UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005

April 10, 2008

EA-08-003

Randall K. Edington, Executive
Vice President, Nuclear
and Chief Nuclear Officer
Mail Station 7602
Arizona Public Service Company
P.O. Box 52034
Phoenix, AZ 85072-2034

SUBJECT: MEETING SUMMARY FOR PALO VERDE NUCLEAR GENERATING STATION PUBLIC MEETING

Dear Mr. Edington:

On March 25, 2008, the NRC held a Regulatory Conference with Arizona Public Service Company at the Region IV offices in Arlington, Texas, to discuss the apparent violation identified in NRC inspection report 2007-012, at its Palo Verde Nuclear Generating Station, and in an NRC letter dated February 1, 2008. The apparent violation was a failure to implement corrective actions for a weakness in the performance of senior reactor operators that the licensee had identified in May 2007. This conference was held at the licensee's request.

During this meeting, Palo Verde management discussed the apparent causes for the failure to promptly correct the identified performance weakness, and corrective actions to ensure the correction of future performance weaknesses, and discussed its evaluation of the significance of the apparent violation. The meeting attendance list and Palo Verde's presentation are enclosed.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Should you have any questions concerning this matter, we will be pleased to discuss them with you.

Sincerely,

/RA/

Ryan E. Lantz, Chief
Operations Branch
Division of Reactor Safety

Dockets: 50-528, 50-529, 50-530
Licenses: NPF-41, NPF-51, NPF-74

Enclosures:
1. Meeting Attendance List
2. Palo Verde Nuclear Generating Station Presentation

cc w/o Enclosure 2:
Steve Olea
Arizona Corporation Commission
1200 W. Washington Street
Phoenix, AZ 85007

Douglas K. Porter, Senior Counsel
Southern California Edison Company
Law Department, Generation Resources
P.O. Box 800
Rosemead, CA 91770

Chairman
Maricopa County Board of Supervisors
301 W. Jefferson, 10th Floor
Phoenix, AZ 85003

Aubrey V. Godwin, Director
Arizona Radiation Regulatory Agency
4814 South 40 Street
Phoenix, AZ 85040

Scott Bauer, Director
Regulatory Affairs
Palo Verde Nuclear Generating Station
Mail Station 7636
P.O. Box 52034
Phoenix, AZ 85072-2034

Mr. Dwight C. Mims
Vice President, Regulatory Affairs and
Performance Improvement
Palo Verde Nuclear Generating Station
Mail Station 7636
P.O. Box 52034
Phoenix, AZ 85072-2034

Jeffrey T. Weikert
Assistant General Counsel
El Paso Electric Company
Mail Location 167
123 W. Mills
El Paso, TX 79901

Eric J. Tharp
Director of Generation
Los Angeles Department of Water & Power
Southern California Public Power Authority
P.O. Box 51111, Room 1255
Los Angeles, CA 90051-5700

John Taylor
Public Service Company of New Mexico
2401 Aztec NE, MS Z110
Albuquerque, NM 87107-4224

Geoffrey M. Cook
Southern California Edison Company
5000 Pacific Coast Hwy, Bldg. D21
San Clemente, CA 92672

Robert Henry
Salt River Project
6504 East Thomas Road
Scottsdale, AZ 85251

Brian Almon
Public Utility Commission
William B. Travis Building
P.O. Box 13326
1701 North Congress Avenue
Austin, TX 78701-3326

Karen O' Regan
Environmental Program Manager
City of Phoenix
Office of Environmental Programs
200 West Washington Street
Phoenix, AZ 85003

Matthew Benac
Assistant Vice President
Nuclear & Generation Services
El Paso Electric Company
340 East Palm Lane, Suite 310
Phoenix, AZ 85004

Chairperson, Regional Assistance Committee
Region IX
Federal Emergency Management Agency
Department of Homeland Security
1111 Broadway, Suite 1200
Oakland, CA 94607-4052

