (e.g., mid-loop, reduced level / flange level, head in place, or cavity flooded, RCS venting strategy, decay heat removal system design, vortexing predisposition and Steam Generator U-tube draining) can have a significant impact on heat removal capability challenging the Fuel Clad Barrier. Analysis in the above references indicates that core damage may occur within an hour following continued core uncovery; therefore, the 30-minute interval was conservatively chosen.

This IC represents the inability to restore and maintain Reactor Vessel level to above the top of active fuel with containment challenged. Fuel damage is probable if Reactor Vessel level cannot be restored, as available decay heat will cause boiling, further reducing the Reactor Vessel level. With the CONTAINMENT breached or challenged then the potential for unmonitored fission product release to the environment is high. This represents a direct path for radioactive inventory to be released to the environment. This is consistent with the

5.2 Category C – Cold Shutdown / Refueling System Malfunction

definition of a GE. The GE is declared on the occurrence of the loss or IMMINENT loss of function of all three barriers.

When Reactor Vessel water level drops below RVLMS HJTC #8, core uncovery is about to occur. RVLMS is the only remotely indicating level monitoring system capable of indicating water level in the Reactor Vessel between the bottom of the RCS Hot Leg and the top of active fuel. In Refueling mode however, normal means of Reactor Vessel level indication may not be available.

Three conditions are associated with a challenge to Containment integrity:

- A 4% hydrogen concentration threshold is generally considered the lower limit for hydrogen deflagrations. To generate such levels of combustible gas, loss of the Fuel Clad and RCS Barriers are likely to have occurred. Two Containment hydrogen monitor channels with a range of 0 - 10% by volume continuously monitor the Containment environment and are indicated / recorded in the Control Room. Hydrogen monitor operability is not required in Modes 5 and 6 and harsh environmental conditions inside Containment may cause the monitors to decalibrate, requiring a calibration check. Containment monitoring and/or sampling should be performed to verify if an explosive mixture exists. In the early stages of a core uncovery event, it is unlikely that hydrogen buildup due to a core uncovery could result in an explosive mixture of dissolved gasses in Containment. However, Containment monitoring and/or sampling should be performed to verify this assumption and a General Emergency declared if it is determined that an explosive mixture exists.
- A design basis Loss of Coolant Accident will result in elevated Containment pressure which is less than the containment design pressure. With RCS level less than the top of active fuel for a prolonged period of time fuel damage is probable. Any unplanned rise in Containment pressure is a challenge to the Containment barrier and taken together with other criteria in the EAL, warrants declaration of the GE.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

- CONTAINMENT CLOSURE is the action taken to secure Containment and its associated structures, systems and components as a functional barrier to fission product release under existing plant conditions. CONTAINMENT CLOSURE should not be confused with refueling Containment integrity as defined in Technical Specifications. Site shutdown contingency plans typically provide for re-establishing CONTAINMENT CLOSURE following a loss of heat removal or RCS inventory functions. If CONTAINMENT CLOSURE is re-established prior to exceeding the 30 minute core uncovery time limit then escalation to GE would not occur. Refer to the appropriate Operations procedure for CONTAINMENT CLOSURE Control requirements.

The General Emergency is declared on the occurrence of the Loss or Potential Loss of the function of all three fission product barriers. Based on the above discussion, RCS Barrier failure resulting in core uncovery for 30 minutes or more may cause fuel clad failure. With the Containment breached or challenged, the potential for unmonitored fission product release to the environment is high. This is consistent with the definition of a General Emergency.

5.2 Category C – Cold Shutdown / Refueling System Malfunction

Subcategory: RCS Level

Initiating Condition: [CG1] Loss of RCS / Reactor Vessel Inventory Affecting Fuel Clad Integrity With Containment Challenged.

Mode Applicability: 5 - Cold Shutdown, 6 - Refueling

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition will likely exceed the applicable time.

CG1.2 General Emergency

RCS / Reactor Vessel level **CANNOT** be monitored with core uncovery indicated by **ANY** of the following for 30 minutes or longer:

- Erratic Source Range Monitor indication
- Unexplained Containment Sump level rise

AND

Containment challenged as indicated by **ANY** of the following:

- CONTAINMENT CLOSURE **NOT** established
- Explosive mixture inside Containment
- UNPLANNED rise in Containment pressure

Basis:

This EAL is based on concerns raised by Generic Letter 88-17, Loss of Decay Heat Removal, SECY 91-283, Evaluation of Shutdown and Low Power Risk Issues, NUREG-1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States, and NUMARC 91-06, Guidelines for Industry Actions to Assess Shutdown Management. A number of variables (e.g., mid-loop, reduced level / flange level, head in place, or cavity flooded, RCS venting strategy, decay heat removal system design, vortexing predisposition and Steam Generator U-tube draining) can have a significant impact on heat removal capability challenging the Fuel Clad Barrier. Analysis indicates that core damage may occur within an hour following continued core uncovery therefore, 30 minutes was conservatively chosen.

This IC represents the inability to restore and maintain Reactor Vessel level to above the top of active fuel with containment challenged. Fuel damage is probable if Reactor Vessel level cannot be restored, as available decay heat will cause boiling, further reducing the Reactor Vessel level. With the CONTAINMENT breached or challenged then the potential

5.2 Category C – Cold Shutdown / Refueling System Malfunction

for unmonitored fission product release to the environment is high. This represents a direct path for radioactive inventory to be released to the environment. This is consistent with the definition of a GE. The GE is declared on the occurrence of the loss or IMMINENT loss of function of all three barriers.

In the Cold Shutdown mode, normal RCS level and Reactor Vessel level instrumentation systems will usually be available. In this EAL however, if all level indication were to be lost during a loss of RCS inventory event, operators would need to determine that Reactor Vessel inventory loss was occurring by observing Containment Sump level changes. Calculation of RCS leakage can be performed using the CFMS or the Technical Team Notebook. Containment Sump level rises must be evaluated against other potential sources of leakage, such as cooling water sources inside Containment, to ensure they are indicative of RCS leakage.

If all means of level monitoring are not available, the Reactor Vessel inventory loss may be detected by the following indirect method (in addition to observing Containment Sump level changes as listed above):

- Post-TMI studies indicate that the installed nuclear instrumentation will operate erratically when the core is uncovered and Source Range Monitors (SRMs) can be used as a tool for making such determinations. SRM count rate can be indicated in the Control Room by Source Range Count Rate recorders and lumigraphs, Startup Channel audible count rate, Wide Range Log Power lumigraphs, Plant Computer System, and QSPDS.

Three conditions are associated with a challenge to Containment integrity:

- A 4% hydrogen concentration threshold is generally considered the lower limit for hydrogen deflagrations. To generate such levels of combustible gas, loss of the Fuel Clad and RCS Barriers are likely to have occurred. Two Containment hydrogen monitor channels with a range of 0 - 10% by volume continuously monitor the Containment environment and are indicated / recorded in the Control Room. Hydrogen monitor operability is not required in Modes 5 and 6 and harsh environmental conditions inside Containment may cause the monitors to

decalibrate, requiring a calibration check. Containment monitoring and/or sampling should be performed to verify if an explosive mixture exists. In the early stages of a core uncovery event, it is unlikely that hydrogen buildup due to a core uncovery could result in an explosive mixture of dissolved gasses in Containment. However, Containment monitoring and/or sampling should be performed to verify this assumption and a General Emergency declared if it is determined that an explosive mixture exists.

- A design basis Loss of Coolant Accident will result in elevated Containment pressure but remain less than the containment design pressure. With RCS level less than the top of active fuel for a prolonged period of time fuel damage is probable. Any unplanned rise in Containment pressure is a challenge to the Containment barrier and taken together with other criteria in the EAL, warrants declaration of the GE.
- CONTAINMENT CLOSURE is the action taken to secure Containment and its associated structures, systems and components as a functional barrier to fission product release under existing plant conditions. CONTAINMENT CLOSURE should not be confused with refueling Containment integrity as defined in Technical Specifications. Site shutdown contingency plans typically provide for re-establishing CONTAINMENT CLOSURE following a loss of heat removal or RCS inventory functions. If CONTAINMENT CLOSURE is re-established prior to exceeding the 30 minute core uncovery time limit then escalation to GE would not occur. Refer to the appropriate Operations procedure for CONTAINMENT CLOSURE Control requirements.

The General Emergency is declared on the occurrence of the Loss or Potential Loss of the function of all three fission product barriers. Based on the above discussion, RCS Barrier failure resulting in core uncovery for 30 minutes or more may cause fuel clad failure. With the Containment breached or challenged, the potential for unmonitored fission product release to the environment is high. This is consistent with the definition of a General Emergency.

SECTION 5.3 - CATEGORY E – EVENTS RELATED TO INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS

5.3 Category E – Events Related to Independent Spent Fuel Storage Installations

An Independent Spent Fuel Storage Installation (ISFSI) is a complex that is designed and constructed for the interim storage of spent nuclear fuel and other radioactive materials associated with spent fuel storage. A significant amount of the radioactive material contained within a cask must escape its packaging and enter the biosphere for there to be a significant environmental effect resulting from an accident involving the dry storage of spent nuclear fuel. Radiological events are addressed under Category A EALs. Security events involving the ISFSI are addressed under Category H EALs.

The events of this category pertain to:

Loss of Cask Confinement

A Notification of Unusual Event is declared on the basis of the occurrence of an event of sufficient magnitude that a loaded cask confinement boundary is damaged or violated. This includes classification based on a loaded fuel storage cask confinement boundary loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage.

5.3 Category E – Events Related to Independent Spent Fuel Storage Installations

Subcategory: Loss of Cask Confinement

Initiating Condition: [E-HU1] Damage To a Loaded Cask CONFINEMENT BOUNDARY.

Mode Applicability: N/A

Emergency Action Level:

E-HU1.1 Notification of Unusual Event
Damage to a loaded cask CONFINEMENT BOUNDARY
[Refer to HS4.1 if damage was due to hostile act]

Basis:

A Notification of Unusual Event in this IC is declared on the basis of the occurrence of an event of sufficient magnitude that a loaded cask confinement boundary is damaged or violated. This classification is based on a loaded fuel storage cask confinement boundary loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage.

This EAL addresses a dropped cask, a tipped over cask, EXPLOSION, PROJECTILE damage, FIRE damage or natural phenomena affecting a cask (e.g., seismic event, tornado, etc.). This includes classification based on a loaded fuel storage cask confinement boundary loss leading to the degradation of the fuel during storage or posing an operational safety problem with respect to its removal from storage. Security events involving the ISFSI should be declared under the Category H EALs

SECTION 5.4 - CATEGORY F – FISSION PRODUCT BARRIER DEGRADATION

5.4 Category F – Fission Product Barrier Degradation

EALs defined in this category represent threats to the defense in depth design concept that precludes the release of highly radioactive fission products to the environment. This concept relies on multiple physical barriers any one of which, if maintained intact, precludes the release of significant amounts of radioactive fission products to the environment. The primary Fission Product Barriers are:

Fuel Clad: The tubes which house the ceramic fuel pellets, along with the end plugs which are welded into each end of the fuel rods, comprise the fuel clad.

Reactor Coolant System (RCS): The reactor vessel shell, vessel head, vessel nozzles and penetrations, plus piping, pumps and valves which are part of the RCS and connected to the RCS, up to and including any and all of the following: the outermost Containment isolation valve in system piping that penetrates the Containment, the second of two valves normally closed during normal reactor operation in system piping that does not penetrate Containment and the RCS safety valves.

Containment: The Containment structure and all isolation valves required to maintain Containment integrity under accident conditions comprise the Containment Barrier. The barrier also includes the main steam, feedwater and blowdown line extensions outside the Containment building up to and including the outermost secondary side isolation valves.

The EALs in this category require evaluation of the Loss and Potential Loss thresholds listed in the Fission Product Barrier matrix of Table F-1. "Loss" and "Potential Loss" signify the relative damage and threat of damage to the barrier. "Loss" means the barrier no longer assures containment of radioactive materials based on exceeding the plant design bases with no immediate certainty of recovery; "Potential Loss" infers an elevated probability of barrier loss and decreased certainty of maintaining the barrier. The number of barriers that are lost or potentially lost and the following criteria determine the appropriate emergency classification level:

Notification of Unusual Event:
Any "Loss" or any "Potential Loss" of Containment Barrier

5.4 Category F – Fission Product Barrier Degradation

Alert:
Any "Loss" or any "Potential Loss" of either Fuel Clad or RCS Barrier.
Site Area Emergency:
"Loss" or any "Potential Loss" of any two barriers.
General Emergency:
"Loss" of any two barriers and "Loss" or any "Potential Loss" loss of third barrier.

The logic used for emergency classification based on Fission Product Barrier monitoring should reflect the following considerations:

- The ability to escalate the emergency classification as an event deteriorates must be maintained. For example, RCS leakage steadily rising would represent a rising risk to public health and safety.
- Fission Product Barrier monitoring must be capable of addressing dynamic conditions. If reaching a Loss or Potential Loss threshold is imminent while an event or multiple events occur, judgment dictates that the imminent situation deserves classification as if the thresholds were actually exceeded.

5.4 Category F – Fission Product Barrier Degradation

Subcategory: Fission Product Barriers

Initiating Condition: [FU1] ANY Loss or ANY Potential Loss of Containment.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

NOTE: Notification of Unusual Event ICs associated with RCS and Fuel Clad Barriers are addressed under Category S – System Malfunction ICs.

FU1.1	**Notification of Unusual Event**
ANY Loss or **ANY** Potential Loss of Containment (Table F-1)	

NOTE: The logic used for these initiating conditions reflects the following considerations:

- The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier.
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS Barrier "Loss" EALs existed, that, in addition to off-site dose assessments, would require continual assessments of radioactive inventory and Containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" EALs existed, the Shift Manager / Station Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.
- The ability to escalate to higher emergency classification levels as an event deteriorates must be maintained. For example, RCS leakage steadily rising would represent a rising risk to public health and safety.
- The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications.
- Determine which combination of the three barriers are lost or have a Potential Loss and use the Category F EALs to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the Loss or Potential Loss thresholds is IMMINENT. In this IMMINENT loss situation, use judgment and classify as if the thresholds are exceeded.

Basis:

Fuel Clad, RCS and Containment comprise the Fission Product Barriers. Table F-1 and Section 5.4.1 contain the Fission Product Barrier thresholds, bases and references.

5.4 Category F – Fission Product Barrier Degradation

Fuel Clad and RCS Barriers are weighted more heavily than the Containment Barrier at the Notification of Unusual Event and Alert levels. Unlike the Fuel Clad and RCS Barriers, the loss of either of which results in an Alert (EAL FA1.1), loss of the Containment Barrier in and of itself does not result in the relocation of radioactive materials or the potential for degradation of core cooling capability. However, Loss or Potential Loss of the Containment Barrier in combination with the Loss or Potential Loss of either the Fuel Clad or RCS Barrier results in declaration of a Site Area Emergency under EAL FS1.1.

5.4 Category F – Fission Product Barrier Degradation

Subcategory: Fission Product Barriers

Initiating Condition: [FA1] ANY Loss or ANY Potential Loss of EITHER Fuel Clad OR RCS.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

FA1.1 Alert
ANY Loss or **ANY** Potential Loss of **EITHER** Fuel Clad **OR** RCS (Table F-1)

NOTE: The logic used for these initiating conditions reflects the following considerations:

- The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier.
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS Barrier "Loss" EALs existed, that, in addition to off-site dose assessments, would require continual assessments of radioactive inventory and Containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" EALs existed, the Shift Manager / Station Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.
- The ability to escalate to higher emergency classification levels as an event deteriorates must be maintained. For example, RCS leakage steadily rising would represent a rising risk to public health and safety.
- The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications.
- Determine which combination of the three barriers are lost or have a Potential Loss and use the Category F EALs to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the Loss or Potential Loss thresholds is IMMINENT. In this IMMINENT loss situation, use judgment and classify as if the thresholds are exceeded.

Basis:

Fuel Clad, RCS and Containment comprise the Fission Product Barriers. Table F-1 and Section 5.4.1 contain the Fission Product Barrier thresholds, bases and references.

At the Alert classification level, Fuel Clad and RCS Barriers are weighted more heavily than the Containment Barrier. Unlike the Containment Barrier, Loss or Potential Loss of

5.4 Category F – Fission Product Barrier Degradation

either the Fuel Clad or RCS Barrier may result in the relocation of radioactive materials or degradation of core cooling capability. Note that the Loss or Potential Loss of Containment Barrier in combination with Loss or Potential Loss of either Fuel Clad or RCS Barrier results in declaration of a Site Area Emergency under EAL FS1.1.

5.4 Category F – Fission Product Barrier Degradation

Subcategory: Fission Product Barriers

Initiating Condition: [FS1] Loss or Potential Loss of ANY Two Barriers.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

FS1.1 Site Area Emergency
Loss or Potential Loss of **ANY** two barriers (Table F-1)

NOTE: The logic used for these initiating conditions reflects the following considerations:

- The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier.
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS Barrier "Loss" EALs existed, that, in addition to off-site dose assessments, would require continual assessments of radioactive inventory and Containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" EALs existed, the Shift Manager / Station Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.
- The ability to escalate to higher emergency classification levels as an event deteriorates must be maintained. For example, RCS leakage steadily rising would represent a rising risk to public health and safety.
- The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications.
- Determine which combination of the three barriers are lost or have a Potential Loss and use the Category F EALs to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the Loss or Potential Loss thresholds is IMMINENT. In this IMMINENT loss situation, use judgment and classify as if the thresholds are exceeded.

Basis:

Fuel Clad, RCS and Containment comprise the Fission Product Barriers. Table F-1 and Section 5.4.1 contain the Fission Product Barrier thresholds, bases and references.

At the Site Area Emergency classification level, each barrier is weighted equally. A Site Area Emergency is therefore appropriate for any combination of the following conditions:

5.4 Category F – Fission Product Barrier Degradation

- One Barrier Loss and a second Barrier Loss (i.e., Loss - Loss).
- One Barrier Loss and a second Barrier Potential Loss (i.e., Loss - Potential Loss).
- One Barrier Potential Loss and a second Barrier Potential Loss (i.e., Potential Loss - Potential Loss).

5.4 Category F – Fission Product Barrier Degradation

Subcategory: Fission Product Barriers

Initiating Condition: [FG1] Loss of ANY Two Barriers AND Loss or Potential Loss of the Third Barrier.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

FG1.1 General Emergency
Loss of **ANY** two barriers **AND** Loss or Potential Loss of the third barrier (Table F-1)

NOTE: The logic used for these initiating conditions reflects the following considerations:

- The Fuel Clad Barrier and the RCS Barrier are weighted more heavily than the Containment Barrier.
- At the Site Area Emergency level, there must be some ability to dynamically assess how far present conditions are from the threshold for a General Emergency. For example, if Fuel Clad and RCS Barrier "Loss" EALs existed, that, in addition to off-site dose assessments, would require continual assessments of radioactive inventory and Containment integrity. Alternatively, if both Fuel Clad and RCS Barrier "Potential Loss" EALs existed, the Shift Manager / Station Emergency Director would have more assurance that there was no immediate need to escalate to a General Emergency.
- The ability to escalate to higher emergency classification levels as an event deteriorates must be maintained. For example, RCS leakage steadily rising would represent a rising risk to public health and safety.
- The Containment Barrier should not be declared lost or potentially lost based on exceeding Technical Specification action statement criteria, unless there is an event in progress requiring mitigation by the Containment barrier. When no event is in progress (Loss or Potential Loss of either Fuel Clad and/or RCS) the Containment Barrier status is addressed by Technical Specifications.
- Determine which combination of the three barriers are lost or have a Potential Loss and use the Category F EALs to classify the event. Also, multiple events could occur which result in the conclusion that exceeding the Loss or Potential Loss thresholds is IMMINENT. In this IMMINENT loss situation, use judgment and classify as if the thresholds are exceeded.

Basis:

Fuel Clad, RCS and Containment comprise the Fission Product Barriers. Table F-1 and Section 5.4.1 contain the Fission Product Barrier thresholds, bases and references.

5.4 Category F – Fission Product Barrier Degradation

At the General Emergency classification level each barrier is weighted equally. A General Emergency is therefore appropriate for any combination of the following conditions:

- Loss of Fuel Clad, RCS and Containment Barriers.
- Loss of Fuel Clad and RCS Barriers with Potential Loss of Containment Barrier.
- Loss of RCS and Containment Barriers with Potential Loss of Fuel Clad Barrier.
- Loss of Fuel Clad and Containment Barriers with Potential Loss of RCS Barrier.

Table F-1 – Fission Product Barrier Matrix

Fuel Clad Barrier

Loss	Potential Loss
1) Critical Safety Function Status	
N/A	RCS Heat Removal safety function acceptance criteria **NOT** met **AND** Core Exit Saturation Margin sustained < 20°F **AND** safety function success path **NOT** identified following review of Resource Assessment Charts
2) Primary Coolant Activity Level	
A. Coolant activity greater than 300 µCi/gm Dose Equivalent I-131 **OR** **B.** VALID high alarm on 2/3RE7838 or 2/3RE7839, PASS Normal Sample Line Isolation Radiation Monitor, indicating fuel clad degradation	N/A
3) Core Exit Thermocouple Readings	
REP CET greater than 1,200°F	REP CET greater than 700°F
4) Reactor Vessel Water Level	
N/A	Reactor vessel level less than the top of active fuel as indicated by RVLMS HJTC #8 uncovered
5) Containment Radiation Monitoring	
VALID 2(3)RE7820-1(2), Containment High Range Area Radiation Monitor, reading greater than 2,000 R/hr	N/A
6) Shift Manager / Station Emergency Director Judgment	
ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the Fuel Clad Barrier	**ANY** condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the Fuel Clad Barrier

Table F-1 – Fission Product Barrier Matrix

Reactor Coolant System Barrier

Loss	Potential Loss
1) Critical Safety Function Status	
N/A	**A.** Uncontrolled RCS cooldown **AND** RCS temperature and PZR pressure are to left of Appendix E limit line in SO23-12-11, Attachment for Post-Accident Pressure / Temperature Limits **OR** **B.** RCS Heat Removal safety function acceptance criteria **NOT** met **AND** Core Exit Saturation Margin sustained < 20°F **AND** safety function success path **NOT** identified following review of Resource Assessment Charts
2) RCS Leak Rate	
RCS leak rate greater than available makeup capacity as indicated by a loss of RCS subcooling and evidenced by Core Exit Saturation Margin less than 20°F	RCS leak, including Steam Generator Tube Leak, with leak rate indicated greater than 44 GPM with Letdown isolated
3) S/G Tube Rupture	
RUPTURED S/G that results in an ECCS (SI) actuation	N/A
4) Containment Radiation Monitoring	
VALID 2(3)RE7820-1(2), Containment High Range Area Radiation Monitor, reading greater than 10 R/hr	N/A
5) Shift Manager / Station Emergency Director Judgment	
ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the RCS Barrier	**ANY** condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the RCS Barrier

Table F-1 – Fission Product Barrier Matrix

Containment Barrier

Loss	Potential Loss
1) Containment Pressure	
A. Containment pressure rise followed by a rapid unexplained drop in Containment pressure **OR** **B.** Containment pressure or Sump level response **NOT** consistent with LOCA conditions	**A.** Containment pressure greater than 60 PSIG and rising **OR** **B.** Explosive mixture exists inside Containment **OR** **C.** Containment pressure greater than 14 PSIG **AND** less than one full train of depressurization equipment operating
2) Core Exit Thermocouple Readings	
N/A	**A.** REP CET greater than 1,200°F **AND** restoration procedures **NOT** effective within 15 minutes **OR** **B. ALL** of the following: • REP CET greater than 700°F • RVLMS HJTC #8 uncovered • Restoration procedures **NOT** effective within 15 minutes
3) S/G Secondary Side Release with Primary-to-Secondary Leakage	
A. RUPTURED S/G is also FAULTED outside of Containment **OR** **B.** Primary-to-secondary leak rate greater than 10 GPM **AND** UNISOLABLE steam release from affected S/G to the environment	N/A
4) Containment Isolation Failure or Bypass	
Failure of all Containment Isolation valves in any one line to close **AND** direct downstream pathway to the environment exists after Containment Isolation Actuation Signal	N/A
5) Containment Radiation Monitoring	
N/A	VALID 2(3)RE7820-1(2), Containment High Range Area Radiation monitor, reading greater than 40,000 R/hr
6) Shift Manager / Station Emergency Director Judgment	
ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the Containment Barrier	**ANY** condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the Containment Barrier

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

Fuel Clad Barrier Loss

1. Critical Safety Function Status

N/A

2. Primary Coolant Activity Level

A. Coolant activity greater than 300 µCi/gm Dose Equivalent I-131.

Elevated reactor coolant activity represents a potential degradation in the level of safety of the plant and a potential precursor of more serious problems. The threshold Dose Equivalent I-131 concentration is well above that expected for iodine spikes and corresponds to about 0.9% fuel clad damage. When reactor coolant activity reaches this level, significant clad heating has occurred and thus the Fuel Clad Barrier is considered lost.

OR

B. VALID high alarm on 2/3RE7838 or 2/3RE7839, PASS Normal Sample Line Isolation Radiation Monitor, indicating fuel clad degradation.

If high alarm on 2/3RE7838 or 2/3RE7839 cannot be validated by (1) an instrument channel check, or (2) indications on related or redundant indicators, then the PASS Normal Sample Line Isolation Radiation Monitor alarm is validated by local readings higher than normal in the PASS lab valve room. Elevated reactor coolant activity represents a potential degradation in the level of safety of the plant and a potential precursor of more serious problems.

There are dual PASS rad. monitors. They do not alarm in the Control Room, but alarm locally and in the Radiochemistry Lab. Actuation of 2/3RE7838 automatically isolates RCS sampling and causes the sample coolers to go to "Bypass". Operations procedures indicate that the 2/3RE7838 high alarm setpoint is 1 R/hr corresponding to 1% fuel failure. The second rad. monitor (2/3RE7839) has a high alarm setpoint of 1R/hr also, which corresponds to 1% failed fuel.

3. Core Exit Thermocouple Readings

REP CET greater than 1,200°F.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

Representative (REP) Core Exit Thermocouple (CET) readings provide an indirect indication of fuel clad temperature by measuring the temperature of the reactor coolant that leaves the core region. The threshold temperature is consistent with Units 2 and 3 Core Damage Assessment procedures. Although clad rupture due to high temperature is not expected for CET readings less than the threshold, temperatures of this magnitude signal significant superheating of the reactor coolant and core uncovery. Events that result in CET readings above the loss threshold are classified as severe accidents and could lead to a Severe Accident Management Guideline "Badly Damaged" condition. The Badly Damaged descriptor signifies possible core overheating to the point that clad ballooning / collapse may have occurred and portions of the core may have melted.

4. Reactor Vessel Water Level

N/A

5. Containment Radiation Monitoring

VALID 2(3)RE7820-1(2), Containment High Range Area Radiation Monitor, reading greater than 2,000 R/hr.

A Containment radiation monitor reading greater than the threshold value indicates the release of reactor coolant into the Containment, with elevated activity indicative of fuel damage. The threshold value is based on a coolant activity level of 300 µCi/gm DEI-131, which corresponds to about 0.9% fuel failure. The threshold value is higher than that specified for RCS Barrier Loss #3; thus, Containment radiation levels above the threshold require at least a Site Area Emergency classification. Containment radiation is indicated on 2(3)RE7820-1(2).

It is important to recognize that the radiation monitors may be sensitive to shine from the Reactor Vessel or RCS piping. Also, these monitor signals may experience errors after a significant increase in Containment temperature or pressure (from a LOCA or ESDE). Industry testing of high range radiation monitor systems has revealed that signal errors or the loss of signal are the result of thermally induced current in the coaxial connectors. The validity of the readings should be checked in accordance with the appropriate procedures.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

6. Shift Manager / Station Emergency Director Judgment

ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the Fuel Clad Barrier.

The Shift Manager / Station Emergency Director judgment threshold addresses any other factors relevant to determining if the Fuel Clad barrier is lost. Such a determination should include Imminent Barrier Degradation, Barrier Monitoring Capability and Dominant Accident Sequences.

- Imminent Barrier Degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance when any safety function acceptance criteria applicable to the barrier are not met.
- Barrier Monitoring Capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of off-site monitoring results.
- Dominant Accident Sequences lead to degradation of all fission product barriers and likely entry to the Functional Recovery. The Shift Manager / Station Emergency Director should be mindful of the loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

Fuel Clad Barrier Potential Loss

1. Critical Safety Function Status

RCS Heat Removal safety function acceptance criteria NOT met AND Core Exit Saturation Margin sustained < 20°F AND safety function success path NOT identified following review of Resource Assessment Charts

The Steam Generators (S/Gs) provide the normal means of heat transfer from the RCS to the Main Condenser and ultimate heat sink. EOIs require maintenance of S/G heat removal at all times during a LOCA, if at all possible. Once RCS pressure and temperature are reduced, RCS heat removal can be provided by the Shutdown Cooling System. Once the Shutdown Cooling System is placed in service, the S/G heat sink capability is no longer necessary.

If RCS subcooling decreases to near 20°F, the margin to superheated conditions is being reduced. Subcooling margin greater than 20°F ensures the fluid surrounding the core is sufficiently cooled and provides margin for reestablishing flow should subcooling deteriorate when SI flow is secured. Voids may exist in some parts of the RCS (e.g., Reactor Vessel Head), but are permissible as long as core heat removal is maintained.

The combination of these conditions indicates the ultimate heat sink function is under extreme challenge. This threshold addresses loss of functions required for Hot Shutdown with the reactor at pressure and temperature and thus a Potential Loss of the Fuel Clad Barrier. This is also a Potential Loss of the RCS Barrier and therefore results in at least a Site Area Emergency.

2. Primary Coolant Activity Level

N/A

3. Core Exit Thermocouple Readings

REP CET greater than 700°F.

Representative (REP) Core Exit Thermocouple (CET) readings provide an indirect indication of fuel clad temperature by measuring the temperature of the reactor coolant that leaves the core region. A superheat condition is indicated by a CET reading above the saturation temperature for the existing RCS pressure. RCS superheat signals the transition from a subcooled to a superheated regime. In a

superheated regime, heat transfer mechanics are not as efficient as the subcooled condition and could lead to a rapid rise in fuel clad temperatures. Valid indication of superheat is a potential Fuel Clad Barrier Loss condition because the possible rapid rise in clad temperatures may lead to clad failure.

This threshold indicates loss of inventory control resulting in significant core exit superheating. An actual steam temperature of 700°F in the core exit region is an indication that the core is uncovered. The primary safety valves will limit the primary system saturation temperature to 668°F, which corresponds to 2,500 PSIA. The value of 700°F physically corresponds to a superheated thermodynamic condition that can only result from core uncovery. It also corresponds to the water critical point (705°F), the point above which water can no longer exist in the liquid phase.

Generally, two accident scenarios lead to the superheated condition: LOCA and loss of S/G as a heat sink. LOCA results directly in a loss of inventory. Very small break LOCAs will not result in depressurization much below the High Pressure Safety Injection (HPSI) pump shutoff head. For these small break LOCAs, superheat is indicative of core uncovery occurring at high pressure. For large break LOCAs that result in rapid depressurization to less than 300 PSIA, superheat occurs at low pressure. A loss of inventory (leading to core uncovery) can also result from a loss of S/G as a heat sink, which causes RCS pressure to rise high enough to lift the Pressurizer safeties.