Electronic distribution by RIV:
Regional Administrator (EEC)
DRP Director (DDC)
DRS Director (RJC1)
DRS Deputy Director (TWP)
Senior Resident Inspector (GXW2)
Senior Resident Inspector (RIT)
Branch Chief, DRP/D (MCH2)
Senior Project Engineer, DRP/D (GEW)
Team Leader, DRP/TSS (CJP)
RITS Coordinator (MSH3)
DRS STA (DAP)
M. Vasquez (GMV)
C. Maier (MCM1)
K. Fuller (KSF)
R. Lantz (REL)
V. Dricks, PAO (VLD)
R. Kahler, NSIR/DRP/EP (REK)
J. Adams, OEDO RIV Coordinator (JTA)
ROPreports
PV Site Secretary (PRC)

SISP Review Completed: _3/31/08_ ADAMS: ✔ Yes ☐ No Initials: PJE
✔ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ✔ Non-Sensitive

DOCUMENT NAME:Distribution for Reactor Escalated.wpd

DRS/OB	TL:ACES	C:DRS/OB		
PElkmann	KSFuller	RLantz		
/RA/	**/RA/**	**/RA/**		
4/10/08	4/10/08	4/10/08		

OFFICIAL RECORD COPY T=Telephone E=E-mail F=Fax

ENCLOSURE 1

MEETING ATTENDANCE LIST

Nuclear Regulatory Commission

E. Collins, Regional Administrator
T. Pruett, Deputy Director, Division of Reactor Safety
V. Watkins, Deputy Director (Acting), Division of Reactor Safety (NASA)
R. Lantz, Chief, Operations Branch, Division of Reactor Safety
M. Hay, Chief, Branch D, Division of Reactor Projects
K. Fuller, Regional Counsel; Director, Allegation Coordination and Enforcement Staff
M. Vasquez, Senior Enforcement Specialist
R. Kahler, Team Leader, NSIR/DRP/EP
P. Elkmann, Senior Emergency Preparedness Inspector, Operations Branch,
R. Treadway, Senior Resident Inspector

Arizona Public Service Company

R. Edington, Executive Vice President, Chief Nuclear Officer
D. Mims, Vice President, Regulatory Affairs and Performance Improvement
S. Bauer, Director, Regulatory Affairs
J. Waid, Director, Training
T. Radtke, General Manager, Emergency Services and Support
P. Carpenter, Department Leader, Operations
M. Ray, Department Leader Designate, Emergency Preparedness
J. Wood, Department Leader, Operations Training
R. Henry, Site Representative, Salt River Project

Other Attendees

R. Kidwell, Senior Nuclear Technologist, Regulatory Affairs, Comanche Peak Steam Electric Station
J. Kinnel
S. Oleo
T. Young

ENCLOSURE 2

PALO VERDE NUCLEAR GENERATING STATION PRESENTATION

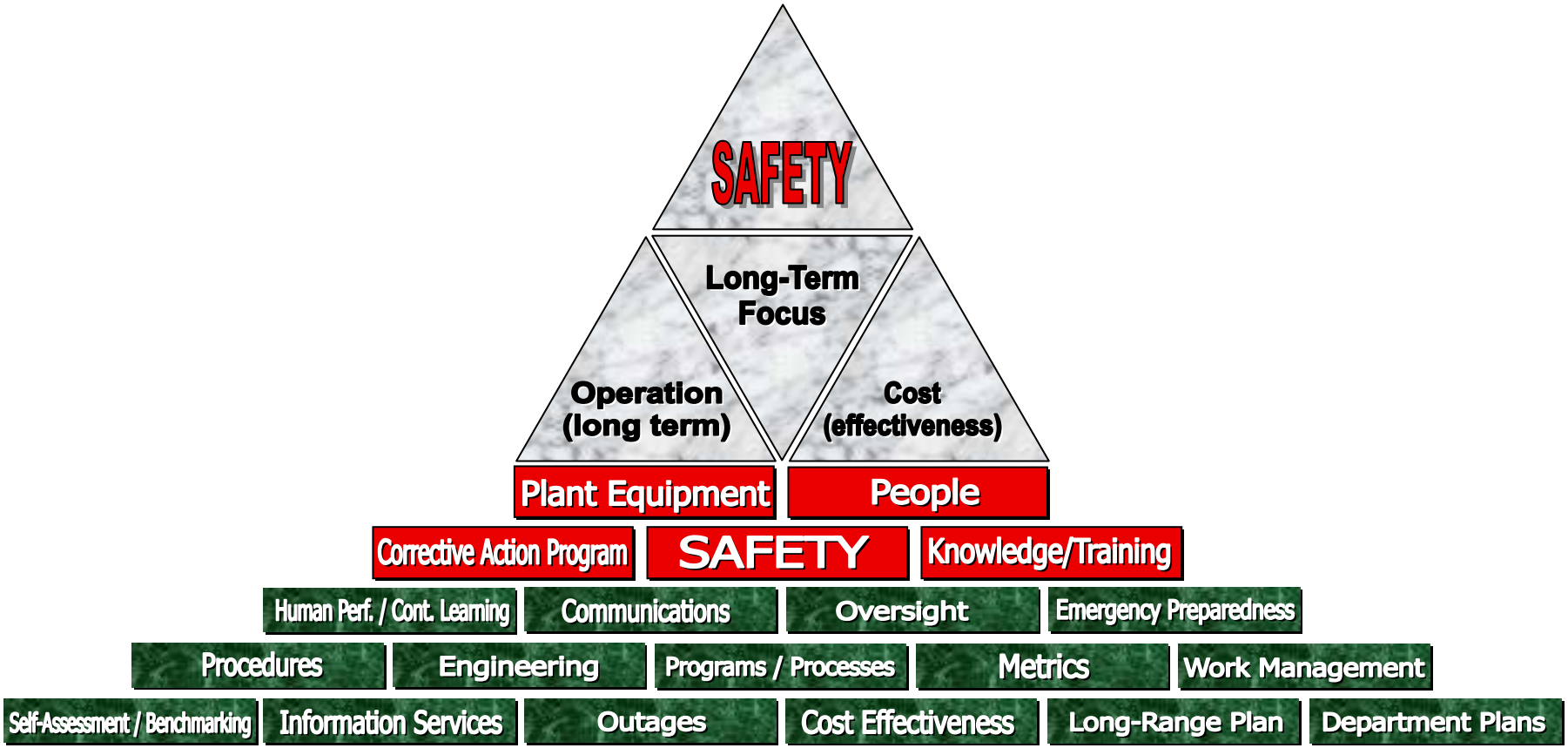
Emergency Action Level 1-7 Regulatory Conference

PALO VERDE

Randy Edington

Executive Vice President and
Chief Nuclear Officer

PALO VERDE



SAFELY and efficiently ***generate*** electricity for the ***long term***

Emergency Preparedness Improvements

- Assessments / ImPACT
- Root Cause Investigations
- Organizational Changes
- Significant Training Efforts
- Procedures / EAL Improvements
- NEI 99-01 Revision 5 EAL Methodology Conversion

Scott Bauer

Director
Regulatory Affairs

Apparent WHITE Finding

- Performance Deficiency: Failure to Correct an RSPS Weakness in a Timely Manner
- Emergency Preparedness Significance Determination Process Criteria:
  - Timeliness “Well in Excess” of Suggested Guidance
  - Timeliness “Inappropriate in View of the Significance” of the Weakness
    - Inappropriate Because of the “Inability to Properly Classify an Emergency Condition”
- Finding Preliminarily Determined to be of Low to Moderate Safety Significance

APS Perspective

- Assumed Knowledge Deficiency Existed With Definition of Prolonged Release
- Job Performance Measure (JPM) Was Flawed
  - Incorrect Answer
  - Insufficient Information
  - Unrealistic Scenario
- Corrective Action Program Not Effectively Used
- Knowledge Deficiency Would Not Result in Misclassification of an Actual Event

Table 1: Fission Product Barrier Reference (Modes 1-4)