4. <u>Reactor Vessel Water Level</u>

Reactor Vessel level less than the top of active fuel as indicated by RVLMS HJTC #8 uncovered.

The Reactor Vessel Level Monitoring System (RVLMS) is based on the C-E Heated Junction Thermocouple (HJTC) system. The HJTC system measures reactor coolant liquid inventory with discrete HJTC sensors located at different levels within a separator tube ranging from the Fuel Alignment Plate (i.e., near top of active fuel) to the top of the Reactor Vessel Head. The basic principle of system operation is detection of a temperature difference between heated and unheated

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

thermocouples. RVLMS HJTC #8 is the lowest RVLMS sensor and is located approximately 32 in. above the top of the fuel (27 ft. 5.5 in. el.).

Reactor Vessel water level approaching the top of the core may lead to a Severe Accident Management Guideline "Badly Damaged" condition. The Badly Damaged descriptor signifies possible core overheating to the point of clad ballooning / collapse and melting. Indication that Reactor Vessel inventory has dropped below the lowest RVLMS sensor, therefore, signals inadequate coolant inventory, loss of subcooling and the occurrence of possible fuel clad damage.

5. Containment Radiation Monitoring

N/A

6. Shift Manager / Station Emergency Director Judgment

ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the Fuel Clad Barrier.

The Shift Manager / Station Emergency Director judgment threshold addresses any other factors relevant to determining if the Fuel Clad Barrier is potentially lost. Such a determination should include Imminent Barrier Degradation, Barrier Monitoring Capability and Dominant Accident Sequences.

- Imminent Barrier Degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance when any safety function acceptance criteria applicable to the barrier are not met.
- Barrier Monitoring Capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of off-site monitoring results.
- Dominant Accident Sequences lead to degradation of all fission product barriers and likely entry to the Functional Recovery. The Shift Manager / Station Emergency Director should be mindful of the loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

Reactor Coolant System Barrier Loss

1. Critical Safety Function Status

N/A

2. RCS Leak Rate

RCS leak rate greater than available makeup capacity as indicated by a loss of RCS subcooling and evidenced by Core Exit Saturation Margin less than 20°F.

This threshold addresses conditions where leakage from the RCS is greater than available inventory control capacity such that a loss of subcooling has occurred. The Reactor Coolant Leak procedure provides a list of conditions that may be observed when excessive RCS leakage occurs and provides appropriate actions to prevent and mitigate the consequences of RCS leakage. EOIs indicate that if core exit saturation margin is less than 20°F, a loss of RCS subcooling has occurred. Subcooling margin greater than 20°F ensures the fluid surrounding the core is sufficiently cooled and provides margin for reestablishing flow should subcooling deteriorate when SI flow is secured. Voids may exist in some parts of the RCS (e.g., Reactor Vessel head), but are permissible as long as core heat removal is maintained. The loss of subcooling is the fundamental indication that the inventory control systems are inadequate in maintaining RCS pressure and inventory against the mass loss through the leak.

Loss of subcooling as a result of the inability to establish RCS heat transfer to the ultimate heat sink is indicative of Potential Losses of the Fuel Clad and RCS Barriers.

3. S/G Tube Rupture

RUPTURED S/G that results in an ECCS (SI) actuation.

This threshold addresses the full spectrum of Steam Generator Tube Rupture (SGTR) events in conjunction with Containment barrier Loss thresholds. To meet this threshold, the leakage must be large enough to cause actuation of the Emergency Core Cooling System (ECCS) (Safety Injection). This is consistent with RCS Barrier Loss #2 By itself, this EAL will result in the declaration of an Alert.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

However, if the S/G is also FAULTED (i.e., two barriers failed), the declaration escalates to a Site Area Emergency per Containment Barrier Loss #3.

4. Containment Radiation Monitoring

Valid 2(3)RE7820-1(2), Containment High Range Area Radiation Monitor, reading greater than 10 R/hr.

A Containment radiation monitor reading greater than the threshold value indicates the release of reactor coolant to the Containment. The reading assumes the instantaneous release and dispersal of the reactor coolant noble gas and iodine inventory associated with normal operating concentrations (i.e., within Technical Specifications) into the Containment atmosphere. The threshold value is based on dose rates that would result from the release of reactor coolant into Containment at the Technical Specification limit of 1.0 µCi/gm DEI-131 and 100/$\bar{E}$ µCi/gm for non-iodine isotopes as documented in Calculation N-4098-005. The readings are less than those specified for Fuel Clad Barrier Loss #3 because no damage to the fuel clad is assumed. Only leakage from the RCS is assumed for this barrier loss threshold.

Containment radiation is indicated on 2(3)RE7820-1(2). It is important to recognize that the radiation monitors may be sensitive to shine from the Reactor Vessel or RCS piping. Also, these monitor signals may experience errors after a significant increase in Containment temperature or pressure (from a LOCA or ESDE). Industry testing of high range radiation monitor systems has revealed that signal errors or the loss of signal are the result of thermally induced current and/or moisture intrusion into the coaxial connectors. The validity of the readings should be checked in accordance with the appropriate procedures.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

5. Shift Manager / Station Emergency Director Judgment

ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the RCS Barrier.

The Shift Manager / Station Emergency Director judgment threshold addresses any other factors relevant to determining if the RCS Barrier is lost. Such a determination should include Imminent Barrier Degradation, Barrier Monitoring Capability and Dominant Accident Sequences.

- Imminent Barrier Degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance when any safety function acceptance criteria applicable to the barrier are not met.
- Barrier Monitoring Capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of off-site monitoring results.
- Dominant Accident Sequences lead to degradation of all fission product barriers and likely entry to the Functional Recovery. The Shift Manager / Station Emergency Director should be mindful of the loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

Reactor Coolant System Barrier Potential Loss

1. Critical Safety Function Status

A. Uncontrolled RCS cooldown AND RCS temperature and PZR pressure are to left of Appendix E limit line in SO23-12-11, Attachment for Post-Accident Pressure / Temperature Limits

"Uncontrolled" means that the RCS cooldown was not the result of deliberate action performed in accordance with plant procedures and exceeds allowable vessel cooldown limits, resulting in RCS average temperature more than 25°F below the reference temperature. Among the EOI safety functions to be maintained is RCS Pressure Control. The potential exists for Pressurized Thermal Shock (PTS) from an excessive cooldown rate followed by a repressurization.

The post-accident pressure / temperature limit curves and RCS cooldown rate limits are established to prevent the effects of PTS. The combination of the conditions of this Potential Loss threshold indicates the RCS Barrier is under significant challenge. Charging and SI flow can result in excess RCS inventory which may fill the Pressurizer (PZR) to a solid condition, a PTS concern upon RCS heatup, fluid expansion and a subsequent RCS pressure excursion. PTS is a concern when the limits of Appendix E have been exceeded in SO23-12-11, Attachment for Post-Accident Pressure / Temperature Limits. Maximum tensile thermal stresses induced in a Reactor Vessel by a PTS transient event occur near the inner surface of the vessel. Maximum irradiation-induced embrittlement also occurs in material adjacent to the inner surface of the vessel. Flaws located in this region of the vessel are particularly susceptible to crack initiation during a PTS transient. This threatens Reactor Vessel integrity. The extent of the repressurization must be controlled to prevent PTS conditions that could lead to brittle fracture in RCS components. The Appendix E limit line refers to ASME Section XI, Appendix E criteria for uncontrolled transients.

OR

B. RCS Heat Removal safety function acceptance criteria NOT met AND Core Exit Saturation Margin sustained < 20°F AND safety function success path NOT identified following review of Resource Assessment Charts.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

The Steam Generators (S/Gs) provide the normal means of heat transfer from the RCS to the Main Condenser and ultimate heat sink. EOIs require maintenance of S/G heat removal at all times during a LOCA, if at all possible. Once RCS pressure and temperature are reduced, RCS heat removal can be provided by the Shutdown Cooling System. Once the Shutdown Cooling System is placed in service, the S/G heat sink capability is no longer necessary.

A S/G is considered available for RCS heat removal if both of the following criteria are satisfied:

- S/G level is between or is being restored to the normal control band
- The S/G is capable of being supplied with Main or Auxiliary Feedwater flow greater than 200 GPM

If RCS subcooling decreases to near 20°F, the margin to superheated conditions is being reduced. Subcooling margin greater than 20°F ensures the fluid surrounding the core is sufficiently cooled and provides margin for reestablishing flow should subcooling deteriorate when SI flow is secured. Voids may exist in some parts of the RCS (e.g., Reactor Vessel Head), but are permissible as long as core heat removal is maintained.

The combination of these conditions indicates the ultimate heat sink function is under extreme challenge. This threshold addresses loss of functions required for Hot Shutdown with the reactor at pressure and temperature and thus a Potential Loss of the RCS Barrier. This is also a Potential Loss of the Fuel Clad Barrier and therefore results in at least a Site Area Emergency.

2. <u>RCS Leak Rate</u>

RCS leak, including Steam Generator Tube Leak, with leak rate indicated greater than 44 GPM with Letdown isolated.

This threshold is based on the inability to maintain normal liquid inventory within the RCS by normal operation of the Chemical and Volume Control System. Isolating letdown is a standard abnormal operating procedure action and may prevent unnecessary classifications when a non-RCS leakage path such as a CVCS leak

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

exists. The Chemical and Volume Control System includes three positive displacement pumps with a capacity of 44 GPM for each pump. The Pressurizer level control program regulates letdown purification subsystem flow by adjusting the letdown flow control valve so that the Reactor Coolant Pump (RCP) Controlled Bleed-Off plus the letdown flow matches the input from the operating Charging Pump. Equilibrium Pressurizer level conditions may be disturbed due to RCS temperature changes, power changes, or RCS inventory loss due to leakage. A decrease in Pressurizer water level below the programmed level results in a control signal to start one or both standby Charging Pumps to restore water level. The intent of this condition is met if Letdown is isolated in accordance with Abnormal Operating Instructions or attempts to isolate Letdown are NOT successful. The need for a second or third Charging Pump to make up leakage in excess of letdown flow may be indicative of a substantial RCS leak. The single Charging Pump capacity is 44 GPM for this threshold.

3. **S/G Tube Rupture**

   N/A

4. **Containment Radiation Monitoring**

   N/A

5. **Shift Manager / Station Emergency Director Judgment**

   ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the RCS Barrier.

   The Shift Manager / Station Emergency Director judgment threshold addresses any other factors relevant to determining if the RCS Barrier is potentially lost. Such a determination should include Imminent Barrier Degradation, Barrier Monitoring Capability and Dominant Accident Sequences.

   - Imminent Barrier Degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance when any safety function acceptance criteria applicable to the barrier are not met.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

- Barrier Monitoring Capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of off-site monitoring results.
- Dominant Accident Sequences lead to degradation of all fission product barriers and likely entry to the Functional Recovery. The Shift Manager / Station Emergency Director should be mindful of the loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

Containment Barrier Loss

1. Containment Pressure

A. A Containment pressure rise followed by a rapid unexplained drop in Containment pressure.

Rapid unexplained loss of pressure (i.e., not attributable to Containment Spray operation, running Containment Cooling Units or condensation effects) following an initial pressure rise indicates a loss of Containment integrity. UFSAR Section 6 describes Containment pressure response for LOCA events.

OR

B. Containment pressure or Sump level response NOT consistent with LOCA conditions.

This threshold addresses unexpected changes occurring in Containment pressure or sump level that are not explainable due to operator actions or automatic system actions. Containment pressure and sump levels should rise as a result of the mass and energy release into Containment from a LOCA. Thus, sump level or Containment pressure not rising from an identified high energy steam release inside of Containment indicates Containment bypass and a loss of Containment integrity. UFSAR Section 6 describes Containment pressure response for LOCA events.

2. Core Exit Thermocouple Readings

N/A

3. S/G Secondary Side Release with Primary-to-Secondary Leakage

A. RUPTURED S/G is also FAULTED outside of Containment.

Steam Generator (S/G) tube leakage can represent a bypass of the Containment Barrier as well as a Loss of the RCS Barrier. This threshold addresses the condition in which a RUPTURED S/G is also FAULTED and represents a bypass of the RCS and Containment Barriers. A faulted S/G means the existence of secondary side leakage that results in an uncontrolled lowering in S/G pressure or the S/G being completely depressurized. A ruptured S/G means the existence of primary-to-secondary leakage of a magnitude sufficient to require or cause a reactor trip and safety injection. In conjunction with RCS Barrier Loss #2, this threshold would always result in the declaration of a Site Area Emergency.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

OR

B. Primary-to-secondary leak rate greater than 10 GPM AND UNISOLABLE steam release from affected S/G to the environment.

Steam Generator (S/G) tube leakage can represent a bypass of the Containment Barrier as well as a Loss of the RCS Barrier. In conjunction with RCS Barrier Loss #2, this would always result in the declaration of a Site Area Emergency.

The threshold for establishing the UNISOLABLE secondary side release is intended to be a prolonged release of radioactivity from the RUPTURED (affected) S/G directly to the environment. This could be expected to occur when the Main Condenser is unavailable to accept the contaminated steam (i.e., SGTR with concurrent loss of off-site power and the RUPTURED S/G is required for plant cooldown or has a stuck open relief valve). If the Main Condenser is available, there may be releases through the Air Ejectors, Gland Seal Exhausters and other similarly controlled and monitored pathways. These pathways do not meet the intent of an UNISOLABLE release path to the environment. These minor releases are assessed using radiological effluent EAL thresholds. However, a continuing steam release due to operation of the Turbine-Driven Auxiliary Feedwater Pump, P-140, (aligned to the ruptured S/G) or Atmospheric Dump Valves is considered non-isolable since contaminated steam is being released directly to atmosphere.

A pressure boundary leakage of 10 GPM is also used as the threshold in RCS Leakage EAL SU5.1. For smaller breaks, not exceeding the normal charging capacity threshold in RCS Barrier Potential Loss #2 or not resulting in ECCS actuation in RCS Barrier Loss #2, this threshold results in the declaration of a Notification of Unusual Event. For larger breaks, RCS Barrier Potential Loss #2 and RCS Barrier Loss #2 would result in an Alert. For SGTRs which may involve more than one S/G or unisolable secondary line breaks, this threshold would occur in conjunction with RCS Barrier Loss #2 and would result in a Site Area Emergency. Escalation to General Emergency would be based on the Potential Loss of the Fuel Clad Barrier.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

There is some redundancy in the Containment Loss thresholds #3 and #4. This was recognized during the NEI EAL development process.

4. Containment Isolation Failure or Bypass

Failure of all Containment Isolation valves in any one line to close AND direct downstream pathway to the environment exists after Containment Isolation Actuation Signal

This threshold addresses incomplete Containment isolation that allows direct release to the environment. It represents a loss of the Containment Barrier. Failure of Containment isolation or Containment ventilation isolation valves to isolate when required addresses incomplete Containment isolation that allows direct release to the environment.

5. Containment Radiation Monitoring

N/A

6. Shift Manager / Station Emergency Director Judgment

ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Loss of the Containment Barrier.

The Shift Manager / Station Emergency Director judgment threshold addresses any other factors relevant to determining if the Containment Barrier is lost. Such a determination should include Imminent Barrier Degradation, Barrier Monitoring Capability and Dominant Accident Sequences.

- Imminent Barrier Degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance when any safety function acceptance criteria applicable to the barrier are not met.
- Barrier Monitoring Capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of off-site monitoring results.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

- Dominant Accident Sequences lead to degradation of all fission product barriers and likely entry to the Functional Recovery. The Shift Manager / Station Emergency Director should be mindful of the loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

Containment Barrier Potential Loss

1. Containment Pressure

A. Containment pressure greater than 60 PSIG and rising.

This threshold is the Containment design pressure and is in excess of that expected from the design basis Loss of Coolant Accident (LOCA). Proper actuation and operation of the Containment Spray System and/or Containment Emergency Cooling System when required should maintain Containment pressure well below the design pressure. The Containment response for the spectrum of LOCAs considered in the plant design basis is described in Section 6 of the UFSAR. The threshold is therefore indicative of a Loss of both RCS and Fuel Clad Barriers in that it should not be reached without severe core degradation (metal-water reaction) or failure to trip in combination with RCS breach. This condition would be expected to require the declaration of a General Emergency.

OR

B. Explosive mixture exists inside Containment.

During and following a LOCA, the hydrogen concentration in the Containment results from radiolytic decomposition of water, metal-water reaction and aluminum-zinc reaction with the spray solution. If hydrogen concentration reaches or exceeds the lower flammability limit (4%) in an oxygen-rich environment, a potentially explosive mixture exists. This condition can be determined by sampling and/or using the Containment Hydrogen Monitors (note that operability is not required in Mode 4 and harsh environmental conditions inside Containment may cause the monitors to decalibrate, requiring a calibration check per the appropriate procedures). If the combustible mixture ignites inside Containment, Loss of the Containment Barrier could occur. To generate such levels of combustible gas, Loss of the Fuel Clad and RCS Barriers must also have occurred. Since this threshold is also indicative of Loss of both Fuel Clad and RCS Barriers with the Potential Loss of the Containment Barrier, it therefore will likely warrant declaration of a General Emergency.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

C. Containment pressure greater than 14 PSIG AND less than one full train of depressurization equipment operating.

This threshold represents a Potential Loss of the Containment Barrier because the Containment heat removal and depressurization equipment (but not including Containment venting strategies) is either lost or degraded, as indicated by Containment pressure greater than the setpoint at which the equipment was supposed to have actuated. The Containment Spray System and the Containment Emergency Heating, Ventilation, and Air Conditioning (HVAC) System are designed to rapidly reduce the Containment temperature and pressure and to maintain these parameters at acceptably low levels. These cooling systems also serve to limit off-site radiation levels by reducing the pressure differential between the Containment atmosphere and the external environment. The heat removal capacity of the systems is sufficient to keep the Containment pressure and temperature below design conditions for any size break in the RCS piping. Either the Containment Spray System (CSS) or the Emergency HVAC System can provide 100% heat removal capacity following a LOCA. Each train of the CSS (consisting of one Spray Pump and one Shutdown Cooling Heat Exchanger with flow greater than 1,600 GPM per train), and of the Containment Emergency Cooling Subsystem, (consisting of two Fan Cooler Units per train), is designed for 50% of the required heat removal rate. The Containment pressure setpoint (14 PSIG) is the pressure at which spray flow is automatically initiated.

2. <u>Core Exit Thermocouple Readings</u>

A. REP CET greater than 1,200°F AND restoration procedures <u>NOT</u> effective within 15 minutes.

This threshold indicates significant core exit superheating and core uncovery. If Representative (REP) Core Exit Thermocouple (CET) readings are greater than 1,200°F, the Fuel Clad Barrier is lost. CETs provide an indirect indication of fuel clad temperature by measuring the temperature of the primary coolant that leaves the core region. Although clad rupture due to high temperature is not expected for CET readings less than the threshold, temperatures of this magnitude signal significant superheating of the reactor coolant and core uncovery. Events that

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

result in CET readings above the loss threshold are severe accidents and are a Severe Accident Management Guideline "Badly Damaged" condition. The Badly Damaged descriptor signifies possible core overheating to the point that clad ballooning / collapse may occur and portions of the core may have melted.

It must also be assumed the loss of RCS inventory is a result of a loss of the RCS Barrier. These conditions, if not mitigated, can lead to core melt which in turn may result in a loss of Containment. Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation within the Reactor Vessel in a significant fraction of the core damage scenarios, and the likelihood of Containment failure is very small in these events. Given this, it is appropriate to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. The 15-minute period allows implementation of procedural guidance to restore RCS inventory. The Shift Manager / Station Emergency Director should make the declaration as soon as it is determined the guidance has not been or will not be effective in restoring temperature below the threshold.

OR

B. ALL of the following:

- **REP CET greater than 700°F**
- **RVLMS HJTC #8 uncovered**
- **Restoration procedures NOT effective within 15 minutes**

This threshold indicates loss of inventory control resulting in significant core exit superheating. An actual steam temperature of 700°F in the core exit region is an indication that the core is uncovered. The primary safety valves will limit the primary system saturation temperature to 668°F, which corresponds to 2,500 PSIA. The value of 700°F physically corresponds to a superheated thermodynamic condition that can only result from core uncovery. It also corresponds to the water critical point (705°F), the point above which water can no longer exist in the liquid phase.

The Reactor Vessel Level Monitoring System (RVLMS) is based on the C-E Heated Junction Thermocouple (HJTC) system. The HJTC system measures reactor

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

coolant liquid inventory with discrete HJTC sensors located at different levels within a separator tube ranging from the Fuel Alignment Plate (i.e., near top of active fuel) to the top of the Reactor Vessel Head. The basic principle of system operation is detection of a temperature difference between heated and unheated thermocouples. RVLMS HJTC #8 is the lowest RVLMS sensor and is located approximately 32 in. above the top of the fuel (27 ft. 5.5 in. el.).

Reactor Vessel water level approaching the top of the core may lead to a Severe Accident Management Guideline "Badly Damaged" condition. The Badly Damaged descriptor signifies possible core overheating to the point of clad ballooning / collapse and melting. Indication that Reactor Vessel inventory has dropped below the lowest RVLMS sensor, therefore, signals inadequate coolant inventory, loss of subcooling and the occurrence of possible fuel clad damage.

It must also be assumed the loss of RCS inventory is a result of a loss of the RCS Barrier. These conditions, if not mitigated, likely lead to core melt which in turn may result in a loss of Containment. Severe accident analyses (e.g., NUREG-1150) have concluded that function restoration procedures can arrest core degradation within the Reactor Vessel in a significant fraction of the core damage scenarios, and that the likelihood of Containment failure is very small in these events. Given this, it is appropriate to provide a reasonable period to allow function restoration procedures to arrest the core melt sequence. The 15-minute period allows procedural guidance to restore RCS inventory. The Shift Manager / Station Emergency Director should make the declaration as soon as it is determined that the guidance has not been or will not be effective in restoring vessel water level above the threshold.

3. **S/G Secondary Side Release with Primary-to-Secondary Leakage**

   N/A

4. **Containment Isolation Failure or Bypass**

   N/A

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

5. Containment Radiation Monitoring

Valid 2(3)RE7820-1(2), Containment High Range Area Radiation Monitor, reading greater than 40,000 R/hr.

A Containment radiation monitor reading greater than the threshold value indicates significant fuel damage well in excess of that required for loss of the Fuel Clad and RCS Barriers. NUREG-1228 "Source Estimations During Incident Response to Severe Nuclear Power Plant Accidents" states that such readings do not exist when the amount of clad damage is less than 20%. A major release of radioactivity requiring off-site protective actions from core damage is not possible unless a major failure into the reactor coolant has occurred. Regardless of whether the Containment Barrier itself is challenged, this amount of activity in Containment, if released, could have severe consequences. It is, therefore, prudent to treat this as a Potential Loss of the Containment Barrier, such that a General Emergency declaration is warranted. The threshold value is based on 20% clad damage as documented in Calculation N-4098-005. The value is higher than that specified for Fuel Clad Barrier Loss #3 and RCS Barrier Loss #3. Containment radiation readings at or above the Containment Barrier Potential Loss threshold, therefore, signifies a Loss of two Fission Product Barriers and Potential Loss of a third, indicating the need to upgrade the emergency classification to a General Emergency.

Containment radiation is indicated on 2(3)RE7820-1(2). It is important to recognize that the radiation monitors may be sensitive to shine from the Reactor Vessel or RCS piping. Also, these monitor signals may experience errors after a significant increase in Containment temperature or pressure (from a LOCA or ESDE). Industry testing of high range radiation monitor systems has revealed that signal errors or the loss of signal are the result of thermally induced current and/or moisture intrusion into the coaxial connectors. The validity of the readings should be checked in accordance with the appropriate procedures.

5.4.1 Fission Product Barrier Loss / Potential Loss Bases

6. Shift Manager / Station Emergency Director Judgment

ANY condition in the opinion of the Shift Manager / Station Emergency Director that indicates Potential Loss of the Containment Barrier.

The Shift Manager / Station Emergency Director judgment threshold addresses any other factors relevant to determining if the Containment Barrier is potentially lost. Such a determination should include Imminent Barrier Degradation, Barrier Monitoring Capability and Dominant Accident Sequences.

- Imminent Barrier Degradation exists if the degradation will likely occur within two hours based on a projection of current safety system performance when any safety function acceptance criteria applicable to the barrier are not met.
- Barrier Monitoring Capability is decreased if there is a loss or lack of reliable indicators. This assessment should include instrumentation operability concerns, readings from portable instrumentation and consideration of off-site monitoring results.
- Dominant Accident Sequences lead to degradation of all fission product barriers and likely entry to the Functional Recovery. The Shift Manager / Station Emergency Director should be mindful of the loss of AC power (Station Blackout) and ATWS EALs to assure timely emergency classification declarations.

SECTION 5.5 - CATEGORY H – HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Hazards are non-plant, system-related events that can directly or indirectly affect plant operation, reactor plant safety or personnel safety.

The events of this category pertain to:

Natural / Destructive Events

Natural events include high winds, earthquakes or floods that have potential to cause plant structure or equipment damage of sufficient magnitude to threaten personnel or plant safety. Non-naturally occurring events can cause damage to plant facilities and include vehicle crashes, missile impacts, etc.

Fire or Explosion

Fires or explosions can pose significant hazards to personnel and reactor safety. Appropriate for classification are fires or explosions within the Units 2/3 PROTECTED AREA which may affect permanent structures or operability of vital equipment.

Toxic or Flammable Gas

Non-naturally occurring events that can cause damage to plant facilities and include toxic or flammable gas leaks.

Security Events

Unauthorized entry attempts into a PROTECTED AREA or VITAL AREA, bomb threats, sabotage attempts, aircraft attack threats, hostile actions and other security events threatening the safety of plant personnel or equipment or loss of control of plant equipment needed for maintaining safety functions.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Control Room Evacuation

Events that are indicative of loss of Control Room habitability. If the Control Room must be evacuated, additional support for monitoring and controlling plant functions is necessary through the emergency response facilities.

Judgment

The EALs defined in other categories specify the predetermined symptoms or events that are indicative of emergency or potential emergency conditions and thus warrant classification. While these EALs have been developed to address the full spectrum of possible emergency conditions which may warrant classification and subsequent implementation of the Emergency Plan, a provision for classification of emergencies based on operator / management experience and judgment is still necessary. The EALs of this category provide the Shift Manager / Station Emergency Director the latitude to classify emergency conditions consistent with the established classification criteria based upon their judgment.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HU1] Natural or Destructive Phenomena Affecting Units 2/3 PROTECTED AREA.

Mode Applicability: All

Emergency Action Level:

HU1.1 Notification of Unusual Event

Seismic event identified by **ANY TWO** of the following:

- Seismic event confirmed by Control Room Annunciator 2UA0061C21, "Seismic Recording System Activated"
- Earthquake felt in plant
- National Earthquake Information Center confirmation

Basis:

The method of detection with respect to emergency classification relies on the agreement of the operators on-duty in the Control Room that the suspected ground motion is a "felt earthquake". As defined in the EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake", dated October 1989, a "felt earthquake" is:

> "An earthquake of sufficient intensity such that: (a) the vibratory ground motion is felt at the nuclear plant site and recognized as an earthquake based on a consensus of Control Room Operators on duty at the time, and (b) for plants with operable seismic instrumentation, the seismic switches of the plant are activated. For most plants with seismic instrumentation, the seismic switches are set at an acceleration of about 0.01g."

Activation of the digital trigger from any of three accelerometers causes audible and visual annunciation in the Control Room to alert the operators that an earthquake has occurred. Audible and visual annunciators are provided on Seismic Event Cabinet L-167 and the Main Control Board annunciator panel in Unit 2 to indicate if OBE accelerations have been exceeded at the Containment foundation or at the Containment operating deck. An alarm, "OPERATING BASIS EARTHQUAKE DETECTED," is also initiated at Control Room annunciator window 2UA0061C22 when this occurs. Additionally, this panel also contains a light for indicating that the strong motion accelerographs have been activated and an alarm, "SEISMIC RECORDING SYSTEM ACTIVATED," is initiated at Control Room

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

annunciator window 2UA0061C21. This annunciation is set to occur at 0.019g horizontal acceleration on the Containment operating floor. The declaration of the seismic NOUE EAL is based upon identification of any two of the three possible initiating events and should not be delayed pending the analysis of seismic instrumentation.

Damage to some portions of the site may occur as a result of the felt earthquake, but it should not affect the ability of safety functions to operate. The National Earthquake Information Center can confirm if an earthquake has occurred in the area of the plant.

This event escalates to an Alert under EAL HA1.1 if the earthquake exceeds Operating Basis Earthquake (OBE) levels.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HU1] Natural or Destructive Phenomena Affecting Units 2/3 PROTECTED AREA.

Mode Applicability: All

Emergency Action Level:

HU1.2 Notification of Unusual Event
Tornado striking within Units 2/3 PROTECTED AREA or high winds greater than 100 MPH

Basis:

This EAL is based on the assumption that a tornado striking (touching down) or design force winds (greater than 100 MPH) within the Units 2/3 PROTECTED AREA may have potentially damaged plant structures containing functions or systems required for safe shutdown of the plant. Escalation of this emergency classification level would be based on VISIBLE DAMAGE, or by other in-plant conditions, via Alert EAL HA1.2.

The wind speed sensors on the meteorological towers have an operating range of 0 – 125 MPH. Displays on CFMS and RADDOSE-V indicate from 0.5 – 125 MPH. The real-time indication DDR10 chart recorder and display in the Control Room hallway are limited to 0 – 50 MPH. The meteorological towers are located in the OWNER CONTROLLED AREA but are used as indication for conditions within the PROTECTED AREA.

The highest wind speed in the vicinity of the San Onofre site based on a recurrent interval of at least 100 years is approximately 90 MPH. However, all structures are designed to withstand a basic wind speed of 100 MPH. This EAL is based on the design basis wind speed of 100 MPH. The Units 2/3 PROTECTED AREA is within the security isolation zone and is depicted on Drawing 21090, Vehicle Barrier System Plot Plan.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HU1] Natural or Destructive Phenomena Affecting Units 2/3 PROTECTED AREA.

Mode Applicability: All

Emergency Action Level:

HU1.3 Notification of Unusual Event

Internal flooding that has the potential to affect safety-related equipment required by Technical Specifications for the current operating mode in **ANY** of the following areas:

- Units 2/3 Intake Structure
- Unit 2(3) Turbine Building Condenser and Main Feedwater Pump Area (7 ft. el.)

Basis:

This EAL addresses the effect of flooding caused by internal events (e.g., component failures, circulating water, component cooling or service water line ruptures, equipment misalignment, fire suppression system actuation, outage activity mishaps, etc.) that results in the potential to affect safety related equipment. Uncontrolled internal flooding that degrades safety-related equipment or creates a safety hazard precluding access necessary for the safe operation or monitoring of safety equipment warrants escalation to an Alert emergency classification under EAL HA1.3. The internal flooding areas are important drainage areas and typically contain systems that are:

- Required for safe shutdown of the plant
- Not designed to be wetted or submerged
- Susceptible to internal flooding events

SONGS analysis of internal flooding has eliminated all but the following areas:

- Units 2/3 Intake Structure – This area includes the Circulating Water Pumps (P-115, 116, 117 and 118), Saltwater Cooling Pumps (P-112, 113, 114 and 307), Screen Wash Pumps (P-126 and 127) and associated components. This event is extensively reviewed in the flood analysis in the SONGS 2/3 UFSAR Section 10.4.5, Circulating Water System. Given that the pumps in this area represent an infinite flood source, it can be postulated that failure of one of the lines or the pumps could

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

easily flood this area. This could generate a plant trip and potentially cause loss of the ultimate heat sink.