FUEL CLAD BARRIER		RCS BARRIER		CONTAINMENT BARRIER	
POTENTIAL LOSS	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**
Highest valid CET temperature > 700ºF **[1-1]**	Highest valid CET temperature > 1200ºF **[1-1]**	RCS leak > 44 gpm **[1-6]**	RCS leak rate > available makeup capacity as indicated by a loss of RCS subcooling (i.e., RCS at saturation conditions) **[1-6]**	CTMT pressure 50 psig and increasing **[1-10]**	Rapid unexplained CTMT pressure decrease following initial increase **[1-10]**
	RCS activity > 300 µCi/gm Dose Equivalent I-131 **[1-3]**			CTMT pressure > 8.5 psig with both CTMT Spray Systems not operating **[1-10]**	CTMT pressure or sump level response not consistent with LOCA conditions **[1-10]**
	Time since shutdown=0.2 hrs: CTMT radiation monitor RU-148 > 2.1E+05 mrem/hr, or RU-149 > 2.4E+05 mrem/hr, **OR** Time since shutdown >.2 hrs: Refer to Appendix P [1-4] RU-148 / RU-149 curves **[1-4]**			CTMT radiation monitor RU-148 > 6.8E+06 mrem/hr, or RU-149 > 7.8E+06 mrem/hr **[1-11]**	Failure of both CTMT isolation valves in any one line to close and pathway to the environment exists **[1-13]**
	Time since shutdown=0.2 hrs: & total RCS leakage < 1 gpm: RCS radiation monitor RU-150 or RU-151 > 2.2E+04 mrem/hr **OR** Time since shutdown >.2 hrs & total RCS leakage < 1 gpm: Refer to Appendix P [1-4] RU-150 / RU-151curve **[1-4]**	SGTR > 44 gpm **[1-7]**	SGTR > 132 gpm with a prolonged release of contaminated secondary coolant occurring from the ruptured S/G to the environment (see limitations in Section 1) **[1-7]**		Release of contam. Secondary side to atmosphere (i.e., S/G safety or ADV) with S/G P/S leakage > Tech Spec allowable S/G P/S leakage **[1-14]**
Valid RVLMS level currently or previously < 21% plenum **[1-2]**		LOAF such that minimum acceptable feedwater flow cannot be maintained **[1-8]**		H_2 concentration > 3.5% by volume **[1-10]**	
				CET > 1200ºF and not restored w/i 15 min. or CET > 700ºF with RVLMS < 21% plenum and not restored within 15 min. **[1-12]**	
Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of Fuel Clad Barrier **[1-5]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of RCS Barrier **[1-9]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of CTMT Barrier **[1-15]**	

APPLY THE CRITERIA ABOVE TO THE CONDITIONS BELOW

UNUSUAL EVENT (NUE)	ALERT	SITE AREA EMERGENCY (SAE)	GENERAL EMERGENCY (GE)
Any loss OR any potential loss of Containment	Any loss OR any potential loss of either Fuel Clad or RCS	Loss of both Fuel Clad and RCS **OR** Potential loss of both Fuel Clad and RCS **OR** Potential loss of either Fuel Clad or RCS AND loss of any additional barrier	Loss of any two barriers **AND** Potential loss of a third barrier

Table 1: Fission Product Barrier Reference (Modes 1-4)

FUEL CLAD BARRIER		RCS BARRIER		CONTAINMENT BARRIER	
P		OTENTIAL LOSS	LOSS		
Hig tem [1-		k > 44 gpm **[1-6]**	RCS leak rate > ava makeup capacity by a loss of RC (i.e., RCS at conditions		CTMT following .0]
					sump level stent with L-10]
					MT isolation ne to close
					tam. Secondary osphere (i.e., S/G ADV) with S/G P/S ge > Tech Spec allowable P/S leakage **[1-14]**
Valid RVLMS level currently or previously < 21% plenum **[1-2]**		LOAF such that minimum acceptable feedwater flow cannot be maintained **[1-8]**		H_2 concentration > 3.5% by volume **[1-10]**	
				CET > 1200ºF and not restored w/i 15 min. or CET > 700ºF with RVLMS < 21% plenum and not restored within 15 min. **[1-12]**	
Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of Fuel Clad Barrier **[1-5]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of RCS Barrier **[1-9]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of CTMT Barrier **[1-15]**	

SGTR > 44 gpm **[1-7]**

SGTR > 132 gpm with a prolonged release of contaminated secondary coolant occurring from the ruptured SG to the environment (see Limitations in Section 1) **[1-7]**

APPLY THE CRITERIA ABOVE TO THE CONDITIONS BELOW

UNUSUAL EVENT (NUE)	ALERT	SITE AREA EMERGENCY (SAE)	GENERAL EMERGENCY (GE)
Any loss OR any potential loss of Containment	Any loss OR any potential loss of either Fuel Clad or RCS	Loss of both Fuel Clad and RCS **OR** Potential loss of both Fuel Clad and RCS **OR** Potential loss of either Fuel Clad or RCS AND loss of any additional barrier	Loss of any two barriers **AND** Potential loss of a third barrier

Prolonged Release

- EPIP 99, Appendix A, Section 1, Precautions and Limitations Defines “Prolonged Release of Contaminated Secondary Coolant” as Encompassing:
  - A Main Steam Line Break
  - A Feedwater Line Break
  - A Stuck-open SG Safety
  - A Stuck-open Atmospheric Dump Valve
  - A Plant Cooldown (i.e., to Mode 5) While Steaming the Affected SG to Atmosphere
- Cooling SG to 540 Degrees F is Not a “Prolonged Release”
- Potential “Inability to Properly Classify” is Specific to the Cooldown to Mode 5 Attribute of EAL 1-7

Timeline

- JPM Administered 30 Times from 2005 to 2007
- 21 Emergency Coordinators (EC) Classified GE (Declaring EAL 1-7 Loss Versus Potential Loss)
- 8 ECs Were Remediated to Intended GE JPM Answer
- May 2, 2007 1 EC Challenged JPM Answer and JPM Error Was Recognized But No Corrective Action Initiated
- May 3, 2007 JPM Selected for NRC Initial Exam
- JPM Validated as GE by Exam Preparers

Timeline

- July 27, 2007 JPM Administered in July NRC Exam and Answer Challenged by License Candidate
- July 30, 2007 PVAR Written
- September 19, 2007 JPM Corrected
- October 9, 2007 Corrected JPM Administered to EC (Not Yet Retrained) and Classified as GE
- October 25, 2007 Remediation Training Completed for ECs (Within 90 Days of PVAR)

APS Perspective

- Actions to Remediate the Identified Deficiency Took 175 Days From Identification
- APS Failed to Enter the JPM Error Into the Corrective Action Program Upon Initial Identification on May 2, 2007
- APS Failed to Afford the Appropriate Significance to an Emergency Preparedness Classification Issue
  - Error Propagated Into NRC Initial Exam
  - Recurred During 95003 Inspection
- APS Agrees This Was a Performance Deficiency

Significance

- Knowledge Deficiency Would Not Result in the "Inability to Properly Classify an Emergency Condition"
  - EAL 1-7 and EAL Scheme Not Deficient
  - JPM Error Reinforced a Misapplication of the EAL in the JPM Setting
  - Misapplication of EAL 1-7 in the JPM Setting Would Not Result in the Inability to Classify an Actual Emergency Condition
- Performance Deficiency is of Very Low Safety Significance

APS Perspective

- Event Classification Training Has Multiple Levels:
  - Classroom Training and Written Exams on EAL Tables
  - Emergency Plan JPMs are a Tool for Testing Individual Knowledge of the EAL Tables
  - Simulator-evaluated Scenarios Test the Ability of Operations Teams to Classify Events
  - Full-scale Drills / Exercises Test the Ability of ERO Teams to Classify Events

APS Perspective

- Failure of This JPM Would Not Lead to Misclassification in an Actual Event
  - JPM Provides a Limited Set of Information
    - A Very Small Subset of Available Plant Indications
    - A Snapshot in Time of an Event
    - Examinee is Given up to 15 Minutes to Evaluate the Information Provided and Make a Classification
    - Selected Cues Trigger EAL Decisions
  - JPM Did Not Provide the Sequence of the Event
    - Operator Actions That Had Been Taken
    - How the Plant Got to the Current Conditions
    - Each Procedure Followed and Where the CRS is in Those Procedures
    - Classifications Would Occur in Stages, Not All at One Time