- Unit 2(3) Turbine Building Condenser and Main Feedwater Area (7 ft. el.) – Although the applicable flood zone encompasses the entire Turbine Building and contains the Condensers, Condensate Pumps, Vacuum Pumps, associated auxiliaries and Main Feedwater Pumps, flooding above 9 ft. el. is not expected. A flood in this area can result in loss of the Condensate or Main Feedwater Pumps or associated components (i.e., MCCs). It can be postulated that a flood would occur due to failure of the Condenser expansion joints, failure of the Condenser structure, loss of seals associated with the piping leading to or from the Condenser and/or failure of pumping components associated with feedwater flow or heater drains.

Escalation of this emergency classification level, if appropriate, would be based upon internal flooding or Control Room indication of degraded performance of safety systems via EAL HA1.3.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HU1] Natural or Destructive Phenomena Affecting Units 2/3 PROTECTED AREA.

Mode Applicability: All

Emergency Action Level:

HU1.4 Notification of Unusual Event
Turbine failure resulting in casing penetration or damage to Turbine or Generator Seals

Basis:

This EAL addresses Main Turbine rotating component failures of sufficient magnitude to cause observable damage to the Turbine Casing or to the seals of the Turbine Generator. Of major concern is the potential for significant leakage of combustible fluids (lubricating oils) and gases (hydrogen cooling) to the plant environs. Actual fires and flammable gas buildup are appropriately classified via ICs HU2 and HU3. Generator seal damage observed after generator purge does not meet the intent of this EAL because it did not impact normal operation of the plant. This EAL is consistent with the definition of a Notification of Unusual Event while maintaining the anticipatory nature desired and recognizing the risk to non-safety related equipment. Escalation of this classification is based on potential damage done by projectiles generated in conjunction with a Steam Generator Tube Rupture. This event would be classified by the Fission Product Barrier ICs.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HU1] Natural or Destructive Phenomena Affecting Units 2/3 PROTECTED AREA.

Mode Applicability: All

Emergency Action Level:

HU1.5 Notification of Unusual Event

Severe weather affecting the Units 2/3 PROTECTED AREA as indicated by **ANY** of the following:

- Tsunami warning with predicted wave height greater than +30 ft. MLLW level
- Rainfall greater than 6 inches in a 3 hour period
- Site is predicted to experience a hurricane with sustained wind speed greater than 73 MPH in less than or equal to 12 hours as projected by the National Weather Service

Basis:

This EAL addresses high ocean water level, flash flood conditions, and hurricanes that can also be precursors of more serious events and which may threaten operability of plant cooling systems. Mean Lower Low Water (MLLW) levels of the magnitude given in this EAL may threaten the seawall and require plant shutdown.

The Alaska Tsunami Warning Center has responsibility for issuing tsunami watches / warnings for the west coast of North America. The National Weather Service transmits information for tsunamis and projected hurricanes over the NOAA Weather Wire and newswire services. The National Weather Service can be used to confirm or update tsunami, hurricane, and flash flood information. Tide levels may be obtained from tide charts in the Shift Manager office or by contacting the Camp Pendleton Base Weather Service.

Flood protection of safety-related systems and components is provided for all postulated flood levels and conditions described in Section 2.4 of the UFSAR. The maximum design basis flood level used in the initial design of plant structures was elevation +30.5 ft. MLLW level. Subsequent hydrological analyses determined that the maximum postulated flood level in the Unit 2 and 3 power block is below elevation +31.0 ft. MLLW level as shown on UFSAR Figure 2.4-13. This flood level is based on the 12.25-inch, 6-hour thunderstorm Probable Maximum Precipitation.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

SONGS procedures use +30 ft. MLLW level as the level at which the seawall would be challenged.

Plant procedures initiate a "Hurricane Watch" when basis sustained wind speed is expected to exceed 73 MPH (an expected severity Category 1 or higher hurricane). Plant procedures initiate a "Flash Flood Watch or Warning" when greater than 6 inches of rain have fallen in a three hour period. Restoration of Important-to-Safety Systems and components should be expedited, if possible, to ensure Operability or functional operability of safety equipment if severe weather conditions worsen. This EAL can escalate to an Alert if severe weather results in damage to VITAL AREAS and/or Safe Shutdown Areas.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Fire or Explosion

Initiating Condition: [HU2] FIRE Within Units 2/3 PROTECTED AREA Not Extinguished Within 15 Minutes of Detection Or EXPLOSION within the Units 2/3 PROTECTED AREA.

Mode Applicability: All

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the duration has exceeded, or will likely exceed, the applicable time.

HU2.1 Notification of Unusual Event

FIRE **NOT** extinguished **within** 15 minutes of Control Room notification or verification of a Control Room FIRE alarm in buildings in actual contact or immediately adjacent to **ANY** Table H-1 Area

[Refer to HS4.1 if fire was due to hostile act]

Table H-1 – Vital Areas and Safe Shutdown Areas
2/3 Control Building
2(3) Containment
2/3 Radwaste Building, except for 68 ft. el. (Locker Room, Hot Tool Crib, Laundry Facility, Dress-out Area)
2(3) Fuel Handling Building
2(3) Safety Equipment Building
2(3) Penetration Building
2(3) Electrical & Piping Tunnels
2(3) MSIV Area & Tank Building
2(3) Salt Water Cooling Pump Rooms
2/3 Intake Structure
2(3) Diesel Generator Building & Diesel Fuel Storage Vaults
2(3) Turbine Building, except for Main Lube Oil Room, FFCPD and 70 ft. el. Turbine Deck
2(3) Yard Area (i.e., Condensate Transfer Pump 2(3) MP049 areas and exterior areas of Condensate Storage Tank 2(3) T-120 and 2(3) T-121 Enclosures)

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Basis:

This EAL addresses the magnitude and extent of FIRES that may be potentially significant precursors of damage to safety systems. It addresses the FIRE, and not the degradation in performance of affected safety systems that may result. The 15 minute time period begins with a credible notification that a FIRE is occurring, or indication of a fire detection system alarm/actuation. Verification of a fire detection system alarm/actuation includes actions that can be taken within the control room or other nearby site specific location to ensure that it is not spurious. An alarm is assumed to be an indication of a FIRE unless it is disproved within the 15 minute period by personnel dispatched to the scene. In other words, a personnel report from the scene may be used to disprove a sensor alarm if received within 15 minutes of the alarm, but shall not be required to verify the alarm.

As used here, detection is visual observation and report by plant personnel or sensor alarm indication.

The intent of the 15-minute period is to size the fire and discriminate against small fires that are readily extinguished (e.g., smoldering waste paper basket). The list applies to buildings and areas in actual contact with or immediately adjacent to VITAL AREAS or Safe Shutdown Areas. The intent of this IC is not to include buildings or areas that are not in actual contact with or immediately adjacent to VITAL AREAS or Safe Shutdown Areas. This excludes FIRES within administration buildings, waste-basket FIRES, and other small FIRES of no safety consequence. Immediately adjacent implies that the area immediately adjacent contains or may contain equipment or cabling that could impact equipment located in VITAL AREAS or Safe Shutdown Areas or the fire could damage equipment inside VITAL AREAS or Safe Shutdown Areas or that precludes access to VITAL AREAS or Safe Shutdown Areas.

Notification that the fire is extinguished must come from the Fire Incident Commander per the appropriate procedures.

EAL HA2.1 provides escalation to the Alert classification. If the fire is determined to be hostile in nature, the event would be classified under EAL HS4.1.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Fire or Explosion

Initiating Condition: [HU2] FIRE Within Units 2/3 PROTECTED AREA Not Extinguished Within 15 Minutes of Detection Or EXPLOSION within the Units 2/3 PROTECTED AREA.

Mode Applicability: All

Emergency Action Level:

HU2.2 Notification of Unusual Event
EXPLOSION within the Units 2/3 PROTECTED AREA with reports of evidence of VISIBLE DAMAGE to permanent structures or equipment **[Refer to HS4.1 if explosion was due to hostile act]**

Basis:

This EAL addresses the magnitude and extent of EXPLOSIONS that may be potentially significant precursors of damage to safety systems. It addresses the EXPLOSION, and not the degradation in performance of affected systems that may result.

This EAL addresses only those EXPLOSIONS of sufficient force to damage permanent structures or equipment within the PROTECTED AREA.

For this EAL, only those unanticipated explosions within the Units 2/3 PROTECTED AREA should be considered. As used here, an explosion is a rapid, violent, unconfined combustion or a catastrophic failure of pressurized equipment that potentially imparts significant energy to nearby structures and materials. No attempt is made in this EAL to assess the actual magnitude of the damage. The occurrence of the explosion with reports of evidence of VISIBLE DAMAGE (e.g., deformation, scorching, etc.) is sufficient for declaration. The Shift Manager / Station Emergency Director also needs to consider any security aspects of the explosion. Escalation of this emergency classification level, if appropriate, would be based on HA2. If the explosion is determined to be hostile in nature, the event would be classified under EAL HS4.1.

A steam line break or steam explosion that damages **surrounding** permanent structures or equipment would be classified under this EAL. This does not mean the emergency is classified simply because the steam line break occurred. The method of damage is not as important as the degradation of plant structures or equipment. The need to classify the

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

steam line break itself is considered in Fission Product Barrier degradation monitoring (Category F EALs).

The Units 2/3 PROTECTED AREA is within the security isolation zone and is depicted on Drawing 21090, Vehicle Barrier System Plot Plan.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Toxic or Flammable Gas

Initiating Condition: [HU3] Release of Toxic, Corrosive, Asphyxiant, or Flammable Gases Deemed Detrimental To NORMAL PLANT OPERATIONS.

Mode Applicability: All

Emergency Action Level:

HU3.1 Notification of Unusual Event
Toxic, corrosive, asphyxiant or flammable gases in amounts that have or could adversely affect NORMAL PLANT OPERATIONS

Basis:

This EAL is based on the release of toxic, corrosive, asphyxiant or flammable gases of sufficient quantity to affect NORMAL PLANT OPERATIONS.

The fact that SCBA may be worn does not eliminate the need to declare the event.

This IC is not intended to require significant assessment or quantification. It assumes an uncontrolled process that has the potential to affect plant operations. This would preclude small or incidental releases, or releases that do not impact structures needed for plant operation.

An asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by merely displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19%, which can lead to breathing difficulties, unconsciousness or even death.

Escalation of this emergency classification level, if appropriate, would be based on HA3.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Toxic or Flammable Gas

Initiating Condition: [HU3] Release of Toxic, Corrosive, Asphyxiant or Flammable Gases Deemed Detrimental To NORMAL PLANT OPERATIONS.

Mode Applicability: All

Emergency Action Level:

HU3.2 Notification of Unusual Event
Report by local, county, state, or federal officials for evacuation or sheltering of site personnel based on an off-site event

Basis:

This EAL is based on the release of toxic, corrosive, asphyxiant or flammable gases of sufficient quantity to affect NORMAL PLANT OPERATIONS.

The fact that SCBA may be worn does not eliminate the need to declare the event.

This IC is not intended to require significant assessment or quantification. It assumes an uncontrolled process that has the potential to affect plant operations. This would preclude small or incidental releases, or releases that do not impact structures needed for plant operation.

An asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by merely displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19%, which can lead to breathing difficulties, unconsciousness or even death.

Escalation of this emergency classification level, if appropriate, would be based on HA3.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Security Events

Initiating Condition: [HU4] Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant.

Mode Applicability: All

Emergency Action Level:

HU4.1 Notification of Unusual Event
A SECURITY CONDITION that does **NOT** involve a HOSTILE ACTION as reported by site Security Supervision

Basis:

NOTE: Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

Security events which do not represent a potential degradation in the level of safety of the plant are reported under 10 CFR 73.71 or in some cases under 10 CFR 50.72. Security events assessed as HOSTILE ACTIONS are classifiable under HA4, HS4, and HG1.

A higher initial classification could be made based upon the nature and timing of the security threat and potential consequences. The licensee shall consider upgrading the emergency response status and emergency classification level in accordance with the Safeguards Contingency Plan and Emergency Plan.

Reference is made to site specific security shift supervision because these individuals are the designated personnel on-site who are qualified and trained to confirm that a security event is occurring or has occurred. Training on security event classification confirmation is closely controlled due to the strict secrecy controls placed on the plant Safeguards Contingency Plan.

This threshold is based on site specific security plans. Site specific Safeguards Contingency Plans are based on guidance provided by NEI 03-12.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Security Events

Initiating Condition: [HU4] Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant.

Mode Applicability: All

Emergency Action Level:

HU4.2 Notification of Unusual Event
A credible site-specific security threat notification

Basis:

NOTE: Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

The intent of the EAL is to ensure that appropriate notifications for the security threat are made in a timely manner. The SONGS Safeguards Contingency Plan (SCP) provides a description of security events indicative of a potential loss of the level of safety of the plant. Events at the Notification of Unusual Event level include credible threats to attack or use a bomb against the plant, or involve extortion, coercion or hostage threats. Threats under this EAL include the following Security event categories:

NOTE: DO NOT revise this Technical Basis Document to add any identifying information to any Security Event codes, and do not remove this note.

- SE-1A, SE-2A, SE-10, SE-16A, SE-17, SE-18A, SE-19A, SE-20,
- **NOTE** : A threat involving the use of aircraft is addressed by EAL HU4.3 or HA4.2.

Threat information may come from various sources, including the NRC or FBI. Only the plant to which the specific threat is made need declare the Notification of Unusual Event. Guidance in these instances should be provided directly by SONGS security personnel and their sources. A higher initial classification could be made based upon the nature and timing of the threat and potential consequences. Consideration shall be given to upgrading the emergency response in accordance with the SONGS SCP and Emergency Plan.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Other security events or conditions that do not conform to one of the events described in the EALs may be classified under EAL HU5.1 based on Shift Manager / Station Emergency Director judgment.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Security Events

Initiating Condition: [HU4] Confirmed SECURITY CONDITION or Threat Which Indicates a Potential Degradation in the Level of Safety of the Plant.

Mode Applicability: All

Emergency Action Level:

HU4.3 Notification of Unusual Event
A validated notification of an aircraft threat greater than 30 minutes away

Basis:

NOTE: Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

The intent of this EAL is to ensure that notifications for the aircraft threat are made in a timely manner and that Off-site Response Organizations (OROs) and plant personnel are at a state of heightened awareness regarding the threat. Only the plant to which the specific threat is made need declare the Notification of Unusual Event. This EAL is met when the plant receives information regarding an aircraft threat from the NRC or other reliable source, such as the FBI, FAA, or NORAD, and the aircraft is more than 30 minutes away from the plant. It is not the intent of this EAL to replace existing non-hostile related EALs involving aircraft.

A higher initial classification could be made based upon the nature and timing of the threat and potential consequences. Consideration shall be given to upgrading the emergency response status and emergency classification in accordance with the SONGS SCP and Emergency Plan. If the aircraft threat is 30 minutes or less away, or the time to impact is unknown, then the event should be classified under EAL HA4.2. Other security events or conditions that do not conform to one of the events described in the SCP may be classified under EAL HU5.1 based on Shift Manager / Station Emergency Director judgment.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Judgment

Initiating Condition: [HU5] Other Conditions Exist Which in the Judgment of the Shift Manager / Station Emergency Director Warrant Declaration of a Notification of Unusual Event.

Mode Applicability: All

Emergency Action Level:

HU5.1 Notification of Unusual Event

Other conditions exist which in the judgment of the Shift Manager / Station Emergency Director indicate that events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere, but that warrant declaration of an emergency because conditions exist which are believed by the Shift Manager / Station Emergency Director to fall under the Notification of Unusual Event emergency class.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HA1] Natural or Destructive Phenomena Affecting VITAL AREAS.

Mode Applicability: All

Emergency Action Level:

HA1.1 Alert

Seismic event greater than Operating Basis Earthquake (OBE) as indicated by Control Room annunciator 2UA0061C22, "Operating Basis Earthquake Detected"

AND

Earthquake confirmed by **ANY** of the following:

- Earthquake felt in plant
- National Earthquake Information Center confirmation
- Control Room indication of degraded performance of systems required for the safe shutdown of the plant

Basis:

Seismic events of this magnitude can result in a VITAL AREA or Safe Shutdown Area being subjected to forces beyond design limits, and thus damage may be assumed to have occurred to plant safety systems. This EAL escalates from HU1.1 in that the occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control room indications of degraded safety system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded safety system response is intended to discriminate against lesser events. The initial report should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual extent of the damage. The significance here is not that a particular safety system or structure was damaged, but rather, that the event was of sufficient magnitude to cause this degradation.

The Seismic Monitoring System generates a reactor trip if the seismic event exceeds 60% of the Design Basis Earthquake and provides Control Room alarms when a seismic event occurs as sensed at the Containment base slab or the Containment S/G base support. The sensors and instruments are designed to function during seismic events including the

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Operating Basis Earthquake (OBE). The declaration of this EAL should not be delayed pending the analysis of seismic instrumentation.

The National Earthquake Information Center can confirm if an earthquake has occurred in the area of the plant.

EPRI-sponsored "Guidelines for Nuclear Plant Response to an Earthquake", dated October 1989, provides information on seismic event categories.

Escalation of this emergency classification level, if appropriate, would be based on System Malfunction ICs.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Sub-Category: Natural / Destructive Events

Initiating Condition: [HA1] Natural or Destructive Phenomena Affecting VITAL AREAS.

Mode Applicability: All

Emergency Action Level:

HA1.2 Alert

Tornado striking or high winds greater than 100 MPH resulting in VISIBLE DAMAGE to **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems

Table H-1 – Vital Areas and Safe Shutdown Areas
2/3 Control Building
2(3) Containment
2/3 Radwaste Building, except for 68 ft. el. (Locker Rooms, Hot Tool Crib, Laundry Facility, Dress-out Area)
2(3) Fuel Handling Building
2(3) Safety Equipment Building
2(3) Penetration Building
2(3) Electrical & Piping Tunnels
2(3) MSIV Area & Tank Building
2(3) Salt Water Cooling Pump Rooms
2/3 Intake Structure
2(3) Diesel Generator Building & Diesel Fuel Storage Vaults
2(3) Turbine Building, except for Main Lube Oil Room, FFCPD and 70 ft. el. Turbine Deck
2(3) Yard Area (i.e., Condensate Transfer Pump 2(3) MP049 areas and exterior areas of Condensate Storage Tank 2(3) T-120 and 2(3) T-121 Enclosures)

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Basis:

This EAL escalates from HU1.2 in that the occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control room indications of degraded safety system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded safety system response is intended to discriminate against lesser events. The initial report should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual extent of the damage. The significance here is not that a particular safety system or structure was damaged, but rather, that the event was of sufficient magnitude to cause this degradation. Escalation of this emergency classification level, if appropriate, would be based on System Malfunction ICs.

This threshold addresses events that may have resulted in a VITAL AREA and/or Safe Shutdown area being subjected to forces beyond design limits and thus damage may be assumed to have occurred to plant safety systems. VITAL AREAS and Safe Shutdown Areas house equipment that may be needed to ensure the reactor safely reaches and is maintained in its lowest energy state. Personnel access to VITAL AREAS and/or Safe Shutdown Areas may be an important factor in monitoring and controlling safety equipment operability. The Alert classification is appropriate if relevant plant parameters indicate that the performance of safety systems in the affected VITAL AREAS and/or Safe Shutdown Areas has been degraded. The declaration of an Alert and the activation of the TSC provide the Shift Manager / Station Emergency Director with the resources needed to perform detailed damage assessments.

The wind speed sensors on the meteorological towers have an operating range of 0 – 125 MPH. Displays on CFMS and RADDOSE-V accept 0.5 – 125 MPH. The real-time indication DDR10 chart recorder and display in the Control Room hallway are limited to 0 – 50 MPH.

The highest wind speed in the vicinity of the San Onofre site based on a recurrent interval of at least 100 years is approximately 90 MPH. However, all structures are designed to withstand a basic wind speed of 100 MPH. This EAL is based on the design basis wind

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

speed of 100 MPH. Sustained wind loads above this magnitude can cause damage to safety functions.

Subcategory: Natural / Destructive Events

Initiating Condition: [HA1] Natural or Destructive Phenomena Affecting VITAL AREAS.

Mode Applicability: All

Emergency Action Level:

HA1.3 Alert

Internal flooding in **ANY** of the following areas resulting in an electrical shock hazard that precludes access to operate or monitor safety-related equipment required by Technical Specifications for the current operating mode **OR** Control Room indication of degraded performance of those safety systems:

- Units 2/3 Intake Structure
- Unit 2(3) Turbine Building Condenser and Main Feedwater Pump Area (7 ft. el.)

Basis:

This EAL escalates from HU1.3 in that the occurrence of the event has caused damage to the safety systems in those structures as evidenced by Control Room indications of degraded system response or performance. The occurrence of degraded system response is intended to discriminate against lesser events. The initial report should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage. The significance here is not that a particular system or structure was damaged, but rather that the event was of sufficient magnitude to cause this degradation. Escalation of this emergency classification level, if appropriate, would be based on System Malfunction ICs.

This EAL addresses flooding caused by internal events (e.g., component failures, circulating water, component cooling or service water line ruptures, equipment misalignment, fire suppression system actuation or outage activity mishaps) that results in degraded safety system performance affected by the flooding, or has created industrial safety hazards (e.g., electrical shock) that preclude necessary access to operate or monitor safety equipment. The inability to operate or monitor safety equipment represents a potential for substantial degradation of the level of safety of the plant. The internal flooding areas are important drainage areas and typically contain systems that are:

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

- Required for safe shutdown of the plant
- Not designed to be wetted or submerged
- Susceptible to internal flooding events

Flooding as used in this EAL describes a condition where water is entering the room faster than installed equipment is capable of removal, resulting in a rise of water level within the room. Classification of this EAL should not be delayed while corrective actions are being taken to isolate the water source.

SONGS analysis of internal flooding has eliminated all but the following areas:

- Units 2/3 Intake Structure – This area includes the Circulating Water Pumps (P-115, 116, 117 and 118), Saltwater Cooling Pumps (P-112, 113, 114 and 307), Screen Wash Pumps (P-126 and 127) and associated components. This flood is extensively reviewed in the flood analysis in the SONGS 2/3 UFSAR Section 10.4.5, Circulating Water System. Given that the pumps in this area represent an infinite flood source, it can be postulated that failure of one of the lines or the pumps could easily flood this area. This could generate a plant trip and potentially cause loss of the ultimate heat sink.
- Unit 2(3) Turbine Building Condenser and Main Feedwater Area (7 ft. el.) – Although the applicable flood zone encompasses the entire Turbine Building and contains the Condensers, Condensate Pumps, Vacuum Pumps, associated auxiliaries and Main Feedwater Pumps, flooding above 9 ft. 1 in. el. is not expected. In the event of a postulated flood, it can be envisioned that the Condenser Vacuum Pump could be lost and low Condenser vacuum would occur due to either the break itself or the loss of vacuum pump operation. A flood in this area can also result in loss of the Condensate or Main Feedwater Pumps or associated components (i.e., MCCs). It can be postulated that a flood would occur due to failure of the Condenser expansion joints, failure of the Condenser structure, loss of seals associated with the piping leading to or from the Condenser and/or failure of pumping components associated with feedwater flow or heater drains.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Uncontrolled internal flooding that has degraded safety-related equipment or created a safety hazard precluding access necessary for the safe operation or monitoring of safety equipment warrants declaration of an Alert. Judgment EAL HA6.1 should be used if flooding unexpectedly impacts safety-related equipment in other areas of the plant not addressed above.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HA1] Natural or Destructive Phenomena Affecting VITAL AREAS.

Mode Applicability: All

Emergency Action Level:

HA1.4 Alert

Turbine failure-generated PROJECTILES result in VISIBLE DAMAGE to or penetration of **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems

Table H-1 – Vital Areas and Safe Shutdown Areas
2/3 Control Building
2(3) Containment
2/3 Radwaste Building, except for 68 ft. el. (Locker Rooms, Hot Tool Crib, Laundry Facility, Dress-out Area)
2(3) Fuel Handling Building
2(3) Safety Equipment Building
2(3) Penetration Building
2(3) Electrical & Piping Tunnels
2(3) MSIV Area & Tank Building
2(3) Salt Water Cooling Pump Rooms
2/3 Intake Structure
2(3) Diesel Generator Building & Diesel Fuel Storage Vaults
2(3) Turbine Building, except for Main Lube Oil Room, FFCPD and 70 ft. el. Turbine Deck
2(3) Yard Area (i.e., Condensate Transfer Pump 2(3) MP049 areas and exterior areas of Condensate Storage Tank 2(3) T-120 and 2(3) T-121 Enclosures)

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Basis:

This EAL escalates from HU1.4 in that the occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures evidenced by control room indications of degraded safety system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded safety system response is intended to discriminate against lesser events. The initial report should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual extent of the damage. Escalation of this emergency classification level, if appropriate, would be based on System Malfunction ICs.

This EAL addresses the threat to safety-related equipment imposed by projectiles generated by Main turbine rotating component failures. The list of areas includes all areas containing safety-related equipment, their controls and their power supplies. Therefore, this EAL is consistent with the definition of an ALERT in that if projectiles have damaged or penetrated areas containing safety-related equipment, the potential exists for substantial degradation of the level of safety of the plant.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HA1] Natural or Destructive Phenomena Affecting VITAL AREAS.

Mode Applicability: All

Emergency Action Level:

HA1.5 Alert

Vehicle crash resulting in VISIBLE DAMAGE to **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems

[Refer to HS4.1 if crash was due to hostile act]

Table H-1 – Vital Areas and Safe Shutdown Areas
2/3 Control Building
2(3) Containment
2/3 Radwaste Building, except for 68 ft. el. (Locker Rooms, Hot Tool Crib, Laundry Facility, Dress-out Area)
2(3) Fuel Handling Building
2(3) Safety Equipment Building
2(3) Penetration Building
2(3) Electrical & Piping Tunnels
2(3) MSIV Area & Tank Building
2(3) Salt Water Cooling Pump Rooms
2/3 Intake Structure
2(3) Diesel Generator Building & Diesel Fuel Storage Vaults
2(3) Turbine Building, except for Main Lube Oil Room, FFCPD and 70 ft. el. Turbine Deck
2(3) Yard Area (i.e., Condensate Transfer Pump 2(3) MP049 areas and exterior areas of Condensate Storage Tank 2(3) T-120 and 2(3) T-121 Enclosures)

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Basis:

The occurrence of the event has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures as evidenced by Control Room indications of degraded safety system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded safety system response is intended to discriminate against lesser events. The initial report should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual extent of the damage. The significance here is not that a particular safety system or structure was damaged, but rather that the event was of sufficient magnitude to cause this degradation. Escalation of this emergency classification level, if appropriate, would be based on System Malfunction ICs.

VITAL AREAS and Safe Shutdown Areas house equipment which may need to be operated to ensure the reactor reaches and is maintained in its lowest energy state. Personnel access to VITAL AREAS and/or Safe Shutdown Areas may be an important factor in monitoring and controlling safety equipment operability. This EAL addresses vehicle crashes that preclude personnel access to VITAL AREAS and/or Safe Shutdown Areas or may have resulted in the area being subjected to forces beyond design limits. It is therefore assumed that safety equipment operability has been challenged or damage has occurred to plant systems necessary for safe shutdown of the plant.

If the vehicle crash is determined to be hostile in nature, the event may be classified under EAL HS4.1.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Natural / Destructive Events

Initiating Condition: [HA1] Natural or Destructive Phenomena Affecting VITAL AREAS.

Mode Applicability: All

Emergency Action Level:

HA1.6 Alert

VISIBLE DAMAGE to **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems as a result of **ANY** of the following severe weather conditions:

- Tsunami warning with predicted wave height greater than +30 ft. MLLW level
- Rainfall greater than 6 inches in a 3 hour period
- Site is predicted to experience a hurricane with sustained wind speed greater than 73 MPH. in less than or equal to 12 hours as projected by the National Weather Service

Table H-1 – Vital Areas and Safe Shutdown Areas
2/3 Control Building
2(3) Containment
2/3 Radwaste Building, except for 68 ft. el. (Locker Rooms, Hot Tool Crib, Laundry Facility, Dress-out Area)
2(3) Fuel Handling Building
2(3) Safety Equipment Building
2(3) Penetration Building
2(3) Electrical & Piping Tunnels
2(3) MSIV Area & Tank Building
2(3) Salt Water Cooling Pump Rooms
2/3 Intake Structure
2(3) Diesel Generator Building & Diesel Fuel Storage Vaults
2(3) Turbine Building, except for Main Lube Oil Room, FFCPD and 70 ft. el. Turbine Deck
2(3) Yard Area (i.e., Condensate Transfer Pump 2(3) MP049 areas and exterior areas of Condensate Storage Tank 2(3) T-120 and 2(3) T-121 Enclosures)

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Basis:

This EAL addresses other site specific phenomena that result in VISIBLE DAMAGE to VITAL AREAS or Safe Shutdown Areas or results in indication of damage to safety structures, safety systems, or safety components containing functions and systems required for safe shutdown of the plant (such as tsunamis, flash floods, or hurricanes) that can also be precursors of more serious events.

This EAL escalates from HU1.5 in that the occurrence of severe weather has resulted in VISIBLE DAMAGE to plant structures or areas containing equipment necessary for a safe shutdown, or has caused damage to the safety systems in those structures as evidenced by Control Room indications of degraded safety system response or performance. The occurrence of VISIBLE DAMAGE and/or degraded safety system response is intended to discriminate against lesser events. The initial report should not be interpreted as mandating a lengthy damage assessment prior to classification. No attempt is made in this EAL to assess the actual magnitude of the damage.

This EAL addresses high ocean water level, flash flood conditions, and hurricanes that are destructive in nature and which may threaten operability of safety systems. Mean Lower Low Water (MLLW) levels of the magnitude given in this EAL may threaten the seawall and require plant shutdown.

The Alaska Tsunami Warning Center has responsibility for issuing tsunami watches / warnings for the west coast of North America. The National Weather Service transmits information for tsunamis and projected hurricanes over the NOAA Weather Wire and newswire services. The National Weather Service can be used to confirm or update tsunami, hurricane, and flash flood information. Tide levels may be obtained from tide charts in the Shift Manager office or by contacting the Camp Pendleton Base Weather Service.

Flood protection of safety-related systems and components is provided for all postulated flood levels and conditions described in Section 2.4 of the UFSAR. The maximum design basis flood level used in the initial design of plant structures was elevation +30.5 ft. MLLW level. Subsequent hydrological analyses determined that the maximum postulated flood level in the Unit 2 and 3 power block is below elevation +31.0 ft. MLLW level as shown on

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

UFSAR Figure 2.4-13. This flood level is based on the 12.25-inch, 6-hour thunderstorm Probable Maximum Precipitation. SONGS procedures use +30 ft. MLLW level as the level at which the seawall would be challenged.

Plant procedures initiate a "Hurricane Watch" when basis sustained wind speed is expected to exceed 73 MPH (an expected severity Category 1 or higher hurricane). Plant procedures initiate a "Flash Flood Watch or Warning" when greater than 6 inches of rain have fallen in a three hour period. Restoration of Important-to-Safety Systems and components should be expedited, if possible, to ensure Operability or functional operability of safety equipment if severe weather conditions worsen.

Escalation of this emergency classification level, if appropriate, would be based on System Malfunction ICs.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Fire or Explosion

Initiating Condition: [HA2] FIRE or EXPLOSION Affecting the Operability of Plant Safety Systems Required to Establish or Maintain Safe Shutdown.

Mode Applicability: All

Emergency Action Level:

HA2.1 Alert

FIRE or EXPLOSION resulting in VISIBLE DAMAGE to **ANY** Table H-1 Area structures containing safety systems or safety components **OR** Control Room indication of degraded performance of those safety systems

[Refer to HS4.1 if fire or explosion was due to hostile act]

Table H-1 – Vital Areas and Safe Shutdown Areas
2/3 Control Building
2(3) Containment
2/3 Radwaste Building, except for 68 ft. el. (Locker Rooms, Hot Tool Crib, Laundry Facility, Dress-out Area)
2(3) Fuel Handling Building
2(3) Safety Equipment Building
2(3) Penetration Building
2(3) Electrical & Piping Tunnels
2(3) MSIV Area & Tank Building
2(3) Salt Water Cooling Pump Rooms
2/3 Intake Structure
2(3) Diesel Generator Building & Diesel Fuel Storage Vaults
2(3) Turbine Building, except for Main Lube Oil Room, FFCPD and 70 ft. el. Turbine Deck
2(3) Yard Area (i.e., Condensate Transfer Pump 2(3) MP049 areas and exterior areas of Condensate Storage Tank 2(3) T-120 and 2(3) T-121 Enclosures*

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Basis:

Visible Damage

Damage to equipment or structure that is readily observable without measurements, testing or analysis. Damage is sufficient to cause concern regarding the continued operability or reliability of the affected safety structure, system or component. Examples of damage include: deformation due to heat or impact, denting, penetration, rupture, cracking and paint blistering. Surface blemishes (e.g., paint chipping, scratches) should not be included.

VISIBLE DAMAGE is used to identify the magnitude of the FIRE or EXPLOSION and to discriminate against minor FIRES and EXPLOSIONS.

The listed areas contain functions and systems required for the safe shutdown of the plant. The SONGS Safe Shutdown Analyses were consulted for equipment and plant areas required for the applicable mode.

This EAL addresses a fire or explosion and not the degradation of performance of safety systems within the identified plant areas. System degradation is addressed in the Category S – System Malfunction EALs. The reference to damage of safety systems is used to identify the magnitude of the fire or explosion and to discriminate from minor fires or explosions. The reference to structures containing safety systems or safety components is included to discriminate against FIRES or EXPLOSIONS in areas having a low probability of affecting safe operation.

The significance here is not that a safety system was degraded, but the fact that the fire or explosion was large enough to cause damage to these safety systems.

The use of VISIBLE DAMAGE should not be interpreted as mandating a lengthy damage assessment prior to classification. The declaration of an Alert and the activation of the TSC provide the Shift Manager / Station Emergency Director with the resources needed to perform detailed damage assessments. The Shift Manager / Station Emergency Director also needs to consider the security aspects of the explosion. If the fire or explosion is due to a hostile act, the event may be classified under EAL HS4.1.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

This situation is not the same as removing equipment for maintenance that is covered by Tech. Specs. Removal of equipment for maintenance is a planned activity controlled in accordance with procedures and, as such, does not constitute a substantial degradation in the level of safety of the plant. A fire or explosion is an unplanned activity and, as such, does constitute a substantial degradation in the level of plant safety. In this situation, an Alert classification is warranted.

A steam line break or steam explosion that damages permanent structures or safety equipment would be classified under this EAL. The method of damage is not as important as the degradation of plant structures or safety equipment. The need to classify the steam line break itself is considered in fission product barrier degradation monitoring (Category F EALs). Escalation of this emergency classification level, if appropriate, will be based on System Malfunctions, Fission Product Barrier Degradation or Abnormal Rad Levels / Radiological Effluent ICs.

Notification that the fire is extinguished must come from the Fire Incident Commander per the appropriate procedures.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Toxic or Flammable Gas

Initiating Condition: [HA3] Access To a VITAL AREA is Prohibited Due to Toxic, Corrosive, Asphyxiant or Flammable Gases Which Jeopardize Operation of Operable Equipment Required to Maintain Safe Operations or Safely Shut down The Reactor.

Mode Applicability: All

Emergency Action Level:

NOTE: If the equipment in the stated area was already inoperable, or out of service, before the event occurred, then this EAL should not be declared as it will have no adverse impact on the ability of the plant to safely operate or safely shut down beyond that already allowed by Technical Specifications at the time of the event.

HA3.1 Alert

Access to a Table H-1 Area is prohibited due to toxic, corrosive, asphyxiant or flammable gases which jeopardize operation of systems required to maintain safe operations or safely shut down the reactor

Table H-1 – Vital Areas and Safe Shutdown Areas
2/3 Control Building
2(3) Containment
2/3 Radwaste Building, except for 68 ft. el. (Locker Rooms, Hot Tool Crib, Laundry Facility, Dress-out Area)
2(3) Fuel Handling Building
2(3) Safety Equipment Building
2(3) Penetration Building
2(3) Electrical & Piping Tunnels
2(3) MSIV Area & Tank Building
2(3) Salt Water Cooling Pump Rooms
2/3 Intake Structure
2(3) Diesel Generator Building & Diesel Fuel Storage Vaults
2(3) Turbine Building, except for Main Lube Oil Room, FFCPD and 70 ft. el. Turbine Deck
2(3) Yard Area (i.e., Condensate Transfer Pump 2(3) MP049 areas and exterior areas of Condensate Storage Tank 2(3) T-120 and 2(3) T-121 Enclosures)

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Basis:

Gases in a VITAL AREA or Safe Shutdown Area can affect the ability to safely operate or safely shut down the reactor.

The fact that SCBA may be worn does not eliminate the need to declare the event.

Declaration should not be delayed for confirmation from atmospheric testing if the atmosphere poses an immediate threat to life and health or an immediate threat of severe exposure to gases. This could be based upon documented analysis, indication of personal ill effects from exposure, or operating experience with the hazards.

If the safety equipment in the stated area was already inoperable, or out of service, before the event occurred, then this EAL should not be declared as it will have no adverse impact on the ability of the plant to safely operate or safely shut down beyond that already allowed by Technical Specifications at the time of the event.

An asphyxiant is a gas capable of reducing the level of oxygen in the body to dangerous levels. Most commonly, asphyxiants work by merely displacing air in an enclosed environment. This reduces the concentration of oxygen below the normal level of around 19%, which can lead to breathing difficulties, unconsciousness or even death.

An uncontrolled release of flammable gasses within a facility structure has the potential to affect safe operation of the plant by limiting either operator or equipment operations due to the potential for ignition and resulting equipment damage/personnel injury. Flammable gasses, such as hydrogen and acetylene, are routinely used to maintain plant systems (hydrogen) or to repair equipment/components (acetylene - used in welding). This EAL assumes concentrations of flammable gasses which can ignite/support combustion.

Escalation of this emergency classification level, if appropriate, will be based on System Malfunctions, Fission Product Barrier Degradation or Abnormal Rad Levels / Radioactive Effluent ICs.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Security Events

Initiating Condition: [HA4] HOSTILE ACTION Within the OWNER CONTROLLED AREA Or Airborne Attack Threat.

Mode Applicability: All

Emergency Action Level:

HA4.1 Alert
A HOSTILE ACTION is occurring or has occurred within the OWNER CONTROLLED AREA as reported by site Security Supervision

Basis:

Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

This EAL is intended to address the potential for a very rapid progression of events due to an attack or other hostile action within the Owner Controlled Area (OCA), including the following:

NOTE: DO NOT revise this Technical Basis Document to add any identifying information to any Security Event codes, and do not remove this note.

- SE-1B, SE-2C, SE-5A, SE-5B, SE-10, SE-16B, SE-18B, SE-19B.

This EAL is not premised solely on the potential for a radiological release. Rather, the issue is the immediate need for assistance due to the nature of the event and the potential for significant and indeterminate damage from additional attack elements. Although SONGS security officers are well trained and prepared to protect against hostile action, it is appropriate for Off-site Response Organizations (OROs) to be notified and encouraged to begin activation (if they do not normally) to be better prepared should protective actions become necessary.

This EAL is intended to address the contingency for a very rapid progression of events due to an airborne terrorist or other hostile attack such as that experienced on September 11, 2001 and the possibility for additional attacking aircraft or forces. It is not intended to address accidental aircraft impact as that initiating condition is adequately addressed by other EALs. Federal agencies are expected to assist in the determination of whether the aircraft impact was accidental or an attack. The federal agency is intended to be NORAD,

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

FBI, FAA or NRC. However, the declaration should not be unduly delayed awaiting federal notification. Aircraft is meant to be interpreted as any private or commercial aircraft since the type of aircraft may not be readily determined and the potential damage may not directly correlate to airframe size.

This IC / EAL addresses the immediacy of an expected threat arrival or impact on the site within a relatively short time. The fact that the site is an identified attack candidate with minimal time available for further preparation requires a heightened state of readiness and implementation of protective measures that can be effective (on-site evacuation, dispersal or sheltering) before arrival or impact.

Security events or conditions that do not conform to one of the events described in the Safeguards Contingency Plan may be classified under EAL HA6.1 based on Shift Manager / Station Emergency Director judgment.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Security Events

Initiating Condition: [HA4] HOSTILE ACTION Within the OWNER CONTROLLED AREA Or Airborne Attack Threat.

Mode Applicability: All

Emergency Action Level:

HA4.2 Alert
A validated notification of an aircraft attack threat within 30 minutes of the site or time to impact unknown

Basis:

Timely and accurate communication between Security Shift Supervision and the Control Room is crucial for the implementation of effective Security EALs.

The intent of this EAL is to ensure that notifications for the impending attack are made in a timely manner and that Off-site Response Organizations (OROs) and plant personnel are at a state of heightened awareness. Only the plant to which the attack is directed or specific threat is made need declare the Alert. This EAL is met when a plant receives reliable information regarding an aircraft attack threat and the aircraft is within 30 minutes of the plant, or the time to impact cannot be determined. Sources of reliable information include the NRC, FBI, FAA and NORAD. A Security Event will be declared but it is not necessary if the NRC initiates the notification via the ENS phone confirming that an attack against the site by a hostile force or aircraft is less than or equal to 30 minutes away. The exact location and nature of the attack may be unknown; the concern is that precautionary actions be taken promptly to protect plant personnel and equipment.

This EAL is intended to address the contingency of a very rapid progression of events due to an airborne terrorist or other hostile attack such as that experienced on September 11, 2001. This EAL is not premised solely on the potential for a radiological release. Rather the issue includes the need for assistance due to the possibility for significant and indeterminate damage from such an attack. Although vulnerability analyses show nuclear power plants to be robust, it is appropriate for OROs to be notified and encouraged to activate (if they do not normally) to be better prepared should it be necessary to consider further actions. Aircraft is meant to be interpreted as any private or commercial aircraft since the type of aircraft may not be readily determined and the potential damage may not

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

directly correlate to airframe size. The status of the plane is normally provided by NORAD through the NRC, but may be received directly from other agencies.

This IC / EAL addresses the immediacy of an expected threat arrival or impact on the site within a relatively short time. The fact that the site is an identified attack candidate with minimal time available for further preparation requires a heightened state of readiness and implementation of protective measures that can be effective (on-site evacuation, dispersal or sheltering) before arrival or impact.

In the event an actual attack or aircraft impact occurs, refer to EAL HA4.1 if the Owner Controlled Area is involved or EAL HS4.1 if a PROTECTED AREA is involved.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Control Room Evacuation

Initiating Condition: [HA5] Control Room Evacuation Has Been Initiated.

Mode Applicability: All

Emergency Action Level:

HA5.1 Alert
Entry into SO23-13-2, Shutdown from Outside the Control Room, for Control Room evacuation

Basis:

With the Control Room evacuated, additional support, monitoring and direction through the Technical Support Center and/or other Emergency Response Facilities may be necessary. The appropriate Operations procedure provides specific instructions for evacuating the Control Room and establishing plant control at the Evacuation Shutdown Panel. Inability to establish plant control from outside the Control Room escalates this event to a Site Area Emergency per EAL HS2.1.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Judgment

Initiating Condition: [HA6] Other Conditions Exist Which in the Judgment of the Shift Manager / Station Emergency Director Warrant Declaration of an Alert.

Mode Applicability: All

Emergency Action Level:

HA6.1 Alert

Other conditions exist which in the judgment of the Shift Manager / Station Emergency Director indicate that events are in progress or have occurred which involve actual or potential substantial degradation of the level of safety of the plant or a security event that involves probable life threatening risk to site personnel or damage to site equipment because of HOSTILE ACTION. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels (1,000 mrem TEDE and 5,000 mrem Thyroid CDE).

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere, but that warrant declaration of an emergency because conditions exist which are believed by the Shift Manager / Station Emergency Director to fall under the Alert emergency class.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Control Room Evacuation

Initiating Condition: [HS2] Control Room Evacuation Has Been Initiated and Plant Control Cannot Be Established.

Mode Applicability: All

Emergency Action Level:

HS2.1 Site Area Emergency

Control Room evacuation has been initiated

AND

Control of the plant **CANNOT** be established per SO23-13-2, Shutdown from Outside the Control Room, within 15 minutes

Basis:

The intent of this IC is to capture those events where control of the plant cannot be reestablished in a timely manner. In this case, expeditious transfer of control of safety systems has not occurred (although fission product barrier damage may not yet be indicated).

The determination of whether or not control is established at the remote shutdown panel is based on Shift Manager judgment. The Shift Manager is expected to make a reasonable, informed judgment within the 15-minute time period for transfer that the licensee has control of the plant from the Evacuation Shutdown Panel.

Once the Control Room is evacuated, the objective is to establish control of important plant equipment and knowledge of important plant parameters in a timely manner. Primary emphasis should be placed on components and instruments that supply protection for and information about safety functions. Typically, these safety functions are reactivity control (ability to shutdown the reactor and maintain it shutdown), vital auxiliaries, RCS inventory control (ability to cool the core), RCS pressure control and heat removal (ability to maintain a heat sink). In Cold Shutdown and Refueling modes, operator concern is directed toward maintaining core cooling such as is discussed in Generic Letter 88-17, Loss of Decay Heat Removal. In Operating and Hot Standby modes, operator concern is primarily directed toward maintaining critical safety functions and thereby assuring fission product barrier integrity.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

The appropriate Operations procedure provides specific instructions for evacuating the Control Room and establishing plant control at the Evacuation Shutdown Panel.

Escalation of this emergency classification level, if appropriate, would be by Fission Product Barrier Degradation or Abnormal Rad Levels/Radiological Effluent EALs.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Judgment

Initiating Condition: [HS3] Other Conditions Exist Which in the Judgment of the Shift Manager / Station Emergency Director Warrant Declaration of a Site Area Emergency.

Mode Applicability: All

Emergency Action Level:

HS3.1 Site Area Emergency

Other conditions exist which in the judgment of the Shift Manager / Station Emergency Director indicate that events are in progress or have occurred which involve actual or likely major failures of plant functions needed for protection of the public or HOSTILE ACTION that results in intentional damage or malicious acts; (1) toward site personnel or equipment that could lead to the likely failure of or; (2) that prevent effective access to equipment needed for the protection of the public. Any releases are not expected to result in exposure levels which exceed EPA Protective Action Guideline exposure levels (1,000 mrem TEDE and 5,000 mrem Thyroid CDE) at or beyond the Exclusion Area Boundary.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere, but that warrant declaration of an emergency because conditions exist which are believed by the Shift Manager / Station Emergency Director to fall under the emergency class description for Site Area Emergency. The Exclusion Area Boundary (EAB) is roughly formed by two semicircles with radii of 0.37 miles (1967.5 ft.) each around the Units 2 and 3 Containment domes. The EAB is depicted in UFSAR Figure 2.1-5.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Security Events

Initiating Condition: [HS4] HOSTILE ACTION Within the PROTECTED AREA.

Mode Applicability: All

Emergency Action Level:

HS4.1 Site Area Emergency
A HOSTILE ACTION is occurring or has occurred within the Units 2/3 PROTECTED AREA or ISFSI PROTECTED AREA as reported by site Security Supervision

Basis:

This class of security events represents an escalated threat to plant safety above that contained in the Alert IC in that a hostile force has progressed from the Owner Controlled Area to the Units 2/3 PROTECTED AREA (PA), including VITAL AREAS, or ISFSI PA.

Although SONGS security officers are well trained and prepared to protect against hostile action, it is appropriate for Off-site Response Organizations (OROs) to be notified and encouraged to begin preparations for public protective actions (if they do not normally) to be better prepared should it be necessary to consider further actions.

This EAL is intended to address the potential for a very rapid progression of events due to a dedicated attack. It is not intended to address incidents that are accidental or acts of civil disobedience, such as physical disputes between employees within the OCA or a PROTECTED AREA. Those events are adequately addressed by other EALs. Hostile action identified above encompasses various acts including Security Events:

NOTE: DO NOT revise this Technical Basis Document to add any identifying information to any Security Event codes, and do not remove this note.

- SE-2C, SE-5A, SE-5B, SE-16C.

This EAL is also intended to address the contingency for a very rapid progression of events due to an airborne terrorist or other hostile attack such as that experienced on September 11, 2001 and the possibility for additional attacking aircraft or forces. It is not intended to address accidental aircraft impact as that initiating condition is adequately addressed by other EALs. This EAL is not premised solely on the potential for a radiological release. Rather the issue includes the need for assistance due to the

possibility for significant and indeterminate damage from additional attack elements. Although vulnerability analyses show nuclear power plants to be robust, it is appropriate for OROs to be notified and to activate in order to be better prepared to respond should protective actions become necessary. Federal agencies are expected to assist in the determination of whether the aircraft impact was accidental or an attack. The federal agency is intended to be NORAD, FBI, FAA or NRC. However, the declaration should not be unduly delayed awaiting federal notification. Aircraft is meant to be interpreted as any private or commercial aircraft since the type of aircraft may not be readily determined and the potential damage may not directly correlate to airframe size.

This EAL addresses the immediacy of an attack to impact a PA or VITAL AREAS within a relatively short time. The fact that the site is under serious attack with minimal time available for additional assistance to arrive requires ORO readiness and preparation for the implementation of protective measures.

Consideration should be given to upgrading the classification to a General Emergency based on actual plant status after impact.

Security events or conditions that do not conform to one of the events described in the Safeguards Contingency Plan may be classified under EAL HS3.1 based on Shift Manager / Station Emergency Director judgment.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Security Events

Initiating Condition: [HG1] HOSTILE ACTION Resulting in Loss of Physical Control of the Facility.

Mode Applicability: All

Emergency Action Level:

NOTE: Containment status should be evaluated per Emergency Action Technical Bases, EPSD-1

HG1.1 General Emergency
A HOSTILE ACTION has occurred such that plant personnel are unable to operate equipment required to maintain safety functions

Basis:

This IC encompasses conditions under which hostile action has resulted in the loss of one or more safety functions and Containment is breached or challenged. These safety functions are Reactivity Control (ability to shut down the reactor and keep it shut down), RCS Inventory Control (ability to cool the core) and Heat Removal (ability to maintain a heat sink). The Functional Recovery procedure addresses restoration of both core and RCS heat removal safety functions as a combined process; therefore, heat removal as it applies to this EAL includes both of these safety functions. If a success path has been identified for restoring safety functions per EOIs, then the above initiating condition is not met. Otherwise, the General Emergency is declared based on conditions leading to core degradation.

Loss of physical control of the Control Room or remote shutdown capability, or the presence of a hostile force in a VITAL AREA, may not prevent the ability to maintain or restore safety functions per se. Design of the remote shutdown capability and the location of the transfer switches should be taken into account.

Security events or conditions that do not conform to one of the events described in the Safeguards Contingency Plan may be classified under EAL HG2.1 based on Shift Manager / Station Emergency Director judgment.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Security Events

Initiating Condition: [HG1] HOSTILE ACTION Resulting in Loss of Physical Control of the Facility.

Mode Applicability: All

Emergency Action Level:

HG1.2 General Emergency
A HOSTILE ACTION has caused failure of Spent Fuel Cooling Systems and IMMINENT fuel damage is likely for a freshly off-loaded reactor core in pool.

Basis:

This EAL encompasses conditions under which a HOSTILE ACTION has resulted in a loss of physical control of VITAL AREAS (containing vital equipment or controls of vital equipment) required to maintain safety functions and control of that equipment cannot be transferred to and operated from another location.

If control of the plant equipment necessary to maintain safety functions can be transferred to another location, then the threshold is not met. This EAL addresses failure of spent fuel cooling systems as a result of HOSTILE ACTION if IMMINENT fuel damage is likely, such as when a freshly off-loaded reactor core is in the spent fuel pool. A freshly offloaded core is defined as having a full core (217 assemblies) in the Spent Fuel Pool within the first three days of shutdown from power operation. The three days is based on a freshly offloaded core creating a SFP heat load which would cause SFP boiling and fuel assembly uncovery in less than 18 hours. The 18 hour time limit is based on a worst case evacuation time estimate (weekday with a concurrent earthquake) of Protective Action Zones (PAZ) 1, 4, and 5 in the SONGS Emergency Planning Zone (EPZ). In the event that a HOSTILE ACTION action results in the loss of all SFP cooling, protection of the health and safety of the public would be assured by being able to evacuate the SONGS EPZ before a significant release of radiation occurred. The conservative assumptions for the 18 hour calculation are: all SFP cooling lost; a full core in the SFP (217 assemblies); SFP level at Technical Specification minimum; and the SFP is already boiling.

5.5 Category H – Hazards and Other Conditions Affecting Plant Safety

Subcategory: Judgment

Initiating Condition: [HG2] Other Conditions Exist Which in the Judgment of the Shift Manager / Station Emergency Director Warrant Declaration of a General Emergency.

Mode Applicability: All

Emergency Action Level:

HG2.1 General Emergency

Other conditions exist which in the judgment of the Shift Manager / Station Emergency Director indicate that events are in progress or have occurred which involve actual or IMMINENT substantial core degradation or melting with potential for loss of Containment integrity or HOSTILE ACTION that results in an actual loss of physical control of the facility. Releases can be reasonably expected to exceed EPA Protective Action Guideline exposure levels (1,000 mrem TEDE and 5,000 mrem Thyroid CDE) at or beyond the Exclusion Area Boundary.

Basis:

This EAL addresses unanticipated conditions not addressed explicitly elsewhere, but that warrant declaration of an emergency because conditions exist which are believed by the Shift Manager / Station Emergency Director to fall under the General Emergency class.

Releases can reasonably be expected to exceed EPA Protective Action Guideline plume exposure levels outside the Exclusion Area Boundary (EAB). The EAB is roughly formed by two semicircles with radii of 0.37 miles (1967.5 ft.) each around the Units 2 and 3 Containment domes. The EAB is depicted in UFSAR Figure 2.1-5.

SECTION 5.6 - CATEGORY S – SYSTEM MALFUNCTION

5.6 Category S – System Malfunction

Numerous system-related equipment failure events that warrant emergency classification have been identified in this category. They may pose actual or potential threats to plant safety.

The events of this category pertain to:

Loss of AC / DC Power Sources

Loss of vital plant electrical power can compromise plant safety system operability including decay heat removal and emergency core cooling systems which may be necessary to ensure fission product barrier integrity.

Technical Specifications

Only one EAL falls into this subcategory. It is related to the failure of the plant to be brought to the required plant operating condition required by Technical Specifications if a limiting condition for operation (LCO) is not met.

Loss of Indications / Alarms

Certain events that degrade plant operator ability to effectively assess plant conditions within the plant warrant emergency classification. Losses of annunciators are in this subcategory.

Coolant Activity

During normal operation, reactor coolant fission product activity is very low. Small concentrations of fission products in the coolant are primarily from the fission of tramp uranium in the fuel clad or minor perforations in the clad itself. Any significant rise from these base-line levels (1% - 5% clad failure) is indicative of fuel failure and is covered under the Fission Product Barrier category. However, lesser amounts of clad damage may result in coolant activity exceeding Technical Specification limits. These fission products will be circulated with the reactor coolant and can be detected by coolant sampling.

5.6 Category S – System Malfunction

RCS Leakage

The Reactor Vessel provides a volume for the coolant that covers the reactor core. The Reactor Vessel and associated pressure piping (Reactor Coolant System) together provide a barrier to limit the release of radioactive material should the reactor fuel clad integrity fail.

Excessive RCS leakage greater than Technical Specification limits are utilized to indicate potential pipe cracks that may propagate to an extent threatening fuel clad, RCS and Containment integrity.

Communication Loss

Certain events that degrade plant operator ability to effectively communicate with essential personnel within or external to the plant warrant emergency classification.

Inadvertent Criticality

Inadvertent criticalities pose potential personnel safety hazards as well being indicative of losses of reactivity control.

ATWS

Events related to failure of the Reactor Protection System (RPS) to initiate and complete reactor trips. In the plant licensing basis, postulated failures of the RPS to complete a reactor trip comprise a specific set of analyzed events referred to as "Anticipated Transient Without Scram" (ATWS) events. For EAL classification however, ATWS is intended to mean any trip failure event that does not achieve reactor shutdown. If RPS / ATWS / DSS actuation fails to assure reactor shutdown, positive control of reactivity is at risk and could cause a threat to fuel clad, RCS and Containment integrity.

Complete Loss of Heat Removal

System malfunctions may lead to loss of capability to remove heat from the reactor core and RCS.

5.6 Category S – System Malfunction

Subcategory: Loss of AC / DC Power Sources

Initiating Condition: [SU1] Loss of All Off-site AC Power to Emergency Buses for 15 Minutes or Longer.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

SU1.1 Notification of Unusual Event
Loss of **ALL** Off-site AC power to 1E 4kV buses 2(3)A04 and 2(3)A06 for 15 minutes or longer

Basis:

Prolonged 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 to emergency busses.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of off-site power.

5.6 Category S – System Malfunction

Subcategory: Technical Specifications

Initiating Condition: [SU2] Inability to Reach Required Shutdown Within Technical Specification Limits.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

SU2.1 Notification of Unusual Event
Plant is **NOT** brought to required operating mode within Technical Specifications LCO action statement time

Basis:

Limiting Conditions for Operation (LCOs) require the plant to be brought to a required operating mode when the Technical Specification required configuration cannot be restored. Depending on the circumstances, this may or may not be an emergency or precursor to a more severe condition. In any case, the initiation of unit shutdown required by the Technical Specifications requires a one-hour report under 10 CFR 50.72 (b) non-emergency events. The unit is within its safety envelope when being shut down within the allowable action statement time in the Technical Specifications. An immediate declaration of a Notification of Unusual Event is required when the unit is not brought to the required operating mode within the allowable action statement time in the Technical Specifications. Declaration of a Notification of 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. Other Technical Specification shutdowns that involve precursors to more serious events are addressed by other ICs.

5.6 Category S – System Malfunction

Subcategory: Loss of Indications / Alarms

Initiating Condition: [SU3] UNPLANNED Loss of Safety System Annunciation or Indication in the Control Room for 15 Minutes or Longer.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

SU3.1 Notification of Unusual Event

UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer:

- Control Room annunciator panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064

  OR

- Control Room safety system indicators on the following Control Room panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064

Basis:

Annunciators or indicators for this EAL include those identified in the Abnormal Operating Instructions, the Emergency Operating Instructions and other EALs (e.g., area, process, and/or effluent rad monitors, etc.). Panels 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR063 and 2(3)CR064 have annunciators / indicators associated with safety systems, abnormal operating instructions and/or emergency operating instructions. Panel 2/3CR061 has annunciators / indicators for radiation monitors and seismic instrumentation associated with EALs involving abnormal radiological conditions and earthquakes. Sections of panel 2/3CR063 have annunciators / indicators for AC power associated with EALs involving loss of off-site power.

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

5.6 Category S – System Malfunction

Recognition of the availability of computer-based monitoring capability (i.e., QSPDS, CFMS and Plant Computer System) is considered at the Notification of Unusual Event emergency classification level.

"Unplanned" loss of annunciators or indicators excludes scheduled maintenance and testing activities.

Quantification is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indications are lost, an elevated risk exists 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 judgment threshold for determining the severity of the plant conditions.

Plant design provides redundant safety system indication powered from separate uninterruptible power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, failure of indications is included in this EAL due to difficulty associated with assessment of plant conditions when indications are not available. The loss of several safety system indicators should remain a function of the specific system or component operability status and is addressed by the applicable Technical Specification. The initiation of a Technical Specification-imposed plant shutdown related to the instrument loss must be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action time, the Notification of Unusual Event is based on SU2 "Inability to Reach Required Shutdown Within Technical Specification Limits."

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses. Due to the limited number of safety systems in operation during Cold Shutdown, Refueling and Defueled modes, this EAL is not applicable during these modes of operation. This NOUE will be escalated to an Alert classification under EAL SA4.1 based on a concurrent loss of compensatory indications or if a SIGNIFICANT TRANSIENT is in progress during the loss of annunciation or indication.

5.6 Category S – System Malfunction

Subcategory: Coolant Activity

Initiating Condition: [SU4] Fuel Clad Degradation.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

SU4.2 Notification of Unusual Event

Reactor coolant sample activity greater than 1.0 µCi/gm Dose Equivalent I-131 for greater than 48 hours

OR

Dose Equivalent Iodine I-131 in unacceptable region of Technical Specification LCO Figure 3.4.16-1

OR

Reactor coolant sample activity greater than 100/Ē µCi/gm indicating fuel clad degradation

[Also check Table F-1 – Fission Product Barrier Matrix]

Basis:

Elevated reactor coolant activity is a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. This EAL addresses reactor coolant samples exceeding coolant Technical Specifications. The Technical Specification LCO limits are established to minimize the off-site radiological dose consequences in the event of a Steam Generator Tube Rupture (SGTR) accident. The allowable level is intended to limit the two-hour dose at the Exclusion Area Boundary to a small fraction of the 10 CFR 100 dose guideline limits. The short-term reactor coolant Dose Equivalent I-131 (DEI-131) specific activity limit is determined from Technical Specification 3.4.16, Figure 3.4.16-1 based on the percent of rated thermal power at the time a coolant sample activity is found to be greater than 1.0 µCi/gm DEI-131. This limit is approximately 62.4 µCi/gm from 80% to 100% power and higher at lower power levels. If the reactor coolant specific activity is within the acceptable region of Figure 3.4.16-1, then up to 48 hours is allowed to restore the DEI-131 specific activity to the long-term limit of less than or equal to 1.0 µCi/gm. Specific activity values within the acceptable range may be due to iodine spiking, rather than fuel clad degradation.

5.6 Category S – System Malfunction

Table F-1 – Fission Product Barrier Matrix should also be checked to determine if Fuel Clad barrier loss #2 applies.