APS Perspective

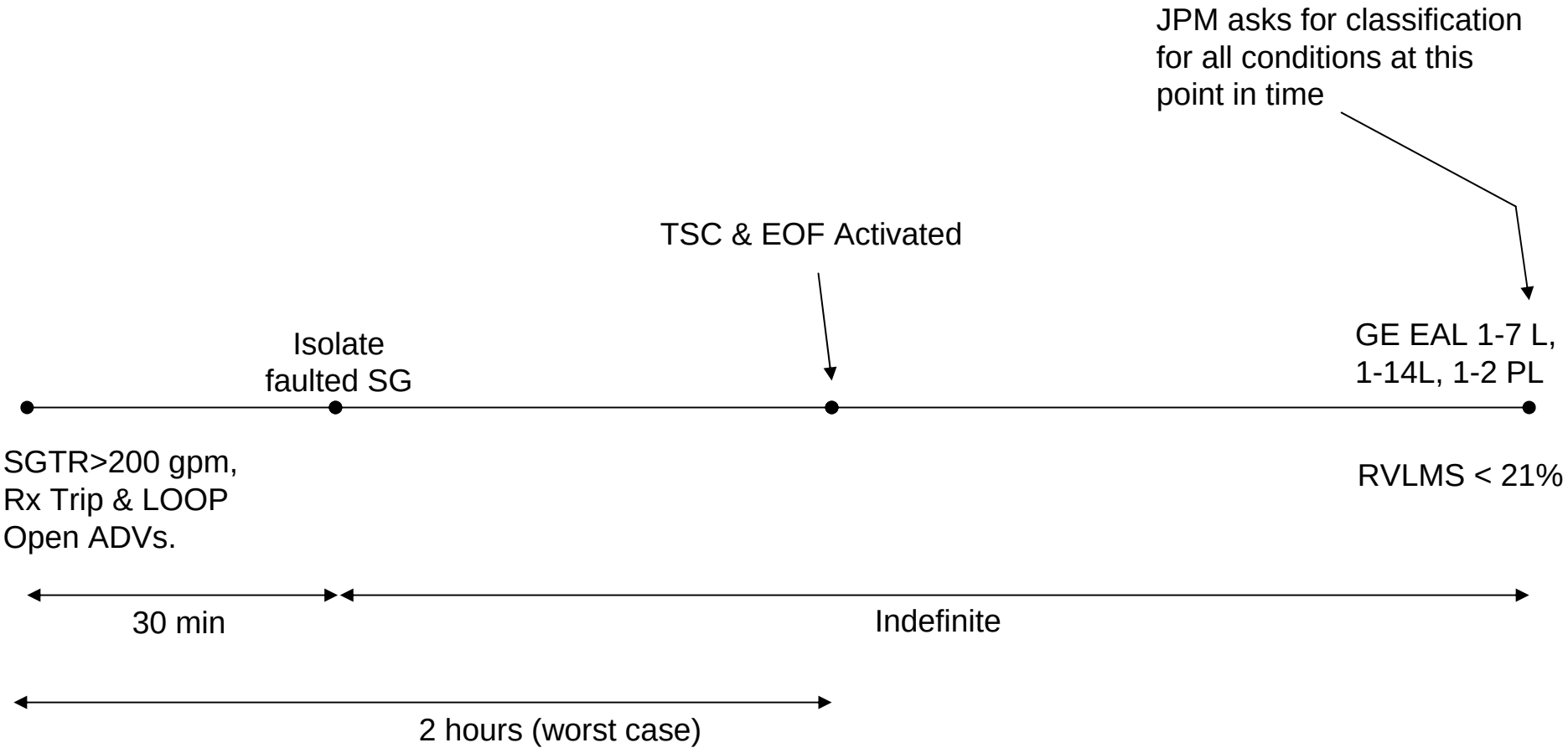
- SGTR JPM Cues
  - An SGTR>200 gpm Has Occurred
  - Reactor Has Been Tripped
  - On the Reactor Trip, a Loss of Power to the Grid Occurred
  - A Loss of Both HPSI Pumps Occurred
  - The CRS Entered the Functional Recovery Procedure
  - Power Restored to PBA-S03 Using the “A” EDG and the “A” HPSI Pump Has Been Started
  - RVLMS Indicated <21% in the Outlet Plenum 10 Minutes Ago But Is Now >21%
  - Secondary Plant Stabilized Using ADVs and “A” AFW

APS Perspective

- SGTR JPM Cues
  - *An SGTR>200 gpm Occurred (EAL 1-7 PL or L)*
  - Reactor Has Been Tripped
  - On the Reactor Trip, a Loss of Power to the Grid Occurred
  - A Loss of Both HPSI Pumps Occurred
  - The CRS Entered the Functional Recovery Procedure
  - Power Restored to PBA-S03 Using “A” EDG and the “A” HPSI Pump Has Been Started
  - *RVLMS Indicated <21% in the Outlet Plenum 10 Minutes Ago But Is Now >21% (EAL 1-2 PL)*
  - *Secondary Plant Stabilized Using ADVs and “A” AFW (EAL 1-14 L and EAL 1-7 PL)*