5.6 Category S – System Malfunction

Subcategory: RCS Leakage

Initiating Condition: [SU5] RCS Leakage.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

SU5.1 Notification of Unusual Event
Unidentified or pressure boundary leakage greater than 10 GPM
[Also check Table F-1 – Fission Product Barrier Matrix]

Basis:

This EAL is included as a Notification of Unusual Event because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. Manual or computer-calculated water balance inventory methods are normally used to determine RCS leakage. Symptoms associated with reactor coolant leakage include one or more of the following (this list should not be considered all inclusive if other indications / methods validate RCS leakage greater than the threshold value):

- Charging flow greater than letdown flow with plant conditions stable
- VCT level lowering
- Containment Sump inlet flow ≥ 1 GPM on CFMS
- RCDT inlet flow high alarm on CFMS ≥ 5 GPM
- Annunciator 57C10, CONTAINMENT RADIATION HI, Illuminated
- Annunciator 57C20, RCS LEAKAGE DETECTION ACTIVITY HI, Illuminated
- Annunciator 57C43, RCS LEAKAGE ABNORMAL / RECIRC SYS VV MISALIGNED, Illuminated

5.6 Category S – System Malfunction

LEAKAGE LEAKAGE shall be:

a. Identified LEAKAGE
   1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) leakoff), that is captured and conducted to collection systems or a sump or collecting tank;
   2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or
   3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE).

b. Unidentified LEAKAGE

   All LEAKAGE that is not identified LEAKAGE

c. Pressure Boundary LEAKAGE

   LEAKAGE (except primary to secondary LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

The following are Component Cooling Water (CCW) indications of RCS leakage:

- RCP seal water return line high temperature
- CCW radiation alarm or rising activity
- CCW surge tank level rise

Relief valve normal operation should be excluded from this IC. However, a relief valve that operates and fails to close per design should be considered applicable to this IC if the relief valve cannot be isolated.

RCS leakage into the CCW System from the Letdown System is unidentified LEAKAGE. Greater than 10 GPM RCS leakage into the CCW System from the Letdown System is classifiable under this EAL, even if the leakage has been subsequently isolated.

5.6 Category S – System Malfunction

The Technical Specification definition of pressure boundary leakage is leakage through a non-isolable fault in an RCS component body, pipe wall or vessel wall. The available isolation valves to isolate a fault in the RCP Seal Heat Exchanger are not qualified or adequate to ensure the integrity of the Reactor Coolant Pressure Boundary. The bases for Technical Specification 3.4.13 states that no pressure boundary leakage is allowed since it indicates material deterioration which could further deteriorate resulting in higher leakage. The 10 GPM value for the unidentified leakage or pressure boundary leakage was selected because it is quantifiable with normal Control Room leak detection methods.

EAL SU2.1 should be checked for applicability if pressure boundary leakage is less than or equal to 10 GPM for greater than 4 hours. Table F-1 – Fission Product Barrier Matrix should also be checked to determine if any RCS or Containment barrier threshold criteria apply.

5.6 Category S – System Malfunction

Subcategory: RCS Leakage

Initiating Condition: [SU5] RCS Leakage.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

SU5.2 Notification of Unusual Event
Identified leakage greater than 25 GPM
[Also check Table F-1 – Fission Product Barrier Matrix]

Basis:

This EAL is included as a Notification of Unusual Event because it may be a precursor of more serious conditions and, as result, is considered to be a potential degradation of the level of safety of the plant. Manual or computer-calculated water balance inventory methods are normally used to determine RCS leakage. Symptoms associated with reactor coolant leakage include one or more of the following (this list should not be considered all inclusive if other indications / methods validate RCS leakage greater than the threshold value):

- Charging flow greater than letdown flow with plant conditions stable
- VCT level lowering
- Containment Sump inlet flow greater than or equal to 1 GPM on CFMS
- RCDT inlet flow high alarm on CFMS greater than or equal to 5 GPM
- Annunciator 57C10, CONTAINMENT RADIATION HI, Illuminated
- Annunciator 57C20, RCS LEAKAGE DETECTION ACTIVITY HI, Illuminated
- Annunciator 57C43, RCS LEAKAGE ABNORMAL / RECIRC SYS VV MISALIGNED, Illuminated
- Annunciator 60A46, SECONDARY RADIATION HI, Illuminated

5.6 Category S – System Malfunction

LEAKAGE LEAKAGE shall be:

a. Identified LEAKAGE
   1. LEAKAGE, such as that from pump seals or valve packing (except reactor coolant pump (RCP) leakoff), that is captured and conducted to collection systems or a sump or collecting tank;
   2. LEAKAGE into the containment atmosphere from sources that are both specifically located and known either not to interfere with the operation of leakage detection systems or not to be pressure boundary LEAKAGE; or
   3. Reactor Coolant System (RCS) LEAKAGE through a steam generator to the Secondary System (primary to secondary LEAKAGE).

b. Unidentified LEAKAGE

   All LEAKAGE that is not identified LEAKAGE

c. Pressure Boundary LEAKAGE

   LEAKAGE (except primary to secondary LEAKAGE) through a nonisolable fault in an RCS component body, pipe wall, or vessel wall.

Relief valve normal operation should be excluded from this IC. However, a relief valve that operates and fails to close per design should be considered applicable to this IC if the relief valve cannot be isolated.

The 25 GPM value for identified leakage is set at a higher value due to the lesser significance of identified leakage in comparison to unidentified or pressure boundary leakage. Table F-1 – Fission Product Barrier Matrix should be checked to determine if any RCS or Containment barrier threshold criteria apply.

5.6 Category S – System Malfunction

Subcategory: Communication Loss

Initiating Condition: [SU6] Loss of All On-site or Off-site Communications Capabilities.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

SU6.1 Notification of Unusual Event

Loss of **ALL** Table S-1 On-site communication methods affecting the ability to perform routine operations

Table S-1 – Communication Methods

System	On-site	Off-site
Sound-Powered Telephone System	X	
Public Address System	X	
Two-Way Radio System (800 MHz and 900 MHz)	X	
SCE Private Automatic Exchange (PAX) Telephone System	X	X
Emergency Notification System (ENS) - Red Phone		X
California State Warning Center (CSWC) - Blue Phone		X
Interagency Telephone (IAT) - Yellow Phone		X
Facsimile Machines		X
Emergency Satellite Phone		X

Basis:

This EAL addresses loss of communications capability that prevents the plant operations staff from performing routine tasks necessary for on-site plant operations.

Loss of on-site communications means that all of the systems listed in the "On-site" column of Table S-1 are not functioning.

5.6 Category S – System Malfunction

Subcategory: Communication Loss

Initiating Condition: [SU6] Loss of All On-site or Off-site Communications Capabilities.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

SU6.2 Notification of Unusual Event

Loss of **ALL** Table S-1 Off-site communication methods affecting the ability to perform Off-site notifications .

Table S-1 – Communication Methods

System	On-site	Off-site
Sound-Powered Telephone System	X	
Public Address System	X	
Two-Way Radio System (800 MHz and 900 MHz)	X	
SCE Private Automatic Exchange (PAX) Telephone System	X	X
Emergency Notification System (ENS) - Red Phone		X
California State Warning Center (CSWC) - Blue Phone		X
Interagency Telephone (IAT) - Yellow Phone		X
Facsimile Machines		X
Emergency Satellite Phone		X

Basis:

This EAL addresses a loss of communications capability that defeats the ability to communicate problems with off-site authorities from the Control Room. The loss of off-site communications ability encompasses the loss of all means of communications with off-site authorities and is expected to be significantly more comprehensive than the condition addressed by 10 CFR 50.72.

The availability of one method of ordinary off-site communications is sufficient to inform federal, state and local authorities of plant problems. This should include ENS, FAX

5.6 Category S – System Malfunction

transmissions and dedicated phone systems. This EAL is intended to be used only when extraordinary means are being utilized to make communications possible (e.g., relaying of information from radio transmissions, individuals being sent to off-site locations, etc.).

Loss of off-site communications means that all of the systems listed in the "Off-site" column of Table S-1 are not functioning.

5.6 Category S – System Malfunction

Subcategory: Inadvertent Criticality

Initiating Condition: [SU8] Inadvertent Criticality.

Mode Applicability: 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

SU8.1 Notification of Unusual Event
UNPLANNED sustained positive startup rate observed on nuclear instrumentation

Basis:

This IC addresses inadvertent criticality events. While the primary concern of this IC is criticality events that occur in Cold Shutdown or Refueling modes (NUREG 1449, Shutdown and Low-Power Operation at Commercial Nuclear Power Plants in the United States), the IC is applicable in other modes in which inadvertent criticalities are possible. This IC indicates a potential degradation of the level of safety of the plant, warranting a Notification of Unusual Event classification. This IC excludes inadvertent criticalities that occur during planned reactivity changes associated with reactor startups (e.g., criticality earlier than estimated). The Cold Shutdown / Refueling IC is CU8.

This condition can be identified using Startup Rate meters, Source Range Count Rate recorders and lumigraphs, SUR indication, Startup Channel Count Rate alarms, Wide Range Log Power lumigraphs, Plant Computer System, and QSPDS.

The term "sustained" is used in order to allow exclusion of expected short-term positive startup rates from planned fuel bundle or control rod movements during core alteration. These short-term positive startup rates are the result of the rise in neutron population due to subcritical multiplication. Escalation would be by Table F-1 – Fission Product Barrier Matrix, as appropriate to the operating mode at the time of the event, or by Shift Manager / Station Emergency Director judgment.

5.6 Category S – System Malfunction

Subcategory: ATWS

Initiating Condition: [SA2] Automatic Trip Fails to Shut Down the Reactor And the Manual Actions Taken from the Control Room Control Panels are Successful in Shutting Down the Reactor.

Mode Applicability: 1 - Power Operation, 2 - Startup

Emergency Action Level:

SA2.1 Alert
A. An automatic trip (RPS and ATWS / DSS) failed to shut down the reactor.
AND
B. Manual actions taken from the Control Room Control Panels successfully shut down the reactor as indicated by Reactor Power less than 5.0%

Basis:

A reactor trip is automatically initiated by the RPS when certain continuously monitored parameters exceed predetermined setpoints. A reactor trip may be the result of automatic action initiated by the RPS in response to any of the following parameters:

- High Reactor power - linear and/or log
- Low Pressurizer (PZR) pressure
- High PZR pressure
- Low Reactor Coolant flow
- Low Steam Generator (S/G) level
- High S/G level
- Low S/G pressure
- High Containment pressure
- Core Protection Calculator trips - Low DNBR, Hi LPD, Aux trips
- High seismic trip
- Loss of load when reactor power is greater than 55%

Following a successful reactor trip, rapid insertion of the Control Element Assemblies (CEAs) occurs. A negative Startup Rate (SUR) and a rapid decrease in Reactor power will

5.6 Category S – System Malfunction

be observed. This rapid power decrease is followed by a slower decrease in indicated power (about -1/3 DPM) until all the delayed neutrons have appeared. Indicated power will stabilize at the sub-critical multiplication level and decrease slowly over a period of hours. A predictable post-trip response from an automatic reactor trip signal should therefore consist of a prompt drop in reactor power as sensed by the nuclear instrumentation and a negative SUR as nuclear power drops into the source range.

If failure of the automatic Loss of Load and/or High PZR pressure RPS trip signal occurs, CEAs can be rapidly inserted by automatic initiation of the ATWS / DSS system on Hi-Hi Pressurizer pressure. If a manual reactor trip is required to achieve reactor shutdown, a condition that is more than a potential degradation of a safety system has occurred in that a front line automatic protection system (RPS, ATWS/DSS) did not function in response to a plant transient. Plant safety has thus been compromised because design limits of the fuel may have been exceeded. An Alert is indicated even if a manual reactor trip is successful because conditions exist that lead to potential loss of Fuel Clad or Reactor Coolant System barrier integrity. The RPS, ATWS / DSS trip setpoint being exceeded, rather than a limiting safety system setpoint, is specified here because the failure of the automatic protection system is the issue.

Per the appropriate procedures, the operator manually trips the reactor if actual plant parameters have reached or exceeded RPS trip setpoints and no trip has occurred. Manual trip actions taken at the Control Room control panels are any set of actions by the reactor operator(s) which causes or should cause Control Element Assemblies (CEAs) to be rapidly inserted into the core and shuts down the reactor. If depressing the reactor trip pushbuttons or deenergization of 480V Loadcenters B15 and B16 from the Control Room is successful in shutting down the reactor, escalation to a Site Area Emergency is not required. Only manual actions taken from within the Control Room satisfy a successful shut down of the reactor for this EAL.

The Alert emergency classification is required whenever the Shift Manager determines that a required automatic reactor trip did not occur. The failure of the automatic RPS, ATWS/DSS trip signal to complete a reactor trip following receipt of an automatic trip

5.6 Category S – System Malfunction

signal meets the Alert classification threshold of potential substantial degradation in the level of safety of the plant. This is true even if no radiation alarms indicate fuel problems.

In the event that the operator identifies a reactor trip is imminent and successfully initiates a manual reactor trip before the automatic trip setpoint is reached, no declaration is required. The successful manual trip of the reactor before it reaches its automatic trip setpoint or reactor trip signals caused by instrumentation channel failures does not lead to a potential fission product barrier loss. If manual reactor trip actions taken at the Main control boards (following an unsuccessful automatic reactor trip) fail to shut down the reactor the event escalates to a Site Area Emergency under EAL SS2.1.

5.6 Category S – System Malfunction

Subcategory: Loss of Indications / Alarms

Initiating Condition: [SA4] UNPLANNED Loss of Safety System Annunciation or Indication in the Control Room With EITHER (1) a SIGNIFICANT TRANSIENT in Progress, or (2) Compensatory Indicators Unavailable.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

SA4.1 Alert

A. UNPLANNED loss of greater than approximately 75% of the following for 15 minutes or longer:

- Control Room annunciator panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064

OR

- Control Room safety systems indicators on the following Control Room panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064

AND

B. EITHER of the following:

- A SIGNIFICANT TRANSIENT is in progress
- Compensatory non-alarming indications on QSPDS, CFMS and PCS are **NOT** available

Basis:

Annunciators or indicators for this EAL include those identified in the Abnormal Operating Instructions, the Emergency Operating Instructions and other EALs (e.g., area, process, and/or effluent rad monitors, etc.). Panels 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR063 and 2(3)CR064 have annunciators / indicators associated with safety systems, abnormal operating instructions and/or emergency operating instructions. Panel 2/3CR061 has annunciators / indicators for radiation monitors and seismic instrumentation associated with EALs involving abnormal radiological conditions and earthquakes. Sections of panel 2/3CR063 have

5.6 Category S – System Malfunction

annunciators / indicators for AC power associated with EALs involving loss of off-site power.

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

"Unplanned" loss of annunciators or indicators does not include scheduled maintenance and testing activities.

Quantification is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, an elevated risk exists 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 judgment threshold for determining the severity of the plant conditions. It is also not intended that the Shift Manager be tasked with making a judgment decision as to whether additional personnel are required to provide increased monitoring of system operation.

Plant design provides redundant safety system indication powered from separate uninterruptible power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, failure of indications is included in this EAL due to difficulty associated with assessment of plant conditions. The loss of several safety system indicators should remain a function of the specific system or component operability status and will be addressed by the applicable Technical Specification. The initiation of a Technical Specification-imposed plant shutdown related to the instrument loss must be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action time, the Notification of Unusual Event is based on EAL SU2.1. "Inability to Reach Required Shutdown Within Technical Specification Limits."

"Significant transient" includes an unplanned event involving one or more of the following: reactor trip, automatic turbine runback involving greater than 25% thermal power change, electrical load rejection greater than 25% full electrical load, SI actuations or thermal power oscillations greater than 10%.

5.6 Category S – System Malfunction

The compensatory indications include:

- Qualified Safety Parameter Display System (QSPDS)
- Critical Function Monitoring System (CFMS) (includes data from QSPDS)
- Plant Computer System (PCS)

If both a major portion of the annunciation system and all computer monitoring capability (i.e., QSPDS, CFMS and PCS) are unavailable to the extent that additional operating personnel are required to monitor indications, the Alert declaration is required.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

Due to the limited number of safety systems in operation during Cold Shutdown, Refueling and Defueled modes, this EAL is not applicable during these modes of operation. This Alert will be escalated to a Site Area Emergency under EAL SS6.1 if the operating crew cannot monitor the transient in progress due to a concurrent loss of compensatory indications with a SIGNIFICANT TRANSIENT in progress during the loss of annunciation or indication.

5.6 Category S – System Malfunction

Subcategory: Loss of AC / DC Power Sources

Initiating Condition: [SA5] AC Power Capability to Emergency Buses Reduced to a Single Power Source for 15 Minutes or Longer Such That Any Additional Single Failure Would Result in Station Blackout.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

NOTE: If any load necessary for removal of decay heat or makeup to the RCS is not operable, then refer to the Emergency Action Level Technical bases, EPSD-1.

SA5.1 Alert

AC power capability to 1E 4kV buses 2(3)A04 or 2(3)A06 reduced to a single power source for 15 minutes or longer

AND

ANY additional single power source failure will result in Station Blackout

Basis:

This IC and the associated EAL are intended to provide an escalation from IC SU1. The condition indicated by this IC is the degradation of the off-site and on-site AC power sources such that any additional single failure would result in a station blackout. A station blackout (SBO) exists when there is a loss of off-site power and concurrent loss of both of emergency diesel generators on a unit. An SBO results in loss of all Class 1E 4kV and 480 V electrical power. An SBO causes a reactor trip. Generally, the only plant equipment that remains functional is limited Control Room instrumentation, the Turbine-Driven Auxiliary Feedwater Pump P140, S/G steaming capability via the Atmospheric Dump Valves, and the Safety Injection Tanks.

Buses 2(3)A04 and 2(3)A06 are the 1E 4kV (emergency) buses and several separate on-site and off-site power sources are provided to the 1E 4kV buses.

Several combinations of power failures could therefore satisfy this EAL. This condition could occur due to a loss of all off-site power with a concurrent failure of one emergency generator to supply power to its emergency bus with no cross-tie in place. Another related

5.6 Category S – System Malfunction

condition could be the loss of all off-site power and loss of on-site emergency diesels with only one train of emergency buses being backfed from the unit Main Generator, or the loss of on-site emergency diesels with only one train of emergency buses being backfed from off-site power. The subsequent loss of this single remaining power source would escalate the event to a Site Area Emergency under EAL SS1.1.

Fifteen minutes was selected as a threshold to exclude transient or momentary losses of power. If multiple sources fail to energize the 1E 4kV buses for a unit within 15 minutes, an Alert is declared under this EAL.

5.6 Category S – System Malfunction

Subcategory: Loss of AC / DC Power Sources

Initiating Condition: [SS1] Loss of All Off-site and All On-Site AC Power to Emergency Buses for 15 Minutes or Longer.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

NOTE: If any load necessary for removal of decay heat or makeup to the RCS is not operable, then refer to the Emergency Action Level Technical Bases, EPSD-1.

SS1.1 Site Area Emergency
Loss of **ALL** Off-site and **ALL** On-site AC power to 1E 4kV buses 2(3)A04 and 2(3)A06 for 15 minutes or longer.

Basis:

Loss of all off-site and all on-site AC power compromises all plant safety systems requiring electrical power. An SBO results in loss of all Class 1E 4kV and 480 V electrical power. An SBO causes a reactor trip. Generally, the only plant equipment that remains functional is limited Control Room instrumentation, the Turbine-Driven Auxiliary Feedwater Pump P140, S/G steaming capability via the Atmospheric Dump Valves and the Safety Injection Tanks. Buses 2(3)A04 and 2(3)A06 are the 1E 4kV (emergency) buses. Several separate power sources are provided to the 1E 4kV buses. See appropriate procedures for detailed power sources.

Consideration should be given to operable loads necessary to remove decay heat or provide RCS makeup capability when evaluating loss of AC power to 1E 4kV buses. Even though a 1E 4kV bus may be energized, if necessary loads ARE lost and have caused failure of the RCS Heat Removal safety function or the RCS Inventory Control safety function, then the bus should not be considered operable. If this bus is the only energized bus, then a Site Area Emergency per this EAL should be declared.

5.6 Category S – System Malfunction

Prolonged loss of all AC power will cause core uncovery and loss of Containment integrity; thus this event can escalate to a General Emergency under Category F EALs or EAL SG1.1. Fifteen minutes was selected as a threshold to exclude transient or momentary losses of off-site power.

5.6 Category S – System Malfunction

Subcategory: ATWS

Initiating Condition: [SS2] Automatic Trip Fails to Shut Down the Reactor And Manual Actions Taken from the Control Room Control Panels are NOT Successful in Shutting Down the Reactor.

Mode Applicability: 1 - Power Operation, 2 - Startup

Emergency Action Level:

SS2.1 Site Area Emergency

A. An automatic trip (RPS and ATWS / DSS) failed to shut down the reactor.

AND

B. Manual actions taken from the Control Room Control Panels **DO NOT** shut down the reactor as indicated by Reactor Power greater than 5.0%

Basis:

This EAL addresses any automatic reactor trip signal followed by a manual trip that fails to shut down the reactor to an extent the reactor is producing energy in excess of the heat load for which the safety systems were designed. Manual trip actions taken at the Control Room control panels are any set of actions by the reactor operator(s) which causes or should cause Control Element Assemblies (CEAs) to be rapidly inserted into the core and shuts down the reactor.

This includes RNO actions in the standard post-trip actions to ensure 480 V Load Centers B15 and B16 are de-energized. Automatic and manual trip actions are not considered successful if action away from the Control Room control panels is required to trip the reactor. This EAL is still applicable even if actions taken away from the Control Room control panels are successful in shutting the reactor down because the design limits of the fuel may have been exceeded or because of the gross failure of the Reactor Protection System to shut down the plant.

If reactor power is greater than or equal to 5.0% with only one atmospheric dump valve available, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. The combination of failure of both front-line and backup protection systems to function in response to a plant transient, along with the continued production of heat, poses a direct threat to the Fuel Clad and RCS barriers and warrants

5.6 Category S – System Malfunction

declaration of a Site Area Emergency. Although this IC may be viewed as redundant to the Fission Product Barrier Degradation IC, its inclusion is necessary to better assure timely recognition and emergency response.

Note that the operating mode changes to Hot Standby as soon as a successful reactor trip occurs. Since this EAL is applicable only to Power Operation and Startup modes, escalation to the Site Area Emergency classification is not appropriate under this EAL after the reactor is successfully tripped. Escalation of this event to a General Emergency would be under EAL SG2.1 or Shift Manager / Station Emergency Director judgment (EAL HG2.1).

Escalation of this event to a General Emergency would be due to a prolonged condition leading to an extreme challenge to either core-cooling or heat removal.

5.6 Category S – System Malfunction

Subcategory: Loss of AC / DC Power Sources

Initiating Condition: [SS3] Loss of All Vital DC Power for 15 Minutes or Longer.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

SS3.1 Site Area Emergency
Less than 105 VDC bus voltage indication on **ALL** Vital DC buses 2(3)D1, 2(3)D2, 2(3)D3 and 2(3)D4 for 15 minutes or longer

Basis:

Loss of all DC power compromises the ability to monitor and control plant safety functions. Prolonged loss of all DC power will cause core uncovery and loss of Containment integrity when there is significant decay heat and sensible heat in the reactor system. Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

The DC power supply systems capabilities for both units are described in UFSAR section 8.3.2.

This EAL is the hot condition equivalent of the cold condition loss of DC power EAL CU7.1. Escalation to a General Emergency would occur by EALs in Category A or Category F, or Shift Manager / Station Emergency Director judgment (EAL HG2.1).

5.6 Category S – System Malfunction

Subcategory: Loss of Indications / Alarms

Initiating Condition: [SS6] Inability to Monitor a SIGNIFICANT TRANSIENT in Progress.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

NOTE: The Shift Manager / Station Emergency Director should not wait until the applicable time has elapsed, but should declare the event as soon as it is determined that the condition has exceeded, or will likely exceed, the applicable time.

SS6.1 Site Area Emergency

A. Loss of greater than approximately 75% of the following for 15 minutes or longer:

- Control Room annunciator panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064

OR

- Control Room safety system indicators on the following Control Room panels: 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR061, 2/3CR063 and 2(3)CR064

AND

B. A SIGNIFICANT TRANSIENT is in progress

AND

C. Compensatory non-alarming indications on QSPDS, CFMS, and PCS are **NOT** available

Basis:

Annunciators or indicators for this EAL include those identified in the Abnormal Operating Instructions, the Emergency Operating Instructions and other EALs (e.g., area, process and/or effluent rad monitors, etc.). Panels 2(3)CR050, 2(3)CR052, 2(3)CR053, 2(3)CR056, 2(3)CR057, 2(3)CR058, 2(3)CR060, 2/3CR063 and 2(3)CR064 have annunciators / indicators associated with safety systems, abnormal operating instructions and/or emergency operating instructions. Panel 2/3CR061 has annunciators / indicators for radiation monitors and seismic instrumentation associated with EALs involving abnormal radiological conditions and earthquakes. Sections of panel 2/3CR063 have

5.6 Category S – System Malfunction

annunciators / indicators for AC power associated with EALs involving loss of off-site power.

This EAL recognizes the threat to plant safety associated with the complete loss of capability of the control room staff to monitor plant response to a SIGNIFICANT TRANSIENT. A Site Area Emergency exists if the Control Room staff cannot monitor safety functions needed for protection of the public.

Quantification is arbitrary, however, it is estimated that if approximately 75% of the safety system annunciators or indicators are lost, there is an 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 judgment threshold for determining the severity of the plant conditions. The judgment of the Shift Manager, however, should be used as the threshold for determining the severity of the plant conditions. It is also not intended that the Shift Supervisor be tasked with making a judgment decision as to whether additional personnel are required to provide increased monitoring of system operation.

Safety function acceptance criteria are contained in the appropriate procedures. The hierarchy on controlling and maintaining safety functions within acceptance criteria are as follows:

1. Reactivity Control
2. Vital Auxiliaries
3. RCS Inventory Control
4. RCS Pressure Control
5. Core Heat Removal
6. RCS Heat Removal
7. Containment Isolation
8. Containment Temperature / Pressure Control
9. Containment Combustible Gas Control

5.6 Category S – System Malfunction

It is further recognized that most plant designs provide redundant safety system indication powered from separate uninterruptible power supplies. While failure of a large portion of annunciators is more likely than a failure of a large portion of indications, the concern is included in this EAL due to difficulty associated with assessment of plant conditions. The loss of specific, or several, safety system indicators should remain a function of that specific system or component operability status. This will be addressed by the specific Technical Specification. The initiation of a Technical Specification imposed plant shutdown related to the instrument loss will be reported via 10 CFR 50.72. If the shutdown is not in compliance with the Technical Specification action, the NOUE is based on SU2 "Inability to Reach Required Shutdown Within Technical Specification Limits."

"Significant transient" includes an unplanned event involving one or more of the following: reactor trip, automatic turbine runback involving greater than 25% thermal power change, electrical load rejection greater than 25% full electrical load, ECCS actuations or thermal power oscillations greater than 10%.

The compensatory indications include:

- Qualified Safety Parameter Display System (QSPDS)
- Critical Functions Monitoring System (CFMS) (includes data from QSPDS)
- Plant Computer System (PCS)

Indications needed to monitor safety functions necessary for protection of the public must include Control Room indications, computer-generated indications (i.e., QSPDS, CFMS and PCS) and dedicated annunciation capability. The specific indications should be those used to determine such functions as the ability to shut down the reactor, maintain the core cooled and in a coolable geometry, remove heat from the core and maintain the reactor coolant system and Containment intact.

A Site Area Emergency is considered to exist if the control room staff cannot monitor safety functions needed for protection of the public while a significant transient is in progress.

Fifteen minutes was selected as a threshold to exclude transient or momentary power losses.

5.6 Category S – System Malfunction

Planned and unplanned actions are not differentiated in the EAL since a loss of instrumentation of this magnitude is of such significance during a transient that the cause of the loss is not an ameliorating factor.

5.6 Category S – System Malfunction

Subcategory: Loss of AC / DC Power Sources

Initiating Condition: [SG1] Prolonged Loss of All Off-site and All On-site AC Power to Emergency Buses.

Mode Applicability: 1 - Power Operation, 2 - Startup, 3 - Hot Standby, 4 - Hot Shutdown

Emergency Action Level:

SG1.1 General Emergency

Loss of **ALL** Off-site and **ALL** On-site AC power to 1E 4kV buses 2(3)A04 and 2(3)A06

AND

EITHER of the following:

- Restoration of at least one 1E 4kV bus in less than 4 hours is **NOT** likely

OR

- Indication of continuing degradation of core cooling based on REP CET greater than 700°F

Basis:

Loss of all AC power compromises all plant safety systems requiring electrical power including shutdown cooling, ECCS, Containment heat removal and secondary heat removal. An SBO causes a reactor trip. Generally, the only plant equipment that remains functional is limited Control Room instrumentation, the Turbine-Driven Auxiliary Feedwater Pump P140, S/G steaming capability via the Atmospheric Dump Valves, and the Safety Injection Tanks.

Prolonged loss of all AC power leads to loss of Fuel Clad, RCS and Containment barriers, thus warranting declaration of a General Emergency. The four-hour interval to restore AC power is based on the blackout coping analysis performed in conformance with 10 CFR 50.63 and Regulatory Guide 1.155, "Station Blackout." Although this IC may be viewed as redundant to the Fission Product Barrier IC, its inclusion is necessary to better assure timely recognition and emergency response.

This IC is specified to assure that in the unlikely event of a prolonged station blackout , timely recognition of the seriousness of the event occurs and that declaration of a General Emergency occurs as early as is appropriate, based on a reasonable assessment of the event trajectory. The likelihood of restoring at least one 1E 4kV bus to a unit should be

5.6 Category S – System Malfunction

based on a realistic appraisal of the situation, since a delay in an upgrade decision based on only a chance of mitigating the event could result in a loss of valuable time in preparing and implementing public protective actions.

In addition, under these conditions, fission product barrier monitoring capability may be degraded. Although it may be difficult to predict when power can be restored, it is necessary to give the Shift Manager / Station Emergency Director a reasonable idea of how quickly to declare a General Emergency based on two major considerations:

1. Are there any present indications that core cooling is already degraded to the point that loss or potential loss of fission product barriers is imminent?
2. If there are no present indications of such core cooling degradation, how likely is it that power can be restored in time to assure that a loss of two barriers with a potential loss of the third barrier can be prevented?

Thus, indication of continuing core cooling degradation must be based on fission product barrier monitoring with particular emphasis on Shift Manager / Station Emergency Director judgment as it relates to imminent loss or potential loss of fission product barriers and degraded ability to monitor fission product barriers.

Buses 2(3)A04 and 2(3)A06 are the 1E 4kV (emergency) buses. Several separate power sources are provided to the 1E 4kV buses. See appropriate procedures for detailed power sources.

Representative (REP) Core Exit Thermocouple (CET) readings provide an indirect indication of fuel clad temperature by measuring the temperature of the reactor coolant that leaves the core region. A superheat condition is indicated by a CET reading above the saturation temperature for the existing RCS pressure. RCS superheat signals the transition from a subcooled to a superheated regime. In a superheated regime, heat transfer mechanics are not as efficient as the subcooled condition and could lead to a rapid rise in fuel clad temperatures. Valid indication of superheat is a potential Fuel Clad barrier loss condition because the possible rapid rise in clad temperatures may lead to clad failure.

5.6 Category S – System Malfunction

When fully pressurized, a temperature of 700°F in the core exit region represents a superheated thermodynamic condition that can only result from core uncovery. The primary safety valves will limit the primary system saturation temperature to 668°F, which corresponds to 2,500 PSIA. It also corresponds to the water critical point (705°F), the point above which water can no longer exist in the liquid phase.

Generally, two accident scenarios lead to the superheated condition: LOCA and loss of S/G as a heat sink. LOCA results directly in a loss of inventory. Very small break LOCAs will not result in depressurization much below the HPSI pump shutoff head. For these small break LOCAs, superheat is indicative of core uncovery occurring at high pressure. For large break LOCAs that result in rapid depressurization to less than 300 PSIA, superheat occurs at low pressure. A loss of inventory (leading to core uncovery) can also result from a loss of S/G as a heat sink, which causes RCS pressure to rise high enough to lift the Pressurizer safeties.

5.6 Category S – System Malfunction

Subcategory: ATWS

Initiating Condition: [SG2] Automatic Trip and All Manual Actions Fail to Shut Down the Reactor And Indication of an Extreme Challenge to the Ability to Cool the Core Exists.

Mode Applicability: 1 - Power Operation, 2 - Startup

Emergency Action Level:

SG2.1 General Emergency

A. An automatic trip (RPS and ATWS / DSS) failed to shut down the reactor.

AND

B. All manual actions **DO NOT** shut down the reactor as indicated by Reactor Power greater than 5.0%:

AND

C. **EITHER** of the following exist or have occurred due to continued power generation:

- Indication exists that core cooling is extremely challenged based on REP CET at or approaching 1,200°F

OR

- Indication exists that heat removal is extremely challenged based on Core Heat Removal and RCS Heat Removal safety function acceptance criteria **NOT** met

Basis:

Under the conditions of this EAL, the efforts to bring the reactor subcritical have been unsuccessful and, as a result, the reactor is producing more heat than the maximum decay heat load for which the safety systems were designed. This situation could be a precursor for a core melt sequence.

This EAL addresses any automatic reactor trip signal followed by a manual trip that fails to shut down the reactor to an extent the reactor is producing energy in excess of the heat load for which the safety systems were designed. A manual reactor trip is any set of actions taken by the operator(s) at the Control Room Control Panels for the purpose of rapidly inserting control element assemblies (CEAs) into the core. This includes RNO action in the standard post-trip actions to ensure 480V Load Centers B15 and B16 are de-

5.6 Category S – System Malfunction

energized. Automatic and manual trips are not considered successful if actions away from the Control Room Control Panels are required to trip the reactor. If any of the alternate recovery actions for RCS boration listed in EOIs are required to reduce reactor power, the reactor trips have been unsuccessful. Startup Rate (SUR) is also used as an indicator of decreasing power and should be observed following any reactor trip from power.

In the event either of these challenges exists at a time that the reactor has not been brought below the power associated with the safety system design a core melt sequence exists. In this situation, core degradation can occur rapidly. For this reason, the General Emergency declaration is intended to be anticipatory of the fission product barrier table declaration to permit maximum off-site intervention time.

If reactor power is ≥ 5.0% with only one atmospheric dump valve available, the reactor is producing more heat than the maximum decay heat load for which the safety systems are designed. The combination of failure of both front-line and backup protection systems to function in response to a plant transient, along with the continued production of heat, poses a direct threat to the Fuel Clad and RCS barriers.

Note that the plant operating mode changes to Hot Standby as soon as a successful reactor trip occurs. Since this EAL is applicable only to Power Operation and Startup modes, escalation to the General Emergency classification is not appropriate under this EAL after the reactor is successfully tripped.

Representative (REP) Core Exit Thermocouple (CET) readings provide an indirect indication of fuel clad temperature by measuring the temperature of the reactor coolant that leaves the core region. An extreme challenge to the ability to cool the core is indicated by REP CET temperatures at or approaching 1,200°F.

Core and RCS heat removal safety function status acceptance criteria are specified in the appropriate procedures.

In the event this challenge occurs at a time when the reactor has not been brought below the power associated with safety system design power (typically 3% - 5%), a core melt sequence may exist and rapid degradation of the fuel clad could begin. To permit maximum off-site intervention time, the General Emergency declaration is therefore

5.6 Category S – System Malfunction

appropriate in anticipation of an inevitable General Emergency declaration due to loss and potential loss of fission product barriers.

CORPORATE EMERGENCY DIRECTOR DUTIES

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50.59 DNA / 72.48 DNA

CORPORATE EMERGENCY DIRECTOR DUTIES

1.0 OBJECTIVES

1.1 Provide guidance to the Corporate Emergency Director (CED) for directing emergency response activities from the Emergency Operations Facility (EOF) or the Alternate EOF (AEOF).

1.2 Provide guidance to CED Advisors and Communicators for emergency response activities from the EOF or the Alternate EOF.

2.0 REFERENCES

2.1 Procedures

2.1.1 SO123-XV-109, Procedure and Instruction Format and Content

2.1.2 SO123-XV-HU-3, Written Instruction Use and Adherence

2.1.3 SO123-VIII-10, Emergency Coordinator Duties

2.1.4 SO123-VIII-10.1, Station Emergency Director Duties

2.1.5 SO123-VIII-10.3, Protective Action Recommendations

2.1.6 SO123-VIII-10.5, Event Closeout and Recovery

2.1.7 SO123-VIII-10.6, Emergency Response Actions to a Declared Security Event

2.1.8 SO123-VIII-30.7, Emergency Notifications

2.1.9 SO123-VIII-60, Security Leader Duties

2.1.10 SO123-VIII-70, Administrative Leader Duties

2.1.11 SO23-13-25, Operator Actions During Security Events

2.1.12 SO123-XV-7, Drug and Alcohol Testing Program for Protected Area Access and Assignment to Emergency Operations Facility Duties

2.2 Other

2.2.1 Form EP(123) 10, Event Notification Form

2.2.2 Form EP(123) 11, Verbal Notification Form

3.0 PREREQUISITES

3.1 Emergency Planning is responsible for ensuring the current copy of this document is in the emergency notebook for use during declared emergencies and drills.

3.2 Personnel are responsible for ensuring they use the current copy of this document when not in a declared emergency or drill by checking the electronic document management system or by use of one of the methods described in SO123-XV-109, Procedure and Instruction Format and Content and SO123-XV-HU-3, Written Instruction Use and Adherence.

3.3 Verify level of use requirements on the first page of the document.

4.0 PRECAUTIONS

4.1 Emergency Coordinator (EC) duties shall normally be performed by the Units 2/3 Shift Manager (SM) prior to turnover to the Station Emergency Director (SED), and ultimately by the CED.

4.1.1 Prior to turnover of EC title to the CED, only the EC (SM/SED) may authorize:

- Emergency Event Declaration/Classification
- Site Assembly and Site Evacuation
- Notification to Offsite Agencies
- Offsite Protective Action Recommendations
- Exceeding 10CFR20 Exposure Limits

4.1.2 When the EC title is turned over to the CED, the EC duties are split between the SED and the CED. Following turnover of EC title to the CED,

.1 The SED retains the authority for:

- Emergency Event Declaration/Classification
- Site Assembly
- Exceeding 10CFR20 Exposure Limits

.2 The CED assumes the authority for:

- Notification to Offsite Agencies
- Offsite Protective Action Recommendations
- Site Evacuation

4.2 The SM/SED has responsibility for coordinating deviations from License Conditions.

4.3 The EOF should be activated in 90 minutes from initiation of ERO Recall.

4.4 Protective Action Recommendations (PARs) shall be made with the 15-minute verbal notification to offsite agencies.

4.5 PARs shall be included in the Event Notification Form and follow-up Event Notification Forms.

4.6 Turnover of the EC duties during transient conditions or with uncompleted verbal notifications in progress may result in failure to meet regulatory requirements for timely and accurate classification, notification and PAR.

5.0 CHECKLIST(S)

NOTE

The following CED Checklist may be performed in any order the Declared Emergency requires.

5.1 EOF/AEOF Activation

5.1.1 Obtain copies of completed EP(123) 10 (Event Notification Form) and/or EP(123) 11 (Verbal Notification Form).

5.1.2 Review Event Notification Form and/or Verbal Notification Form.

5.1.3 Contact the SED for update of plant status.

5.1.4 Review EOF staffing with Emergency Planning Coordinator (EPC).

5.1.5 If the EOF/AEOF minimum staffing requirements are met and the ability to perform EOF functions is satisfied, then inform the SED that the EOF/AEOF is activated.

5.1.6 Direct an emergency responder to fill EOF Manager position.

.1 Provide the EOF Manager with Attachment 1.

5.1.7 Direct an emergency responder to fill SRO Briefer/Ivory Phone Communicator position.

.1 Provide the SRO Briefer with Attachment 2.

5.1.8 Direct an emergency responder to fill the Joint Information Center (JIC) Communicator/Technical Liaison position.

.1 Provide the JIC Communicator/Technical Liaison with Attachment 7.

5.1.9 Declare the EOF/AEOF activated when minimum staffing requirements are met and EOF personnel are able to perform their emergency response duties.

.1 Announce the activation of the EOF to EOF personnel.

.2 Perform an Initial EOF Briefing using Attachment 8 (CED/EOF Briefing Guidance – Section 1.0, only).

5.1.10 Inform the SED the EOF/Alt EOF is activated and is ready for turnover.

NOTE

The CED may request a filled out copy of the SED Turnover Sheet be Faxed to the EOF prior to beginning EC turnover.

5.2 Emergency Coordinator (EC) Turnover

5.2.1 Direct EOF Leaders to come to the CED table for EC turnover:

- EOF Manager
- EOF Technical Leader
- EOF Health Physics Leader
- EOF Emergency Planning Coordinator
- Security Director
- Administrative Leader

5.2.2 Refer to a clean copy of Attachment 4 (Emergency Coordinator Turnover Status).

5.2.3 Direct the SED to begin EC Turnover.

5.2.4 When EC Turnover is complete:

.1 Perform a Team Update to inform the EOF that the EC title is turned over to the CED.

.2 Perform an EOF briefing using Attachment 8 (CED/EOF Briefing Guidelines – Section 2.0, only).

NOTE

Offsite notification is required following:

- Increase in classification
- Upgrade in PAR
- Start of Radiological Release
- Stop of Radiological Release

5.3 Notifications to California Emergency Management Agency (Cal EMA) and Yellow Phone System (YPS) Stations

5.3.1 Direct the Emergency Advisor Notifications (EAN) to make all required notifications in accordance with SO123-VIII-30.7.

5.3.2 Review, approve, and sign required EP(123) 11 Forms (Verbal Notification Forms) prior to being communicated to Cal EMA or YPS Stations.

5.3.3 Review, approve, and sign all EP(123) 10 Forms (Event Notification Forms) prior to being faxed to Cal EMA or YPS Stations.

5.4 Protective Action Recommendations (PARs)

5.4.1 Determine PARs in accordance with SO123-VIII-10.3.

5.4.2 Upgrade PARs when conditions require PAR upgrades.

.1 Changing wind direction from one Protective Action Zone (PAZ) to another in accordance with SO123-VIII-10.3.

.2 Changing radiological conditions when wind direction impacts PAZ 5 in accordance with SO123-VIII-10.3.

NOTE

1) EOF Offsite Field Monitoring Teams, Fire Department, and Security may assist with the assembly of Camp Mesa personnel.
2) EOF Offsite Field Monitoring Teams, Fire Department, and Security may assist with the evacuation of Camp Mesa personnel.
3) The Emergency Response Position (Shift Manager, Station Emergency Director, and Corporate Emergency Director) who is the EC is responsible for ensuring Camp Mesa is assembled.
4) The Emergency Response Position (Shift Manager, Station Emergency Director, and Corporate Emergency Director) who is the EC is responsible for ensuring Camp Mesa is evacuated.

5.5 Camp Mesa Assembly and Evacuation

5.5.1 Direct Camp Mesa to assemble in G-50 Cafeteria at an Alert or higher Emergency Declaration unless it exposes Camp Mesa personnel to a greater hazard.

5.5.2 Direct Camp Mesa to evacuate at a Site Area Emergency or higher Emergency Declaration unless it exposes Camp Mesa personnel to a greater hazard.

NOTE

1) The Emergency Response Position (Shift Manager and Station Emergency Director) who is the EC is responsible for ensuring Non-Essential Personnel are assembled.
2) The Emergency Response Position (Shift Manager, Station Emergency Director, and Corporate Emergency Director) who is the EC is responsible for ensuring Non-Essential Personnel are evacuated.
1) The CED may use Attachment 9 (Guidance for Assembly/Evacuation of Non-Essential Personnel) to assist in the assembly/evacuation process.

5.6 Assembly and Evacuation of Non-Essential Personnel

5.6.1 Verify that Non-Essential Personnel are assembled at a Site Area Emergency or higher Emergency Declaration by contacting the SED.

5.6.2 Direct Non-Essential Personnel to evacuate at a Site Area Emergency or higher Emergency Declaration unless it exposes personnel to a greater hazard.

5.7 Additional Actions

5.7.1 Refer to Section 6.6 (Credible Threat) and Attachment 3 for response to a credible threat.

5.7.2 Refer to Section 6.7 (Security Event Activities), and Attachment 6 for response to a Security related event.

5.7.3 Refer to Attachment 6 (EC Post-Security Event Checklist) at the termination of a declared security event.

5.7.4 Refer to Section 6.8 (Activation of Alternate EOF at Irvine Operations Center) for activation of the AEOF.

5.7.5 Refer to Step 6.10.2 concerning activation of Institute Nuclear Power Operations (INPO) Mutual Aid Agreement.

.1 Contact the INPO Communicator for assistance.

5.7.6 Refer to Section 6.11 (Turnover) for turnover with relief oncoming CED information.

5.7.7 Refer to Section 6.12 and SO123-VIII-10.5 (Event Closeout and Recovery) for assistance in closeout/termination of declared emergency events.

5.7.8 Refer to Section 6.12 and SO123-VIII-10.5 (Event Closeout and Recovery) for assistance in recovery from declared emergency event.

5.7.9 Refer to Step 6.1.1.7 for instructions concerning how to handle recalled personnel who have consumed alcohol.

6.0 PROCEDURE

CAUTION

Failure to maintain effective communications with ERO members providing information to you and requiring your input may result in errors in Dose Assessment, Emergency Classifications and/or Protective Action Recommendation.

6.1 Activation

6.1.1 EOF Activation

.1 Obtain and review copies of EP(123) 10, Event Notification Form and/or EP(123) 11, Verbal Notification Form, issued from the Control Room and the Technical Support Center (TSC).

.2 Contact the EC/SED in the TSC for an update on plant status.

.3 Review the status of staffing in the EOF with the Emergency Planning Coordinator (EPC).

.4 Direct emergency responders to fill the following functions by providing them their respective Attachments from this procedure:

- EOF Manager - Attachment 1
- SRO Briefer - Attachment 2
- JIC Communicator/Technical Liaison – Attachment 7

.5 When the EOF/Alternate EOF (AEOF) minimum staffing requirements are met and the ability to perform EOF functions is satisfied, then inform the SED that the EOF/AEOF is activated.

.6 Direct the EPC to announce the EOF activation to EOF personnel over the EOF Public Address system.

.7 If notified of recalled personnel who have consumed alcohol within five hours and are waiting entry into the EOF, evaluate the individual per SO123-XV-7 requirements to determine if the individual should:

- Be allowed entry into the EOF (with restrictions), or
- Report to the E50 Local Assembly Area (Classrooms 1 through 4) and continue to wait, or
- Be provided a ride home.

6.1.2 Emergency Coordinator Turnover

.1 Request the SED provide turnover information.

.2 Refer to Attachment 4 in preparation for turnover.

.3 Based on Emergency Action Level, direct personnel from the list below to be present for the turnover:

- EOF Manager
- EOF Technical Leader
- EOF Health Physics Leader
- EOF Emergency Planning Coordinator
- Security Director
- Administrative Leader Duties

.4 When prepared to assume the EC duties, inform the SED.

.5 Announce to EOF personnel over the public address system the following (this can be delegated to the EPC):

- Your Name
- Your assumption of EC position
- Affected unit(s)
- Emergency Class
- Emergency Action Level
- Security Code (Red or Blue), for security events.
- Event Declaration Time
- Protective Action Recommendation (PAR)
- Status of Onsite Protective Actions
- Performance Expectations in accordance with Attachment 8, EOF Briefing Checklist

6.2 Event Notifications

NOTES

1) Verbal notifications to the NRC are issued from the TSC.

2) During security related events, consider a review by the Security Director prior to notification approval.

3) Event Notifications are the responsibility of the Emergency Advisor, Notifications and the Yellow Phone Communicator.

6.2.1 Direct EAN to initiate notifications. (Completion of notifications for each emergency classification, reclassification, upgrade in PAR, start or stop of radiological release should be within the time limits specified in the Notification Time Limits table).

NOTIFICATION TIME LIMITS

TIME LIMIT	NOTIFICATION	RESPONSIBILITY
EDT + 15 minutes	Verbal to Local & State	EAN
EDT + 30 minutes	ENF to Local & State	EAN
EDT + 90 minutes and every 60 minutes thereafter	ENF Follow-up	EAN

(EDT = Event Declaration Time)

6.2.2 Perform the following for each reclassification, upgrade in PAR, start or stop of radiological release:

.1 Direct the Emergency Advisor for Notifications to prepare required notifications per SO123-VIII-30.7.

.2 Review and authorize transmittal of verbal and written notifications by initialing the associated notification form.

6.2.3 If the Communicator **has not** started to read the verbal message and any of the following occurs:

- Increase in classification
- Upgrade in PAR
- Start of radiological release
- Stop of radiological release

AND

- If reading of updated verbal message can start within 15 minutes of initial event

then provide notification for the updated condition only.

.1 Include previous classification, PARs or time when radiological release started/stopped on the 30-minute ENF.

6.2.4 If the Communicator **has** started to read the verbal message and any of the following occurs:

- Increase in classification
- Upgrade in PAR
- Start of radiological release
- Stop of radiological release

then inform Communicator to complete notification skipping the roll call portion of the verbal notification form, and report to start new set of notifications.

.1 Include time when radiological release started/stopped on the 30-minute ENF.

6.3 Actions for Alert or Higher Classification

6.3.1 Determine PARs using SO123-VIII-10.3.

.1 If plant conditions change or new information becomes available (e.g., dose projections, core damage assessment, containment activity, wind direction change), then reassess the PAR using SO123-VIII-10.3.

6.3.1.2 If accident conditions exist beyond plant design bases, and there is no immediate certainty of recovery, then:

.2.1 Direct Effluent Engineer to obtain the current source term.

.2.2 Direct Health Physics (HP) to calculate dose projections based on the potential source term.

.2.3 Direct HP Leader to supply the most current 15-minute average wind direction and wind speed in accordance with SO123-VIII-10.3.

.2.4 Recommend offsite protective actions based on the potential dose projections using SO123-VIII-10.3.

.3 Inform the SED of the PAR and its bases.

6.3.2 Notify the NRC Site Team, if present in the EOF, immediately after completion of notification to local and state authorities.

6.3.3 Direct INPO Communicator to notify American Nuclear Insurers (ANI) of the declaration of an emergency at San Onofre (refer to Emergency Response Telephone Directory (ERTD) for Phone Number).

6.3.4 Direct INPO Communicator to notify the Institute of Nuclear Power Operations (INPO) of the declaration of an emergency at San Onofre (refer to ERTD for Phone Number).

6.3.5 Review and approve news releases prior to their release. (For Security-related events, direct the Security Director to review news releases prior to their approval).

6.4 Camp Mesa Assembly/Evacuation

NOTES

1) Once the EC function has been transferred to the CED, the CED is responsible for Camp Mesa assembly and/or evacuation.

2) At an Alert, Camp Mesa should be verbally informed of emergency declaration and inform residents of requirement to report to Mesa Cafeteria Assembly Area, unless otherwise directed.

3) Verbal notification of Camp Mesa residents may be performed by portable PA system, or door-to-door.

6.4.1 If the SED still has the EC functions, then perform the following:

.1 If Camp Mesa is occupied and classification is Alert or higher, then verify with the SED that he/she has directed the Fire Department or Security, as available, to perform a sweep of Camp Mesa, verbally informing residents of an emergency declaration requiring them to report to the Mesa Cafeteria assembly area, unless otherwise directed.

6.4.1.2 Verify with the SED that he/she has directed evacuation of Camp Mesa residents at the Site Area Emergency (SAE) or higher classification.

6.4.2 If the CED has the EC functions, then perform the following:

.1 Direct Security to perform a sweep of Camp Mesa, verbally informing residents of an emergency declaration requiring them to report to the Mesa Cafeteria assembly area, unless otherwise directed.

.1.1 HP Field Teams, if available, and/or Fire Department can assist in performing this task.

NOTE

At a Site Area Emergency, Assembly of Camp Mesa non-emergency response personnel is mandatory unless it exposes personnel to a greater hazard.

6.4.3 If event classification is at least a Site Area Emergency, or it is is determined that Camp Mesa evacuation is necessary, then perform the following:

.1 Direct Security to perform a sweep of Camp Mesa, verbally informing residents of evacuation.

.1.1 HP Field Teams, if available, and/or Fire Department can assist in performing this task.

.2 Request EOF Administrative Leader to implement SO123-VIII-70.

6.5 Site Assembly and Evacuation Coordination

NOTES

1) Once the EC function is transferred to the CED, the CED is responsible for Site Evacuation.

2) The SED is responsible for making Site Assembly determination and Site PA announcements. The SED can determine due to emergency/hazardous conditions, immediate evacuation is required without assembly.

3) The SED when acting as the EC is responsible for providing information to the personnel located at assembly areas and then evacuating these personnel.

4) The CED when acting as the EC is responsible for providing information to the personnel located at assembly areas and then evacuating these personnel.

5) The CED may use Attachment 9, Guidance for Assembly/Evacuation of Non-Essential Personnel, to assist in the evacuation process.

6.5.1 Evaluate the need for evacuation of non-emergency response personnel, considering the following conditions:

- Site Assembly followed by site evacuation is mandatory for all non-emergency response personnel at a SAE or higher classification, unless assembly or evacuation exposes personnel to a greater hazard.
- Non-emergency response personnel are all individuals on site who are not required for immediate response during an emergency.
- Siren Activation is mandatory upon declaration of Alert or higher emergencies, and for Site Assembly and Evacuation.
- Evacuation of vehicles through the South Gate will require removal of the bollards at the south end of Parking Lot #2, which is estimated to take 1.5 hours.
- For short-term releases, consideration should be given to on-site Sheltering.

6.5.2 If emergency Class is SAE or higher, then a site assembly and evacuation should be implemented.

6.5.3 If a site assembly is required, then perform the following steps:

.1 Contact SED to coordinate initiation of site assembly in accordance with SO123-VIII-10.1, Station Emergency Director Duties.

.2 Direct EOF Administrative Leader to implement appropriate portions of SO123-VIII-70 for Site Assembly/Evacuation.

.3 Direct Security Director and EOF HP Manager to assist with implementation support.

.4 Direct the EOF Administrative Leader to provide Assembly Area Coordinators assistance.

6.5.4 If a site evacuation is necessary, then perform the following steps:

.1 Contact SED to coordinate initiation of site evacuation in accordance with SO123-VIII-10.1, Station Emergency Director Duties.

.2 Direct the EOF Administrative Leader to implement an evacuation of the personnel located in Assembly Areas.

.3 Direct Security Director and EOF HP Manager to assist with implementation support.

.4 Direct the EOF Administrative Leader to provide Assembly Area Coordinators assistance.

6.6 Credible Threat

6.6.1 Review Attachment 3 with the Security Director and the SED to develop an appropriate level of response to a credible threat.

6.6.2 Assign action items to fully develop and implement the plan.

6.7 Security Event Activities

6.7.1 If the emergency is a Security Event, then confer with the Security Director to determine the appropriate time to address Attachment 6.

6.7.2 Refer to SO123-VIII-10.6 for guidance on declared Security-related events.

6.8 Activation of Alternate EOF at Irvine Operations Center

6.8.1 If conditions exist that prevent access to the EOF as a result of severe weather or other reason, then consult with Emergency Advisors to direct activation of the Alternate EOF (AEOF) at the Irvine Operations Center (IOC).

6.8.2 If the EOF is already manned, and conditions exist which require evacuation, then direct the EOF staff to relocate to the AEOF at the IOC.

6.8.3 If any of the hazards listed below affect the EOF, then consult with Emergency Advisors to determine the necessity for relocation of the staff to the AEOF.

- High EOF or portable radiation monitor readings
- Fire in or near the EOF.
- Security hazards which threaten personnel.

6.8.4 Turn over EC functions to the SED in the TSC until the AEOF is staffed.

6.8.5 Collect and transport materials and equipment necessary to perform emergency response functions at the alternate facility.

6.8.6 When time allows, then conduct an assessment of emergency response facility status, command and control functions, and key Emergency Response Organization (ERO) functions using Attachment 5.

6.8.7 Re-Entry Into Evacuated Areas

.1 If the hazard causing an evacuation of the EOF has been eliminated or controlled to a point that will allow use of the EOF, then direct the EPC to coordinate re-entry efforts.

6.9 Event Reclassification/PAR/PAR Upgrade/Radiological Release

NOTES

1) The Emergency Advisor (EA) Operations in the TSC notifies the emergency response facilities of the classifications/reclassifications using the Ivory Phone.

2) The EOF Manager discusses each reclassification and PAR/PAR Upgrade with Offsite Dose Assessment Center (ODAC).

3) Reclassification, upgrade in PAR including additional PAZ(s), start or stop of a radiological release requires a new set notifications per the Notification Time Limits table in Section 6.2. Include time when radiological release started/stopped on the following 30-minute ENF.

6.9.1 Determine PARs using SO123-VIII-10.3.

6.9.2 Initiate offsite notifications per Step 6.2.

6.9.3 Announce or have the EPC announce the reclassification, upgrade in PAR including additional PAZ(s), start or stop of a radiological release to personnel in the EOF.

6.10 Emergency Response Coordination

6.10.1 Brief EOF Advisors at periodic intervals so that they are aware of current emergency conditions in accordance with Attachment 8.

6.10.2 Mutual Aid Agreement

.1 Activate INPO mutual assistance agreement, if mitigation efforts dictate the need for additional resources.

6.10.3 Emergency Response Facility (ERF) Staff Minimization

.1 If the plant is stable and there is no threat of escalation, then the CED/EC may reduce the staffing in the ERFs to appropriate levels.

6.11 Turnover

CAUTION

Turnover of the EC duties during transient conditions or with uncompleted verbal notifications in progress may result in failure to meet regulatory requirements for timely and accurate classification, notification and PAR.

6.11.1 Turnover shall not prevent timely completion of the primary EC responsibilities of classification, notification and PAR.

6.11.2 Conduct an assessment of notifications in progress prior to turnover of the EC duties.

6.11.3 If any Alternate Emergency Response Facilities have been activated, then conduct an assessment of Emergency Response Facility status, Command and Control functions and key ERO functions using Attachment 4 prior to turnover of the EC duties.

6.11.4 When the relief CED arrives at the EOF, perform the following:

.1 Complete Attachment 4 with the relief CED.

.2 If alternate emergency response facilities have been activated, then complete Attachment 5, and discuss with the relief CED.

.3 When the off-going CED is relieved of all duties, then the relief CED shall announce to EOF personnel over the public address system the following:

- Their Name
- Their assumption of the CED position.
- Emergency Class
- PAR

.4 Have the turnover announced to all Emergency Response Facilities via the Ivory Phone.

6.12 **Event Closeout**

6.12.1 Review the event close-out conditions in SO123-VIII-10.5, when conditions warrant, consider event closeout according to the guidance in that procedure.

7.0 RECORDS

7.1 Collect all paperwork generated in response to the emergency event (e.g., logs, procedures, attachments, completed forms and checklists) and deliver to Emergency Planning Coordinator.

EOF MANAGER

NOTES

1) EOF Manager is a direct report to the CED

2) The EOF Manager should perform the CED duties by implementing the CED appropriate portions of this procedure until the CED arrives, if CED Qualified.

3) The EOF Manager should perform the CED duties if the CED becomes incapacitated, or during temporary absence of the CED, or upon request of the CED, if CED Qualified.

1. If the CED has not arrived, then implementing the CED appropriate portions of this procedure until the CED arrives - **ONLY IF CED QUALIFIED**.

2. If the CED has arrived, then report your presence to the CED.

3. Review plant status and radiological conditions, and assist in the development of PARs.

4. Advise the Offsite Liaison and ODAC on the status of the emergency.

5. Keep the TSC and CED informed of actions and decisions of offsite jurisdictions, particularly the implementation of PARs.

6. Direct the Offsite Liaison/Status Board Keeper to maintain the Offsite Status Board.

7. Discuss PARs with ODAC, including explanations of plant conditions.

8. Assist the CED when it becomes necessary to activate Mutual Aid Agreements, found in SONGS Emergency Plan, Appendix A, with INPO or Nuclear Steam Supply System (NSSS) supplier.

9. Assist the EA Notification in the preparation of Event Notification forms.

SRO BRIEFER

1. Monitor Ivory Phone communications with the Control Room, TSC, and Operations Support Center (OSC).

2. Monitor Control Room decision-making using the Emergency Operating Instructions and the Abnormal Operating Instructions.

3. Update the following persons on plant conditions:

   - CED
   - Emergency Advisor, Notifications
   - EOF Manager

4. Keep the CED, the Emergency Advisor, Notifications and the EOF Manager informed of the status of emergency classification actions in the TSC.

5. Post information on Plant Situation Board.

6. Provide, at a minimum, the following information over the Ivory Phone:

   6.1 Activation of the EOF

   6.2 Assumption of the CED duties

   6.3 Changes in Event Classification

   6.4 Changes in PARS

   6.5 Major Decisions made by the CED

7. Maintain a log and record the CED decisions. At a minimum, the items found in the above step 6 should be recorded in the log.

CREDIBLE THREAT PLAN DEVELOPMENT

Consider the following planning issues and assign actions or mark N/A.	Assignment or N/A
Request Security to Provide Recommendations	
Onsite: Reduction of Non-Response Personnel	
Offsite: Law Enforcement Resource Issues	
Estimated Duration of Threat	
Determine Appropriate Shift Staffing Levels (Ops, HP, Maint)	
Consider Keeping an Additional Shift on Standby	
Determine Appropriate ERF Staffing Levels	
Consider Placing ERO on Standby or Reduced Staffing	
Determine If Changes to Plant Status Warrant Further Attention or Shutdown (refer to A.I. SO23-13-25)	
Initiate Contact with Interjurisdictional Planning Committee (IPC) Decision Makers	
Consider Restricting State Park Public Access	
Prepare Briefing Points	
Consider Holding IPC Briefings Onsite/Offsite	
Assess Response to Media Attention	
EC Staffing Requirements	
Press Releases	
Determine Plant Employee Information Requirements	
Broadcast Email Information and Restricted Access Areas	
Provide Public Address Announcements	
Consider Reducing Public Access to the OCA and/or the Mesa Area	
Consider Reducing Non-Emergency Response Personnel	
Consider assembly (in accordance with SO123-VIII-10, Attachment 2, 3, and 4) and accountability (in accordance with SO123-VIII-60, Sections 6.2 and 6.3).	
Retention of plant staff members.	
Consider performing evacuation (in accordance with SO123-VIII-10.1, Section 6.7)	
Check available Edison Resources (INPO, Westinghouse, NEI)	
Refer to Corporate Emergency Response and Recovery Plan. (Also see ERTD)	
Determine Status of Emergency Response Equipment	
Fire Pumps, Systems, Equipment and Fire Apparatus	
Emergency Communications and Facilities Surveillance	
Notify NRC, FEMA, FAA and Coast Guard (See ERTD)	
Provide Plant Status and Determine Resource Needs	

EMERGENCY COORDINATOR TURNOVER STATUS

DATE___/___/_____ TIME____:____AM/PM

TURNOVER FROM_____ TO_____

AFFECTED FACILITY: □Unit 2 □Unit 3 **or** □ ISFSI MODE__ EVENT CODE_____

BASES FOR EVENT CODE_____

SECURITY EVENT IN PROGRESS? YES / NO IF YES: CODE RED CODE BLUE

RELEASE IN PROGRESS? YES / NO / IMMINENT (IF YES, THEN COMPLETE ITEMS A THROUGH C BELOW)

A) WIND DIRECTION_____

B) SOURCE OF RELEASE_____

C) SOURCE TERM/EAB DOSE RATE (IF KNOWN)_____/_____

ONSITE PROTECTIVE ACTIONS IN PROGRESS_____

OFFSITE PROTECTIVE ACTION RECOMMENDATIONS_____

OFFSITE PROTECTIVE ACTION RECOMMENDATION BASED ON:

EVENT CODE__ PENDING PLANT CONDITIONS__ OFFSITE DOSE PROJECTIONS__
OTHER (SPECIFY)_____

NOTIFICATIONS IN PROGRESS (TO BE COMPLETED BY OFF GOING EMERGENCY COORDINATOR)

_____

NOTIFICATIONS PENDING (TO BE COMPLETED BY ONCOMING EMERGENCY COORDINATOR)

_____

SAFETY FUNCTIONS SATISFIED? YES / NO MOST AFFECTED SAFETY FUNCTIONS____

MITIGATION ACTIONS IN PROGRESS:

IN-PLANT_____

CONTROL ROOM_____

AREA OF NEEDED SUPPORT_____

OTHER COMMENTS_____

ALTERNATE EMERGENCY RESPONSE FACILITY STATUS CHECKLIST

1. Emergency Response Facilities:

Accessible:	CR	☐ Yes	☐ No	Activated:	CR	☐ Yes/Time:_____	☐ No
	TSC	☐ Yes	☐ No		TSC	☐ Yes/Time:_____	☐ No
	OSC	☐ Yes	☐ No		OSC	☐ Yes/Time: _____	☐ No
	EOF	☐ Yes	☐ No		EOF	☐ Yes/Time: _____	☐ No
	EC	☐ Yes	☐ No		EC	☐ Yes/Time: _____	☐ No

Alternate Facilities In Use: ☐ Yes ☐ No
Describe: _____

_____

_____

2. Command and Control:

Event Classification	☐ SM ☐ SED
PAR Decision-Making	☐ SM ☐ SED ☐ CED
State/Local Notification	☐ SM ☐ SED ☐ CED
NRC Notification	☐ SM ☐ SED ☐ CED
Exposure Control	☐ SM ☐ SED
Overall Command & Control	☐ SM ☐ SED ☐ CED

3. Key ERO Functions:

Dose Assessment	☐ CR ☐ TSC ☐ EOF ☐ Alt. EOF
Accident Assessment	☐ CR ☐ TSC ☐ EOF ☐ Alt. EOF
NRC ENS Phone	☐ CR ☐ TSC ☐ EOF ☐ Alt. EOF
Accountability	☐ TSC ☐ Other: _____
Offsite Interface	☐ EOF ☐ Alt. EOF
LEA Interface	☐ EOF ☐ Alt. EOF ☐ Other: _____
Accident Mitigation	☐ CR ☐ TSC ☐ EOF
Repair Team Coordinator	☐ CR ☐ OSC ☐ EOF
Field Team Dispatch	☐ OSC ☐ EOF ☐ Other: _____
Media Briefings	☐ EC ☐ Other: _____

4. Alternate ERF Locations for Security Events:

Alternate TSC = Bldg. E50, Classroom 11
Alternate OSC = Bldg. E50, Learning Center

EC POST-SECURITY EVENT CHECKLIST

The following actions are to be considered immediately after Security has determined the event has been concluded.

☐ Assess Plant Staffing Capabilities - This assessment includes staffing of Operators, Security, Health Physics, Maintenance and other Emergency Response Personnel. Obtain additional resources, based on results of assessment.

☐ Onsite Protective Actions - Protective Actions are to be considered and adjusted according to the current plant conditions. Consider the following options:

1. Instruct personnel to remain at their location until directed. (Personnel hazards are identified prior to directing personnel movement)
2. Gather personnel within the Protected Area - Coordinate with Security to determine a safe area, adequate to assemble all personnel in the area and *not* compromise any law enforcement investigation.
3. Assembly and Personnel Accountability - Consider directing implementation of a site assembly in order to conduct accountability.
4. Evacuation of non-emergency response personnel from the Owner Controlled Area (OCA) - Provide direction regarding exit routes from the OCA.
5. Draft and then make appropriate PA announcements regarding the event, protective actions and areas to remain clear of while moving about the site. Include information that areas of the activity are to be considered crime scenes and are to be preserved for law enforcement investigation.

☐ Medical and Fire Support – Assess and address the need for medical and fire response. (Adequate support has been requested and provided by onsite and/or offsite responders)

1. Direct the SONGS Fire Department to respond to the most critical locations.
2. Direct the Security Director to contact the Offsite Incident Commander to provide additional responders based on results of assessment.
3. If escorts are needed, then assign available ERO personnel.

☐ Emergency Classification - Review the Emergency Action Levels (EALs) to ensure the highest classification attained during the event has been declared. If Alert or higher has been declared, then do not downgrade the emergency classification until the ERFs are activated.

☐ Notifications - Provide current status of onsite conditions, and other required information contained in the notifications, to:

1. Offsite Authorities
2. NRC
3. ERO

EC POST-SECURITY EVENT CHECKLIST (Continued)

☐ Protective Action Recommendations – Issued PARs are consistent with current plant conditions and/or radiological release criteria per SO123-VIII-10.3. Direct EAN to communicate PARs to offsite officials per SO123-VIII-30.7.

☐ Law Enforcement – Direct Security to contact the FBI and Law Enforcement Agencies and apprise the FBI and Law Enforcement Agencies of the event status.

1. The Security Shift Commander should identify locations that would be considered crime scenes.
2. Stand-by to provide access to the Protected Area by law enforcement, fire- and medical-support personnel.
3. If escorts are needed, then assign available ERO personnel.

☐ Personnel Dose Assessment - Take necessary actions so personnel who may have been exposed to a radiological release during the event are identified and assessed by Health Physics. Security response personnel in fixed positions should be of particular concern.

☐ Deviations From License Conditions-50.54(x) - Assess the status of the license conditions (equipment and Security) so appropriate actions are underway in accordance with this procedure.

☐ Turnover and Interface with responding ERO - Prepare for contact with the SED turnover of command and control of the emergency.

1. Provide plant and event status using Attachment 4, Emergency Coordinator Turnover Status.
2. Request needed support personnel (e.g., Operations, HP, Maintenance, Security, Fire, and Medical).
3. Provide destination(s) and route(s) for Emergency Response Personnel.
4. Consider the need to relocate Emergency Response Personnel from the Alternate TSC and Alternate OSC to the Protected Area for repair and mitigation activities. Coordinate movement of personnel into the OCA or Protected Area with the Security Shift Commander.

JOINT INFORMATION CENTER (JIC) COMMUNICATIONS/TECHNICAL LIAISON

NOTE

The JIC Communications/Technical Liaison duties are to act as a liaison between the Media Writer at the JIC and the CED and reports to the CED/EOF Manager.

1. Upon arrival in the EOF:
   - Sign onto the EOF Staffing Board
   - Log onto the computer
     - Network User ID - **enc**
     - Network Password - **NewscenterQ** (the last four digits of the password will always be current quarter and current year, e.g. **0112**)
     - Lotus Notes Email ID - **ENC Communications**
     - Lotus Notes Password - **NewscenterQ** (the last four digits of the password will always be current quarter and current year, e.g. **0112**)
     - Verify that the local printer is attached
2. Establish contact with the Media Writer Team by calling **7-51502**.

NOTE

Press Releases originate at the JIC. Completed Press Releases will be e-mailed to above address. A phone call will occur alerting of incoming Press Releases.

3. Print a copy of any email Press Releases and provide the printout to the CED for review and approval.
4. If the CED has any changes to the Press Release, then communicate these changes by phone to the author of the Press release at 7-51502.
   - 4.1 Once corrects have been made, the corrected Press release will be e-mailed back to the EOF.
5. If there are no changes required to the email, then communicate this to the Media Writer via phone at 7-51502.
   - 5.1 Another copy of the approved Press Release will be e-mailed to the EOF.
6. Provide a copy of the approved Press release to the EOF Administrative Coordinator for distribution throughout the EOF.

JOINT INFORMATION CENTER (JIC) COMMUNICATIONS/TECHNICAL LIAISON (continued)

7. Act as a liaison for CED for any topics concerning press releases.

8. Act as a liaison to gather information for the JIC by:

   8.1 Printing or requesting a printout of the Critical Functions Monitoring System (CFMS) Status Board (Page 1 and Page 2) approximately every 30 minutes, or when significant changes occur, from the EOF Technical Leader or the EOF Brown Phone Talker.

   8.2 Printing or requesting a printout of the CFMS Emergency Response Data System (ERDS) (Page 1 and Page 2) approximately every 30 minutes, or when significant changes occur, from the EOF Technical Leader or the EOF Brown Phone Talker.

   8.3 Making a copy of the printouts requested in steps 8.1 and 8.2 and ask the Administrative Coordinator or the Administrative Leader to fax the copied printouts to the JIC.

   8.4 Recording any JIC requested information and asking the EOF Technical Leader (for Operational questions) or the EOF HP Leader (for Radiological questions) to provide appropriate information.

9. At the conclusion of the event or drill, provide the Media Writer Team with comments, and delete all emails from the JIC Communications/Technical Liaison computer.

CED/EOF BRIEFING GUIDELINES

1.0 INITIAL CED BRIEFING GUIDELINES

CED EXPECTATIONS

- Refer to the SONGS Human Performance Tools Handbook (Blue Book)
- Perform all tasks in a safe manner
- Follow Procedures and use circle slash technique
- Use proper Communications Methods
- Use Three-way communications
- Use a Questioning Attitude
- Use Self Checking and Peer Checks
- Focus on EOF Priorities and Use EOF Priority Status Board During Briefings:
    - Notifications
    - PARs
    - Offsite Issues
    - ODAC Assistance
- Pay Attention to Briefings
- Pay Attention to "UPDATE" Announcements and respond appropriately
    - "UPDATE"; "READY"; " INFORMATION"; "END OF UPDATE"
- Check Status Boards - Information should be current and correct
- Keep your Area Leader informed of Significant Changes
- KeepCED informed of Significant Changes
- Keep ODAC informed of Significant Changes.
- Examples of Significant Changes:
    - PARs / PAR Upgrades
    - Status of Radiological Release (Start Time / Stop Time)
    - Offsite Field Monitoring Team Information
    - Unusually High Radiation Monitor Values

CED/EOF BRIEFING GUIDELINES (Continued)

2.0 EOF BRIEFING GUIDELINES

CED

Facility Activation Status

Emergency Coordinator Change Status

Event Classification Status

EOF Priorities **(Refer to EOF Priority Status Board)**

Call on Following Leads to Provide Additional Information

- EOF Manager
- Health Physics Leader
- Technical Leader
- Emergency Advisor Notification
- Administrative Leader
- Security Director
- ODAC (if not already provided information)
- NRC (if present)

Other Issues

Outstanding/Unresolved Issues

- **Capture Any Outstanding/Unresolved Issues on the EOF Priority Status Board**

GUIDANCE FOR ASSEMBLY/EVACUATION OF NON-ESSENTIAL PERSONNEL

NOTE

This guidance may be used to assist the CED with Assembly/Evacuation duties of non-essential personnel when CED is the Emergency Coordinator.

1. CED verifies that the SED is directing site assembly for non-essential personnel and is making the required PA announcement |
2. CED directs Admin Leader to fill out Assembly Area Briefing Script (AABS) in accordance with (IAW) SO123-VIII-70 and to return within 10 minutes to obtain CED approval of completed AABS.
3. CED directs Admin Leader to contact Assembly Areas, provide AABS information to Assembly Area Coordinators IAW SO123-VIII-70, and to inform CED when this has been completed.
4. CED announces in the EOF that he is directing evacuation of all non-essential personnel.
5. CED requests the SED to make the PA announcement for Site Evacuation of all non-essential personnel.
6. CED directs the Admin Leader to verify that the Assembly Areas are evacuating and requests the Admin Leader to report back to CED when the evacuation of the Assembly Areas has been completed. |
7. CED requests the Security Director to inform CED when evacuation from the Site has been completed.

EMERGENCY NOTIFICATIONS

TABLE OF CONTENTS

REFERENCE USE
QA PROGRAM AFFECTING
50.59/72.48 DNA

EMERGENCY NOTIFICATIONS

1.0 OBJECTIVE

1.1 Provide direction to Shift Communicators, Yellow Phone Communicators, and Emergency Advisors for Notifications (EAN) for performing emergency notifications from Control Room, Technical Support Center (TSC) or Emergency Operations Facility (EOF).

2.0 REFERENCES

2.1 Commitments

2.1.1 NN 201507385, NRC Safety Evaluation Report, dated July 26, 2007 [Section 6.2]

2.2 Corrective Actions

2.2.1 NN 201809145-CA0008, INPO IER 11-39, Establish Criteria of 10 minutes or Less for Initiation of ERO Augmentation

2.3 Procedures

2.3.1 SO123-VIII-10, Emergency Coordinator Duties

2.3.2 SO123-VIII-10.3, Protective Action Recommendations (PARs)

2.3.3 SO123-XV-109, Procedure and Instruction Format and Content

2.3.4 SO123-XV-HU-3, Written Instruction Use and Adherence

2.4 Other

2.4.1 Form EP(123) 10, Event Notification Form (ENF)

2.4.2 Form EP(123) 11, Verbal Notification Form (VNF)

2.4.3 Emergency Response Telephone Directory (ERTD)

3.0 PREREQUISITES

3.1 Emergency Planning (EP) is responsible for ensuring current copy of this document is in emergency notebook(s) for use during declared emergencies and drills.

3.2 Personnel are responsible for ensuring current copy of this document, when not in a declared emergency or drill, by referring to the electronic document management system (preferred method: OA_FIND) or one of the methods listed in SO123-XV-HU-3, Written Instruction Use and Adherence.

3.3 Verify level of use requirements on the first page of the document.

4.0 PRECAUTION(S)

4.1 Emergency Coordinator (EC) duties **SHALL** normally be performed by Units 2/3 Shift Manager (SM) prior to turnover to Station Emergency Director (SED), and ultimately by Corporate Emergency Director (CED).

4.2 Shift Communicator (SC) or EOF Yellow Phone Communicator **SHALL** interrupt all Yellow Phone System (YPS) communications when an emergency notification needs to be performed. Notifications to meet 15-minute regulatory time requirement **SHALL** take precedence over all other YPS communications.

4.3 Corrected or updated information should be supplied to the Offsite Agencies through verbal or written notifications as soon as possible.

5.0 CHECKLIST(S)

☐ NOUE ☐ ALERT ☐ SAE ☐ GE

5.1 **15-Minute Verbal Notification** (See Step 6.4)

- ☐ Prepare Form EP(123) 11, Verbal Notification Form (VNF)
- ☐ Obtain Verbal Notification approval initials from the EC
- ☐ EAN/EC to complete Form EP(123) 10, Event Notification Form (ENF)
- ☐ If Recall is required to be performed, then initiate Recall using Attachment 2 (Control Room activity only)
- ☐ Perform Blue Phone verbal notification
- ☐ Perform YPS verbal notification
- ☐ Report verbal notification status to the EAN/EC

5.2 **30-Minute Printed Message** (See Step 6.5)

- ☐ EAN/EC to prepare hand-drafted ENF
- ☐ Retrieve completed EC-approved, hand-drafted ENF
- ☐ Enter ENF data into the computer
- ☐ Print message
- ☐ Obtain approval of the printed message by the EAN/EC
- ☐ Fax ENF to all YPS stations and to the California Emergency Management Agency (Cal EMA)
- ☐ Record completion time on VNF, Section 6.0
- ☐ Fax completed VNF to TSC and/or EOF
- ☐ Report printed message status to the EAN/EC

5.3 **Follow-Up Notification** (See Step 6.8)

- ☐ EAN or Yellow Phone Communicator to prepare VNF (Sections 2 and 5)
- ☐ EAN/EC to complete hand-drafted ENF
- ☐ Retrieve completed EC-approved, hand-drafted ENF
- ☐ Enter ENF data into computer
- ☐ Print message
- ☐ Obtain approval of printed message by the EAN/EC

5.0 CHECKLIST(S) (Continued)

5.3 **Follow-Up Notification** (See Step 6.8) – Continued

- ☐ Perform blue and yellow phone verbal notification using VNF Sections 2 and 5
- ☐ Fax ENF to all YPS stations and to Cal EMA
- ☐ Record completion time on VNF, Section 6.0
- ☐ Fax completed VNF to TSC and/or EOF
- ☐ Report printed message status to the EAN/EC
- ☐ Consider ERO recall system use to keep ERO informed of current status

5.4 **Close-out Notifications**

- ☐ EAN or Yellow Phone Communicator to prepare VNF (Sections 2 and 5)
- ☐ EAN/EC to complete hand-drafted ENF
- ☐ Retrieve completed EC-approved, hand-drafted ENF
- ☐ Enter ENF data into computer
- ☐ Print message
- ☐ Obtain approval of printed message by the EAN/EC
- ☐ Perform blue and yellow phone verbal notification using VNF Sections 2 and 5
- ☐ Fax ENF to all YPS stations and to Cal EMA
- ☐ Record completion time on VNF, Section 6.0
- ☐ Fax completed VNF to TSC and/or EOF
- ☐ Report printed message status to the EAN/EC
- ☐ Initiate ERO recall system to inform ERO of event close-out

*** ***End of Checklist*** ***

6.0 PROCEDURE

6.1 Initial Actions

6.1.1 Shift Communicator (SC) - Assume initial responsibility to implement this procedure.

.1 If transfer of Emergency Coordinator (EC) duties to Station Emergency Director (SED) has occurred, then SC **SHALL** turn over responsibility for this procedure to TSC Emergency Advisor for Notifications (EAN).

.2 If transfer of EC duties to Corporate Emergency Director (CED) has occurred, then TSC EAN **SHALL** turn over responsibility for this procedure to EOF EAN.

6.1.2 Report to EC prepared to initiate notifications when directed or upon awareness that abnormal conditions may lead to one of the following:

- Initial Event Declaration
- Event Reclassification
- Upgrade in PAR including additional PAZ(s)
- Start of radiological release
- Stop of radiological release

NOTES

1) Notification duties **SHALL** follow EC duties when turnover to SED or CED occurs based on turnover agreement.

2) TSC responders are required to log into Protected Area Personnel Accountability (PAPA).

6.1.3 EANs - Sign-in on minimum staffing board upon arrival at TSC or EOF.

6.1.4 Verify YPS equipment is ready for use.

.1 Verify fax clock is set to facility clock. (The Pacific Time Zone at http://www.time.gov can be used as a back up, JAVA animation may need to be disabled.)

.2 Print a blank form to ensure printer is working.

.3 Check paper supply to ensure there is enough paper.

.4 If YPS equipment is not working properly, then refer to Section 6.10 and contact EOF Telecom Supervisor or call Telecom at 949-587-5500.

6.1.5 Direct copies of all VNF and ENF messages to TSC and EOF, EAN, Communicator, EOF Emergency Planning Coordinator (EPC), and EOF Administrative Coordinator.

.1 If ENF message(s) is(are) not legible, then request another fax from originating YPS station.

6.1.6 Monitor all YPS communications.

6.2 Emergency Recall Activation [NN 201507385]

6.2.1 If this is the initial event declaration from the Control Room, then perform emergency recall activation per Attachment 2 within 10 minutes of event declaration.

6.2.2 If upgrading from a Notification of Unusual Event (NOUE) to an Alert or higher classification, and entire Emergency Response Organization (ERO) has not already been recalled, then use recall system to stop current scenario, and start a new scenario using new Scenario ID per Attachment 2 within 10 minutes of event upgrade.

6.2.3 If ERO has already been recalled and are to be redirected to another facility (e.g., Alternate EOF [AEOF], E-50, or Staging Area), or be provided with additional information, then initiate ERO Recall System using, Attachment 2, Section C.

6.2.4 If ERO has already been recalled, then enter "N/A" in time blank on the VNF, EP(123) 11, otherwise record time of activation.

6.3 Offsite Notification Protocol

NOTES

1) The Blue Phone is the primary circuit to contact Cal EMA. If the Blue phone is inoperable, then use Cal EMAs alternate number.

2) The YPS all-call (91) and Yellow Phone Data System (YPDS) are used to signal local offsite agencies for every notification. If the YPS all call (91) and YPDS are inoperable, then use the alternate numbers and communication methods.

3) Normal working hours are defined as 8:00am to 5:00pm, Monday through Friday.

CAUTION

Corrected or updated information should be supplied to the Offsite Agencies through verbal or written notifications as soon as possible.

6.3.1 Contact Cal-EMA in accordance with VNF, Step 1.2a.

6.3.2 Use the YPS all-call (91) to signal the offsite agencies in accordance with VNF, Step 1.2b.

6.3.3 Ensure verbal contact with the following four YPS Stations in accordance with VNF at all times 24/7:

- (23) USMC Dispatch
- (27) Orange County
- (29) State Parks
- (46) San Diego County

.1 If the notification is given during normal working hours or offsite EOCs are activated, then also ensure contact with the following five YPS Station EOCs:

- (24) State Parks
- (25) San Clemente
- (26) San Juan Capistrano
- (28) Orange County
- (34) Dana Point

NOTE

SCE's (42) Generation Operation Center is staffed 24/7 and is expected to acknowledge SONGS verbal notifications for information only. They are not required to be contacted within 15 minutes.

6.3.4 If the expected agencies per Step 6.3.3 do not answer the (91) all-call, then make one attempt to contact them using an individual YPS call followed by an alternate number call prior to performing the 30 minute printed message YPDS transmission.

6.3.5 If EOCs are not activated or primary and alternate notification methods are not successful, then request (27/28) Orange County to notify the non-responding stations.

.1 Follow-up with (27/28) Orange County to confirm that non-responding stations were contacted after performing the 30 minute printed message transmission.

6.4 15-Minute Verbal Notification

NOTES

1) The PAR for an event declaration should be made within 15 minutes of the declaration and shall be included in the verbal notification.

2) A PAR upgrade should be made within 15 minutes after recognizing the need for a PAR upgrade. The verbal notification then has to be made within 15 minutes after the PAR upgrade time has been determined.

6.4.1 Perform the following steps within 15 minutes of:

- Initial Event Declaration
- Event Reclassification
- Upgrade in PAR Including Additional PAZ(s)
- Start of Radiological Release
- Stop of Radiological Release

.1 Prepare VNF, during declaration announcement or immediately afterwards (refer to Attachment 1 for VNF Key Points).

.2 If completing form, then initial "Prepared by" block.

.3 Ensure Independently Verified By block is initialed.

.4 Obtain EC Approved By initials on VNF authorizing transmission of verbal notifications.

CAUTION

Notifications must be complete within 15 minutes of EDT.

6.4.2 Perform a **Blue Phone** verbal notification to Cal EMA. Document time **Blue Phone** notification was initiated on VNF Section 1.

.1 If Cal EMA does not respond to Blue Phone as expected, then contact them per Step 6.3

6.4.3 Dial 91 on the **Yellow Phone** and perform verbal notification to YPS stations. Document time YPS notification message was given on VNF, Section 4.

.1 When performing the roll call in Section 4.0, if the person from each staffed station states their name, then check "YES" as contact verification, otherwise, check "NO" contact, for no contact.

.2 If an offsite agency does not respond to a notification as expected at time of transmission, then contact them per Step 6.3.

.3 If there are YPS system problems, then contact Telecom Control Center (TCC) at PAX 51200 and perform Step 6.10

.4 Report status of 15-minute verbal notification to EAN/EC.

6.4.4 If the Communicator **has not** started to read the verbal message and any of the following occurs:

- Change in classification
- Upgrade in PAR
- Start of radiological release
- Stop of radiological release

and

If reading of updated verbal message can start within 15 minutes of initial event declaration

then provide notification for the updated condition(s) only.

.1 Include previous classification, PARs or time when radiological release started/stopped on the 30-minute ENF.

6.4.5 If the Communicator **has** started to read the verbal message and any of the following occurs:

- Change in classification
- Upgrade in PAR
- Start of radiological release
- Stop of radiological release

then inform Communicator to complete notification skipping the roll call portion of the verbal notification form, and standby for a new set of notifications.

.1 Include time when radiological release started/stopped on the 30-minute ENF.

6.5 30-Minute Printed Message

6.5.1 EAN/EC - **SHALL** complete hand-drafted ENF and deliver it to communicator promptly after verbal notifications are complete. (See Attachment 3 for ENF Key Points).

.1 Verify message information matches verbal notification form information in Sections 2 and 3.

.2 If any information has changed; Upgrading the PAR, addition of affected PAZ(s); or release information, then inform EAN/EC to re-verify data.

.3 Verify EC has approved hand-drafted ENF form.

.4 Enter data into the computer approximately 10 minutes before notification time is due.

.5 Print the message and compare it to the hand-drafted ENF.

NOTE

EC approval is required on any additional changes made to the VNF or ENF after initial approval has been made.

.6 Make ENF corrections on-the-spot as directed by the EAN or EC.

.7 Provide the printed ENF message to EAN/EC for review and initial prior to transmitting it to offsite agencies.

.8 Fax the ENF message to all YPS stations and to Cal EMA.

.9 Record completion time on VNF, Section 6.

.10 If no ENF is transmitted, then enter "N/A" in fax time blank.

.11 Fax completed VNF to TSC and/or EOF.

6.5.2 Report status of 30-minute printed message notification to EAN/EC.

6.6 Turnover of Notification Duties

6.6.1 If you are the Communicator at the CR proceed to the TSC when notified by the Shift Manager that EC turnover is complete and continue to assist the TSC EAN and TSC Manager.

6.6.2 If you are the TSC EAN, contact your counterpart at the EOF for turnover when notified by the SED that EC turnover to CED is complete. Ensure EOF EAN and the **Yellow Phone** Communicator are ready to perform emergency notifications.

.1 Transfer responsibility for notifications.

.2 Notify SED/CED and U2/3 Shift Communicator that turnover of emergency notification duty responsibilities is complete.

6.7 Event Reclassification/PAR Upgrade/Radiological Release

NOTES

1) A change in Classification, a start or stop of radiological release, or upgrading a PAR, which includes addition of affected PAZ(s), requires notification within 15 minutes of change.

2) When an event is reclassified, notifications for the prior event are superseded, even if the affected unit(s) are not the same for the prior and the current classification.

6.7.1 If Emergency Coordinator (EC) reclassifies the event, upgrades PAR, a start or stop of radiological release occurs, then start a new notification process (15-minute verbal notification and 30-minute written notification) per Step 6.4 and Step 6.5.

.1 If reclassification of event, a change in radiological release status, or PAR upgrade affects response of ERO, then start a new ERO Recall per Steps 6.2.2 and/or 6.2.3.

.2 Mark printed messages not transmitted as "Superseded" in a clear manner and file them for documentation purposes.

6.8 Follow-Up Notifications

6.8.1 Fax an ENF within 90 minutes of initial Classification and then continue faxing a new ENF approximately 60 minutes from the time the last ENF was faxed.

.1 If significant changes in radiological release conditions or plant status occur but do not result in a new classification or an upgraded PAR, then EC should consider issuing a follow-up notification within approximately 15 minutes.

.2 Continue follow-up notifications until event is reclassified, PAR is upgraded, start or stop of radiological release occurs, EC reduces the follow-up frequency, or event is closed out.

NOTE

No EC approval or roll call is required for a follow-up verbal notification. Yellow Phone Communicator can prepare follow up VNF without EAN assistance.

6.8.2 Prepare VNF

.1 Enter Message number

.2 Complete Sections 2.0 and 5.0 only.

6.8.3 Prepare ENF:

.1 EAN/EC completes hand-drafted ENF follow-up notification (see Attachment 3 for ENF key points).

.2 Check box "**is in progress**" and ensure Event Classification and EDT are the same as previous ENF.

.3 Provide updated plant status information, and obtain EC approval on ENF.

.4 Enter data into the computer.

.5 Print the message and compare it to the hand-drafted ENF.

NOTE

EC approval is required on any additional changes made to the ENF after initial approval has been made.

.6 Make ENF corrections on-the-spot as directed by the EAN or EC.

.7 Provide the printed ENF message to EAN/EC for review and initial prior to transmitting it to offsite agencies.

6.8.4 Perform Follow-up Notification

.1 Read VNF Sections 2 and 5 as a **Blue Phone** verbal notification to Cal EMA. Document time Blue Phone notification was initiated on VNF Section 1.

.2 Dial 91 on the Yellow Phone and read VNF Sections 2 and 5 to the YPS stations. Document time YPS notification message was given on VNF, Section 4.

.3 Fax ENF to all YPS stations and to Cal EMA.

.4 Record completion time on VNF, Section 6.0.

.5 Fax completed VNF to TSC and/or EOF.

6.8.5 Report status of follow-up notification to EAN/EC.

6.8.6 Consider use of ERO recall system, using Attachment 2, Section C, to keep ERO informed of current status.

6.9 Close-Out Notifications

NOTE

SM should ensure plant status is included for close-outs performed from the Control Room to provide updated information to offsite agencies. Duty EPC may complete close-out ENF for SM approval and transmission.

6.9.1 Prepare VNF

.1 Enter Message number.

.2 Complete Sections 2.0 and 5.0 only.

6.9.2 Prepare ENF

.1 EAN/EC completes hand-drafted ENF close-out notification (See Attachment 3 for ENF key points).

.2 Check box "**has been closed out**" and enter time event was closed out.

.3 Provide status of current conditions on ENF for close-out, and obtain EC approval on ENF.

.4 Enter data into the computer.

.5 Print the message and compare it to the hand-drafted ENF.

.6 Make ENF corrections on-the-spot as directed by the EAN or EC.

.7 Provide the printed ENF message to EAN/EC for review and initial prior to transmitting it to offsite agencies.

6.9.3 Perform Close-Out Notification

.1 Read VNF Sections 2 and 5 on the **Blue Phone** and record initiation time in Section 1.0.

.2 Read VNF Sections 2 and 5 on **YPS Phone** and record time in Section 4.0.

.3 Fax ENF to all YPS stations and to Cal EMA.

.4 Record completion time on VNF, Section 6.0.

.5 Fax completed VNF to TSC and/or EOF.

6.9.4 Report status of close-out notification to EAN/EC.

6.9.5 Initiate ERO recall system using Attachment 2, Section C to inform ERO the event has been close-out.

6.10 Yellow Phone System Problems

6.10.1 If Yellow Phone **Voice Circuit** is completely inoperable, then

.1 Using the alternate number found in the VNF or ERTD, contact Orange County (Station 27) and read the VNF information and inform them the Yellow Phone is inoperable.

.1.1 Request Orange County relay the VNF information to the cities of Dana Point, San Juan Capistrano and San Clemente.

.1.2 Inform the jurisdictions that further updates will be through the Yellow Phone Bridge Line (949-368-3800 access code 0852).

.2 Using the alternate number found in the VNF or ERTD, contact the San Diego County EOC (Station 46), USMC Command Center (Station 23), State Parks Dispatch (Station 29), Edison Generation Operations (Station 42), and read the VNF information and inform them the Yellow Phone is inoperable.

.2.1 Inform the jurisdictions that further updates will be through the Yellow Phone Bridge Line (949-368-3800 access code 0852).

.3 Request assistance for offsite notifications from another facility Communicator when available or from Edison Generation Operations (Station 42).

6.10.2 Report all phone problems to EOF Telecom Supervisor, facility EPC or TSC Manager.

6.10.3 If all stations report no message receipt, then fax printed message from another fax machine.

NOTE

The following steps will tie an outside phone call directly into YPS. The station must maintain an open line.

6.10.4 If a YPS voice circuit fails, then contact affected station and direct them to dial (949) 368-3880 followed by Access Code 0852 to reconnect to YPS verbal circuit.

.1 If more than three backup lines are needed, then contact affected station and direct them to dial(949) 368-3800 followed by Access Code 0852 to reconnect to YPS verbal circuit.

.2 Immediately inform EOF Telecom Supervisor of circuit problem.

6.10.5 If nearest YPS is not working or is inaccessible (i.e., equipment malfunction or uninhabitable atmosphere), then emergency notifications could be completed using the YPS at other Emergency Response Facilities, or from a safe location using the alternate telephone and fax numbers.

.1 Refer to Form EP(123)11.

6.11 EOF Administrative Actions

6.11.1 Perform the following actions upon fax of an approved ENF to offsite agencies:

.1 Deliver one copy to EOF Administrative Coordinator for distribution.

.2 Maintain a log of decisions and actions required by EPIPs.

.3 Provide documentation of conditions, events, and communications wherever appropriate to ensure a complete and adequate record, to minimize misunderstanding, and to identify items requiring followup actions.

7.0 RECORDS

7.1 Forward all completed procedures, logs, and forms to the TSC Manager or EOF EPC upon event close-out.

VERBAL NOTIFICATION FORM and KEY POINTS

SAMPLE

REF: SO123-VIII-30.7

VERBAL NOTIFICATION FORM

Message # (1) Prepared by: (2) Independently Verified by: (3) EC Approved by: Not Required for Follow-Up (4)

1.0 Log Notifications:

.1 [ ] Notify ERO OR [ ] Recall ERO

(Enter Time Recall Initiated or Enter "N/A" If Recall Completed)----------> (5) (Enter Time or N/A)

.2 Initiate offsite Verbal Message

a. Contact Cal EMA by Blue Phone or Alt Number (916) 845-8911
b. Dial YPS 91 all call

(6) (Enter VNF Start Time)

2.0 Read for ALL Messages:

(7) "This is [ ] a Drill [ ] an Emergency"
"This is San Onofre Nuclear Generating Station,

A(n) [ ] Notification of Unusual Event
[ ] Alert (8)
[ ] Site Area Emergency
[ ] General Emergency

[ ] has been declared at
[ ] is in progress since
[ ] has been closed out at:

(9) (Enter Time Declared)

3.0 Read for Classification/PAR/Release Status Change:

"Consult Event Code (10) (Enter EAL) in your Manual of Emergency Events."

(11) "The wind is from: ____ Degrees at: ____ MPH."
(Use 10m 15 min average Met Data if available)

(12) "The Protective Action Recommendation (PAR)
[ ] is as follows: [ ] was upgraded at _____ to:
(Enter PAR Time)

(EAN: Review SO123-VIII-10.3 for PARs. Multiple choices are allowed.)
[ ] None Required
[ ] Evacuate State Beach within PAZ 1 immediately adjacent to SONGS
[ ] Shelter PAZ(s) [ ]1 [ ]3 [ ]4 [ ]5
[ ] Evacuate PAZ(s) [ ]1 [ ]2 [ ]3 [ ]4 [ ]5
[ ] Ingest KI PAZ(s) [ ]1 [ ]2 [ ]3 [ ]4 [ ]5

"There [ ] has not been a radioactive release associated with this event."
(13) [ ] Is
[ ] was

"SONGS [ ] is activating the [ ] EOF."
(14) [ ] has activated the [ ] All EOF."
[ ] has not activated the

4.0 Read only on YPS for Class/PAR/Release Status Changes:
(Log time done reading VNF Msg to YPS Stations)----------> (15) (Enter VNF Done Time)

"When I announce your station number and agency name, please respond with your first initial and last name."

(Check all Offsite Agency "contacted" boxes either Yes or No)---------->

5.0 Read for ALL Messages:

Prepare to receive printed message # (16) in a few minutes."

(17) [ ] "Printed message # ___ will not be transmitted.

"This is [ ] a Drill [ ] an Emergency"

"This message is complete, San Onofre is Clear."

6.0 FAX Printed Message to:

All YPS Stations and
Cal EMA: (916) 845-8910

(Log time ENF message Fax was initiated)----------> (18) (Enter FAX Start Time)

Contact these four 24/7 Stations for all Offsite Notifications (Ref. SO123-VIII-30.7, Step 6.3.3)

23 USMC DISPATCH
Contacted: [ ] Yes [ ] No

27 O/C COMM CTR
Contacted: [ ] Yes [ ] No

29 State Parks Dispatch
Contacted: [ ] Yes [ ] No

46 SD COUNTY EOC
Contacted: [ ] Yes [ ] No

Contact this one 24/7 Station for all Offsite Notifications (not a 15 min time requirement)

42 EDISON GEN OPS
Contacted: [ ] Yes [ ] No

Contact these five EOC Stations only if M - F 8:00am – 5:00pm OR EOCs are activated (Ref. SO123-VIII-30.7, Step 6.3.3.1)

24 St Parks EOC
Contacted: [ ] Yes [ ] No

25 San Clemente EOC
Contacted: [ ] Yes [ ] No

26 San Juan Cap.
Contacted: [ ] Yes [ ] No

28 O/C EOC
Contacted: [ ] Yes [ ] No

34 Dana Point EOC
Contacted: [ ] Yes [ ] No

Verbal Notification Form Key Points
(Continued)

NOTE: Items identified with an asterisk (*) are used to determine the accuracy of the notification.

VERBAL NOTIFICATION AUTHORIZATION:

(1) Initial verbal notification for a given event is Message No. 1. Each subsequent notification is sequentially numbered until event close-out. Sequence numbers on VNF and associated ENF (Attachment 3) **SHALL** be the same.

(2) Preparer **SHALL** initial "Prepared by" box to document who entered message content.

(3) VNF **SHALL** be given an independent verification by an individual who is trained in classification process (e.g., Control Room Supervisor, Shift Technical Advisor, Emergency Advisor Operations, EOF Manager, SRO Briefer). This individual **SHALL** not be the EC or involved in the notification process. Reviewer **SHALL** initial "Independently Verified By" box to acknowledge agreement the message content is correct.

(4) Acting EC **SHALL** initial "EC Approved By" box when peer review is completed to authorize verbal notification transmission. This is not required for follow-up notifications.

ACTIONS REQUIRED IN 15 MINUTES:

(5) SC **SHALL** enter time Recall System is initiated or enter N/A if no pager message is to be sent with this notification. The interval between this time and declaration time (item 9 below) must be 10 minutes or less.

(6) * Communicators **SHALL** enter time they start to read verbal message. The interval between this time and declaration time (item 9 below) must be 15 minutes or less. Blue Phone notification should be completed first, as notification of this single agency is typically faster than notification of multiple agencies via the Yellow Phone. If difficulties are encountered with the Blue Phone, immediately begin notification process on Yellow Phone to meet 15-minute requirement.

KEY PERFORMANCE INDICATOR DATA:

(7) * The box for a Drill or an Emergency **SHALL** be checked.

(8) * The box for current classification level **SHALL** be checked. The second column of boxes should be checked as follows:

- "has been declared at" for each new or changed classification;
- "is in progress since" each time a verbal notification is initiated but the classification remains the same;
- "has been closed out" any time the emergency is being closed out in accordance with SO123-VIII-1 or SO123-VIII-10.5. This would be the last verbal notification given to state and local agencies.

(9) * The time EC declares emergency or reclassifies event.

Verbal Notification Form Key Points
(Continued)

KEY PERFORMANCE INDICATOR DATA: (Continued)

(10) * Enter Event Code that consists of the Event Category (A, C, E-H, F, H, S), Emergency Class (U = NOUE, A=Alert, S=SAE and G=GE), event subcategory (1, 2, 3, etc) and the Emergency Action Level (1, 2, 3, etc.).

(11) * Enter wind direction in degrees from (use 10 meter 15-minute average Met Data if available) and the wind speed in mph. The wind direction from is used to determine affected PAZ(s).

(12) * Check box labeled:

- "is as follows:" if PAR is being made at the same time event classification is being declared, if there is no change in PAR in this notification, or if there is no PAR required;
- "was upgraded at" and enter time PAR upgrade was made on the following line when there is an upgrade in PAR but classification has not changed;

and

- select appropriate boxes to indicate the PAR.

(13) * Check the following radioactive release box that is correct:

- "There **has not been** a radioactive release associated with this event" if there **is not** an increase in measurable quantities of radioactive material related to event which are in a pathway to the environment, or already in the environment (as measured by field monitoring);
- "There **is** a radioactive release associated with this event" if there **is** an increase in measurable quantities of radioactive material related to event which are in a pathway to the environment, or already in the environment (as measured by field monitoring);
- "There **was** a radioactive release associated with this event" if there **was** an increase in measurable quantities of radioactive material related to the event which were in a pathway to the environment, or already in the environment (as measured by field monitoring), **but** this release was stopped.

(14) If event requires EOF activation, then check "SONGS is activating the EOF."
If event requires EOF activation and EOF has been activated, then check "SONGS has activated the EOF."
If event requires Alt EOF activation, then check "SONGS is activating the Alt EOF."
If event requires Alt EOF activation and Alt EOF has been activated, then check "SONGS has activated the Alt EOF."
If the EOF or Alt EOF is not required to be activated or the ERO are told to go the SONGS Staging Areas, then check "SONGS has not activated the EOF, Alt EOF."

(15) Communicator should enter time when verbal message was completed (before roll call is initiated).

PRINTED MESSAGE ITEMS:

(16) Record number of current printed message as indicated at the top of associated verbal message form.

(17) Read this line in verbal message only if previous printed message is superseded by a PAR change, reclassification of event or start/stop of a radiological release. Enter the number of voided printed message.

(18) Enter time Yellow Phone printed message is faxed to Cal EMA and all YPS stations. Enter "N/A" if ENF was superseded by a new verbal message.

Verbal Notification Form Key Points
(Continued)

VERBAL NOTIFICATION FORM COLOR CODE:

Red Box: must contain information (or note of explanation when not used due to 15 minute clock reset, drill terminated, etc.) NO BLANKS

Red Bracket: must check at least one box (multiple choices are allowed for PARs)

Green Box: initials of Independent Verifier and Approver of PI data inside the BIG Green Box

Big Green Box: Independent Verifier and Approver are responsible for Data Accuracy (Approval Obtained in Green Boxes located at the top of the VNF).

Black Text: direction or clarifying notes to the Form user.

Blue Text: verbal message text that is read aloud on the phone per approved menu selections

Magenta Text: If Magenta Text is required to be read based on conditions, then read the conditional verbal message text aloud on the phone.

Bold Text: 1. Major Section Titles 2. YPS stations that are staffed 24/7

EMERGENCY RECALL ACTIVATION

SECTION A Locate applicable Scenario ID Number in the list below.

See Section F for displayed pager message for the Security Initiating Conditions (IC) scenarios.

SECURITY

	Scenario ID Number
NRC Threat Advisory Level V - no Site Specific Threat:	9
Notification Of Unusual Event Security	19
Alert Security	29
Site Area Emergency Security	39
General Emergency Security	49

NON SECURITY

	Scenario ID Number
Notification Of Unusual Event Non-Security - no response required	17
Notification Of Unusual Event Non-Security - response required	18
Alert Non-Security	28
Site Area Emergency Non-Security	38
General Emergency Non-Security	48

EMERGENCY RECALL ACTIVATION (Continued)

Section B Enter **Required Scenario ID Number** per Step 1 to activate a Scenario

Enter **Required Scenario ID Number** per Step 2 to stop a Scenario.

1. Enter **Scenario ID Number** to be activated _____ (See Section A)
2. Enter **Scenario ID Number** to be stopped _____ (See Section A)
3. **Dial 83747** using a touch-tone telephone.
4. Enter your Activation **Password** then press "#" key.
5. Follow system prompts to activate or stop selected scenario.

CAUTION

Do NOT enter more than one valid Scenario ID Number.

6. Record time recall was initiated on VNF, Step 1.0.
7. To transmit additional instructions develop and send message using Section C.
8. If recall system fails, then activate pagers using Intranet Method in Section D.
9. If recall system and Intranet are both unavailable, then activate pagers using Telephone Method in Section E.
10. Contact Emergency Services at 86655 to verify recall activation page went out with correct information, as time permits.

Section C Modified Message: If recalled ERO need to be redirected to another facility, provided with additional information or instructions, or other recall ERO notification is required, then create and send a modified message as follows:

1. Create and record message here:

   "This is [ ] a Drill [ ] an Emergency

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   _____

   This is [ ] a Drill [ ] an Emergency"

2. Dial 83747 using a touch-tone telephone.
3. Enter your activation Password then press the # key.
4. Follow the system prompts to activate Scenario ID Number 4.
5. Follow the system prompts to record the voice message.
6. Follow the system prompts to end the call.
7. Log the time the modified message was initiated in your logbook.
8. Contact Emergency Services at 86655 to verify recall activation page went out with correct information, as time permits.
9. If recall system fails, then activate pagers using intranet method in Section D.

EMERGENCY RECALL ACTIVATION (Continued)

Section D Intranet Method: If Intranet Method is the method that is to be used, then use this method to transmit an alphanumeric text message to **Group Pagers** as follows:

NOTE: Both Minimum Staff and Non-Minimum Staff ERO members are normally recalled during an emergency.

1. Open the Edison International Portal.
2. Enter a Shift Manager's last name and click on "Employee Search."
3. Click on the "Pager" icon for the Shift Manager.
4. Notify ERO as follows:
   a. Click on "Switch to group paging mode" box. A "Group" box will appear under the "From" box.
   b. Enter "songs.minimum.staff@wmg.sce.com, songs.non.minimum.staff@wmg.sce.com, songs.non.minimum2.staff@wmg.sce.com, songs.ero.craft@wmg.sce.com" in the "Group" box.
   c. Type an appropriate message in the "Message" box (see examples below):
      (1) "A(n) (NOUE, Alert SAE, GE) was declared at San Onofre at (hh:mm). This event is due to: Release, Loss of Coolant, Seismic Event, etc.)"
      (2) "Disregard inadvertent pager activation, no response is required."
      (3) "Report to alternate location and wait further instructions."
      (4) "Report to the EOF/E-50."
   d. Click on "Send Wireless Message" box.
   e. A window confirmation will appear.

EMERGENCY RECALL ACTIVATION (Continued)

Section E Telephone Method: If the Telephone Method is the method to be used, then activate **Group Pagers** with a numeric message as follows:

NOTE: Both Minimum Staff and Non-Minimum Staff ERO members are normally recalled during an emergency.

1. Notify the ERO Minimum Staff by:

   a. Dial 9-1-626-651-0723 from a phone with access to outside phone lines.

   b. When connected to pager vendor as indicated by a series of three (3) beeps, enter 911911911 followed by the pound (#) key.

   c. Wait for confirmation beeps, then hang up.

   d. Dial 9-1-626-651-0164 from a phone with access to outside phone lines.

   e. When connected to pager vendor as indicated by a series of three (3) beeps, enter 911911911 followed by the (#) key.

   f. Wait for confirmation beeps, then hang up.

2. Notify ERO Non-Minimum Staff by:

   a. Dial 9-1-626-651-0623 from a phone with access to outside phone lines.

   b. When connected to pager vendor as indicated by a series of three (3) beeps, enter 911911911 followed by the pound (#) key.

   c. Wait for confirmation beeps, then hang up.

   d. Dial 9-1-626-651-0005 from a phone with access to outside phone lines.

   e. When connected to pager vendor as indicated by a series of three (3) beeps, enter 911911911 followed by the pound (#) key.

   f. Wait for confirmation beeps, then hang up.

EMERGENCY RECALL ACTIVATION (Continued)

SECTION F Security Recall System Scenario Messages:

Notification Of Unusual Event HU4.1, HU4.2 or HU4.3

A Notification of Unusual Event based on security events has been declared at SONGS. ERO personnel report to a staging area.

Alert HA4.1 or HA4.2

An ALERT based on security events has been declared at SONGS. ERO personnel report to a staging area.

Site Area Emergency HS4.1

A Site Area Emergency based on security events has been declared at SONGS. ERO personnel report to a staging area.

General Emergency HG1 or HG1.2

A General Emergency based on security events has been declared at SONGS. ERO personnel report to a staging area.

NRC Threat Advisory Level 5 - No Site-Specific Threat

PRECAUTIONARY - NRC Threat Advisory Level 5 has been issued. All On-Duty Minimum Staff ERO personnel report to Emergency Response Facilities in Building E-50.

EVENT NOTIFICATION FORM & KEYPOINTS

REFERENCE: SO123-VIII-30.7

SAN ONOFRE NUCLEAR GENERATING STATION

EVENT NOTIFICATION FORM

This is ☐ a Drill. ☐ an Emergency.

Date: _____ Message No. _____

Emergency Classification:

(1) ☐ A Notification of Unusual Event ☐ An Alert ☐ A Site Area Emergency ☐ A General Emergency

(2) ☐ has been declared ☐ is in progress ☐ has been closed out

Time: (3) _____ Unit(s): (4) _____ Event Code: (5) _____

(Declaration/Reclassification/Close-out)

Meteorological Data:

Wind Direction (From) (6) _____ Degrees at _____ mph ... *(Use CFMS Weather Page or Raddose-V)*

Protective Action Recommendations:

There (7)
- ☐ is a need for protective action beyond the Exclusion Area Boundary (EAB).
- ☐ is not a need for protective action beyond the EAB.

Recommended Action: ... *(Multiple choice allowed.) (Reference SO123-VIII-10.3)*

(8)
- ☐ None
- ☐ Evacuate State Beach within PAZ 1 immediately adjacent to SONGS
- ☐ Shelter PAZ(s) [ ]1 [ ]3 [ ]4 [ ]5
- ☐ Evacuate PAZ(s) [ ]1 [ ]2 [ ]3 [ ]4 [ ]5
- ☐ Ingest KI PAZ(s) [ ]1 [ ]2 [ ]3 [ ]4 [ ]5

Release Information: (9)

☐ There **has not been** a radioactive release to the environment associated with this event.
(Planned radioactive releases per an approved Liquid or Gaseous Release Permit remain within Federally approved operating limits.)

☐ There **was** an event-related release that has been stopped.

☐ There **is** an ongoing event-related radioactive release to the environment.

The release is:

☐ **above** Federally approved operating limits.

☐ **below** Federally approved operating limits.

The event-related radiation dose:

☐ is measurable at the Exclusion Area Boundary.

☐ **is not** measurable at the Exclusion Area Boundary.

The release:

☐ is / ☐ was to the ☐ land. ☐ atmosphere. (Multiple choice allowed) ☐ ocean.

FACSIMILE

EVENT NOTIFICATION FORM & KEY POINTS (Continued)

EVENT NOTIFICATION FORM (Continued)

This is ☐ a Drill. ☐ an Emergency. Message No. _____

Dose Rate Projections/Measurements: ...(Use when information is available and EOF ODAC is not staffed.)

Expected Release Duration: (10) (hrs) Calculation Time:		Projected Dose (Mrem)	Calculated Plume Arival Time	Field Measured Dose Rate (mr/hr)	at time
Exclusion Area Boundary	TEDE				
	Thyroid CDE				
1 Mile	TEDE				
	Thyroid CDE				
2 Miles	TEDE				
	Thyroid CDE				
5 Miles	TEDE				
	Thyroid CDE				
10 Miles	TEDE				
	Thyroid CDE				

TEDE: Total Effective Dose Equivalent CDE: Committed Dose Equivalent

Current Plant Conditions: (11)

Prognosis of Emergency: (12)

Emergency Response Actions Underway Onsite: (13)

Request for Offsite Support: (14)

PREPARED BY: (15) _____ APPROVED BY: (16) _____

FACSIMILE

EVENT NOTIFICATION FORM & KEY POINTS (Continued)

EMERGENCY CLASSIFICATION INFORMATION: (matched to the verbal information)

(1) **Emergency Action Level**: Enter appropriate emergency class.

(2) **Status of Emergency**: Check appropriate block.

(3) **Time**: Enter time event was actually declared, reclassified, or closed out.

(4) **Unit**: Enter affected unit(s) based on the following criteria:

- "2" if event category is A, C, F, H or S and it affects Unit 2 only
- "3" if event category is A, C, F, H or S and it affects Unit 3 only
- "ISFSI" if event category is E-H
- "2 and 3" if event category is A or H and it is common to Unit 2 and Unit 3, but does not affect the ISFSI.
- "2, 3 and ISFSI" if event category is H and it affects the entire site or is common to Unit 2, Unit 3 and ISFSI

(5) **Event Code**: Write as shown in SO123-VIII-1 (e.g., HA1.1).

METEOROLOGICAL DATA:

(6) **Wind**: Enter the "from" wind direction in degrees and the speed in miles per hour (use 10 meter 15 minute average Met Data if available).

PROTECTIVE ACTION RECOMMENDATIONS: (matched to the verbal information)

(7) **Protective Action Recommendations**: (Check appropriate box)
(a) Enter "is" for PAR necessary beyond the site boundary. Remember, this is for Edison-recommended offsite PARs only.
(b) If no PAR, then enter "is not" and skip directly to Release Information Section (9) on the bottom of ENF.

(8) **Recommended Action**: (Can be multiple choice) Enter appropriate PAR in accordance with SO123-VIII-10.3, Protective Action Recommendations.

EVENT NOTIFICATION FORM & KEY POINTS (Continued)

(9) **Release Information:**

Release Definition: There **is** an increase in measurable quantities of radioactive material related to event which are in a pathway to the environment, or already in the environment (as measured by field monitoring).

Measurable at the Exclusion Area Boundary (EAB) Definition: Dose **above background** measured either by field monitoring teams at the EAB or by the Pressurized Ion Chambers surrounding the site (ask HP Leader). If there is no information confirming the release is measurable at the EAB, then check the box "is not".

Federally Approved Operating Limits

a. If the following Gaseous Effluent Radiation Monitors are reading:

2(3)RE7870 $\geq$ 4.0 E5 µCi/sec

OR

Sum of 2RE7865 and 3RE7865 $\geq$ 4.0 E5 µCi/sec

OR

2(3)RE7874A1 or 2(3)RE7874B1 = Valid reading above background with a release to atmosphere from an affected Steam Generator.

Then check the box "above" Federally Approved Operating Limits.

b. If an Unmonitored release is detectable at the EAB, then check the box, "above" Federally Approved Operating Limits.

c. If a Notification of Unusual Event is declared in accordance with SO123-VIII-1, Initiating Condition (IC) AU1 then check the box, "above" Federally Approved Operating Limits.

d. If there is no information confirming an unmonitored release, then check the box, "below" Federally Approved Operating Limits as specified in the Offsite Dose Calculation Manual (ODCM).

If there is no event-related radioactive release in progress, then check the first box. ("There has not been ....")

If an event-related radioactive release did occur but was stopped, then check the second box. ("There was ....")

If an event-related radioactive release is ongoing, then check the third box. ("There is ....")

If release is gaseous, then check Atmosphere box.

If release is liquid and is on land, then check the Land Box

If release is liquid and is going into the Ocean, then check the Ocean Box.

EVENT NOTIFICATION FORM & KEY POINTS (Continued)

(10) **DOSE RATE PROJECTIONS/MEASUREMENTS**:
This information should be completed when the information is available and ODAC is not staffed. Otherwise, dose rate information should be provided to the ODAC Leader who will disseminate it to the agencies.

NARRATIVE INFORMATION:

(11) **Current Plant Conditions**:
Describe briefly current plant conditions that form the basis for the emergency classification and or PAR. If an increase in classification, an upgrade in PAR, a start or stop of radiological release occurred within 15 minutes of the previous classification or PAR, and verbal notification was only provided for the second condition, include information about previous classification, PARs, or radiological release. Include time when radiological release started/stopped on this section. Also, if there are other significant plant updates for any Unit and it is not related to the current Emergency, it should be described in this section.

(12) **Prognosis of Emergency**:
Describe briefly trends in current plant conditions.

(13) **Emergency Response Actions Underway Onsite**:
Describe briefly current mitigating activities such as activation of emergency response facilities, repair or surveillance team activities.

(14) **Request for Offsite Support**:
Describe briefly request for support required from Offsite Agencies or enter none.

(15) **PREPARED BY**: Initialed by the EAN or leave blank if completed by Shift Manager.

(16) **APPROVED BY**: Initialed by the EC as authorization to send the message.

Attachment 2

SONGS EMERGENCY PLAN IMPLEMENTING PROCEDURES (EPIPs) INDEX

DOCUMENT	REV. #	TCN/EC	TITLE
SO123-VIII-0.100	14	14-1	MAINTENANCE AND CONTROL OF EMERGENCY PLANNING DOCUMENTS
SO123-VIII-0.200	14		EMERGENCY PLAN DRILLS AND EXERCISES
SO123-VIII-0.201	22		EMERGENCY PLAN EQUIPMENT SURVEILLANCE PROGRAM (EPESP)
SO123-VIII-0.202	11		ASSIGNMENT OF EMERGENCY RESPONSE PERSONNEL
SO123-VIII-0.301	15	15-1	EMERGENCY TELECOMMUNICATIONS TESTING
SO123-VIII-0.302	7		ONSITE EMERGENCY SIREN SYSTEM TEST
SO123-VIII-0.303	3		PERIMETER PUBLIC ADDRESS SYSTEM (PPAS) ROUTINE TEST
SO123-VIII-1	36		RECOGNITION AND CLASSIFICATION OF EMERGENCIES
SO123-VIII-10	31		EMERGENCY COORDINATOR DUTIES
SO123-VIII-10.1	22		STATION EMERGENCY DIRECTOR DUTIES
SO123-VIII-10.2	20		CORPORATE EMERGENCY DIRECTOR DUTIES
SO123-VIII-10.3	13		PROTECTIVE ACTION RECOMMENDATIONS
SO123-VIII-10.4 ISS2	3		TECHNICAL SUPPORT CENTER (TSC) MANAGER DUTIES
SO123-VIII-10.5	4		EVENT CLOSE OUT AND RECOVERY
SO123-VIII-10.6	4		EMERGENCY RESPONSE ACTIONS FOR A DECLARED SECURITY EVENT
SO23-VIII-30	19		UNITS 2/3 OPERATIONS LEADER DUTIES
SO123-VIII-30.1	26		EMERGENCY PLANNING COORDINATOR DUTIES

Attachment 2

SONGS EMERGENCY PLAN IMPLEMENTING PROCEDURES (EPIPs) INDEX

DOCUMENT	REV. #	TCN/EC	TITLE
SO123-VIII-30.3	6		OSC OPERATIONS COORDINATOR DUTIES
SO123-VIII-30.4	10	10-1	EMERGENCY SERVICES COORDINATOR DUTIES
SO123-VIII-30.7	16		EMERGENCY NOTIFICATIONS
SO123-VIII-40	26		TSC HEALTH PHYSICS LEADER DUTIES
SO123-VIII-40.1	28		OSC HEALTH PHYSICS COORDINATOR DUTIES
SO123-VIII-40.3	18		EOF HEALTH PHYSICS (HP) LEADER DUTIES
SO123-VIII-40.100	15		DOSE ASSESSMENT
SO123-VIII-40.200	2		RADDOSE-V DOSE ASSESSMENT
SO123-VIII-40.300	1		OFFSITE FIELD MONITORING TEAM DUTIES
SO123-VIII-50	19		TSC TECHNICAL LEADER DUTIES
SO123-VIII-50.1	7		CHEMISTRY COORDINATOR DUTIES
SO123-VIII-50.2	8		EOF TECHNICAL LEADER DUTIES
SO23-VIII-50.3	11		CORE DAMAGE ASSESSMENT
SO123-VIII-60	23		SECURITY LEADER DUTIES
SO123-VIII-60.1	20		OSC SECURITY COORDINATOR DUTIES
SO123-VIII-60.2	11		EOF SECURITY LIAISON DUTIES
SO123-VIII-60.4	3		SECURITY DIRECTOR DUTIES
SO123-VIII-70	20	20-1	ADMINISTRATIVE LEADER DUTIES

Attachment 2

SONGS EMERGENCY PLAN IMPLEMENTING PROCEDURES (EPIPs) INDEX

DOCUMENT	REV. #	TCN/EC	TITLE
SO123-VIII-70.2	7		EOF ADMINISTRATIVE COORDINATOR DUTIES
SO123-VIII-80	15		EMERGENCY GROUP LEADER DUTIES

Attachment 3

SONGS EMERGENCY PLAN REFERENCED MANUALS, ORDERS AND TRAINING PROCEDURES

DOCUMENT	REV. #	TCN/EC	TITLE
SO123-EP-1	8		SONGS EMERGENCY PLAN IMPLEMENTATION
SO123-NP-1	8		OFFSITE EMERGENCY PLANNING (OEP) RESPONSIBILITIES AND OFFSITE INTERFACES
SO123-XXI-1.11.3	25		EMERGENCY PLAN TRAINING PROGRAM DESCRIPTION
EPSD-1	4		EMERGENCY ACTION LEVEL TECHNICAL BASES
EPSD-1 1.0	2		SECTION 1.0 - PURPOSE
EPSD-1 2.0	3		SECTION 2.0 - DISCUSSION
EPSD-1 3.0	2		SECTION 3.0 - REFERENCES
EPSD-1 4.0	4		SECTION 4.0 - DEFINITIONS, ACRONYMS AND ABBREVIATIONS
EPSD-1 5.0	2		SECTION 5.0 - EAL TECHNICAL BASES
EPSD-1 5.1	3		SECTION 5.1 - CATEGORY A - ABNORMAL RAD LEVELS / RADIOLOGICAL EFFLUENT
EPSD-1 5.2	4		SECTION 5.2 - CATEGORY C - COLD SHUTDOWN / REFUELING SYSTEM MALFUNCTION
EPSD-1 5.3	3		SECTION 5.3 - CATEGORY E - EVENTS RELATED TO INDEPENDENT SPENT FUEL STORAGE INSTALLATIONS
EPSD-1 5.4	4		SECTION 5.4 - CATEGORY F - FISSION PRODUCT BARRIER DEGRADATION

Attachment 3

SONGS EMERGENCY PLAN REFERENCED MANUALS, ORDERS AND TRAINING PROCEDURES

DOCUMENT	REV. #	TCN/EC	TITLE
EPSD-1 5.5	4		SECTION 5.5 - CATEGORY H - HAZARDS AND OTHER CONDITIONS AFFECTING PLANT SAFETY
EPSD-1 5.6	4		SECTION 5.6 - CATEGORY S - SYSTEM MALFUNCTION