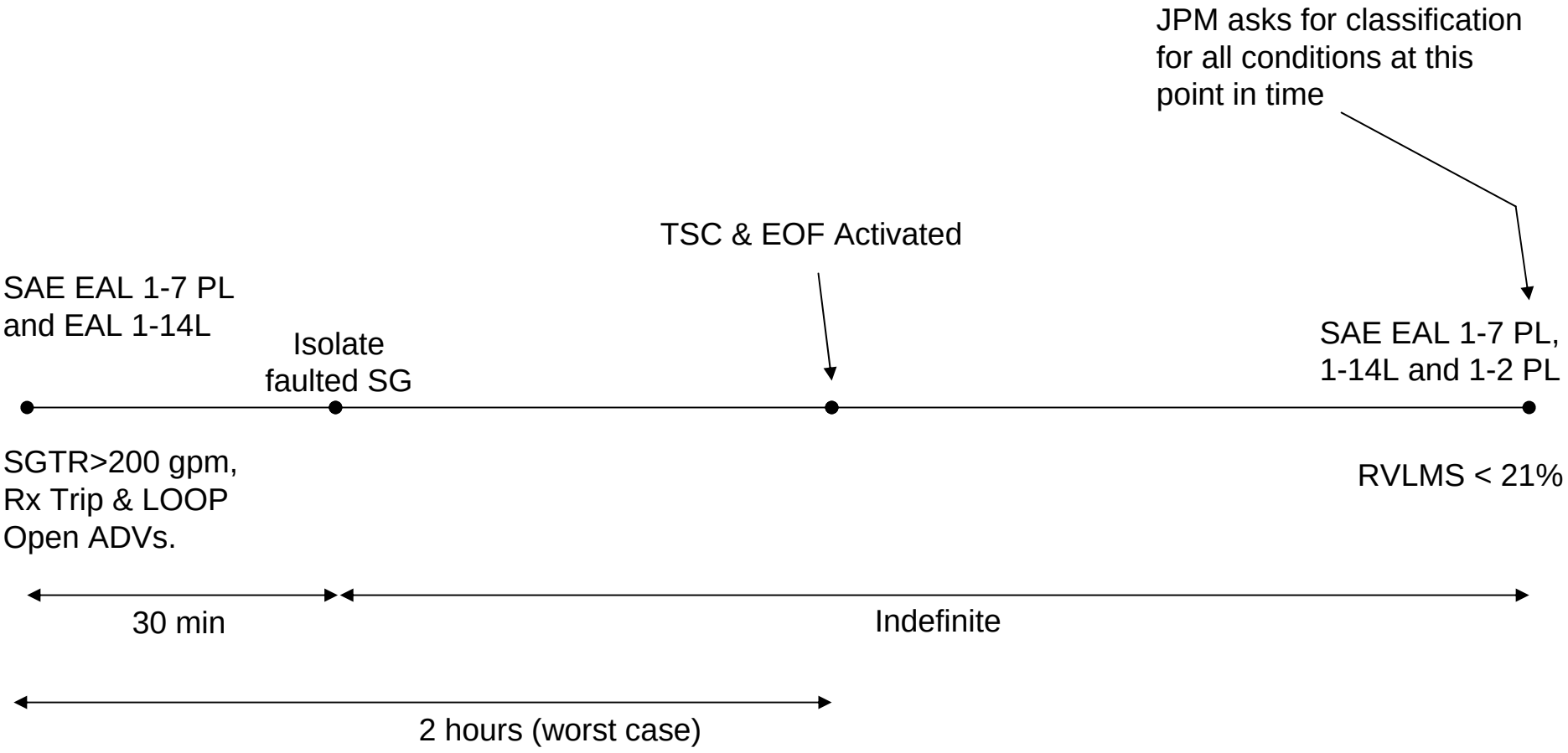
Event Timeline

JPM Scenario



Event Timeline

JPM Scenario



Event Timeline

Simulator Results for JPM Scenario Initial Conditions

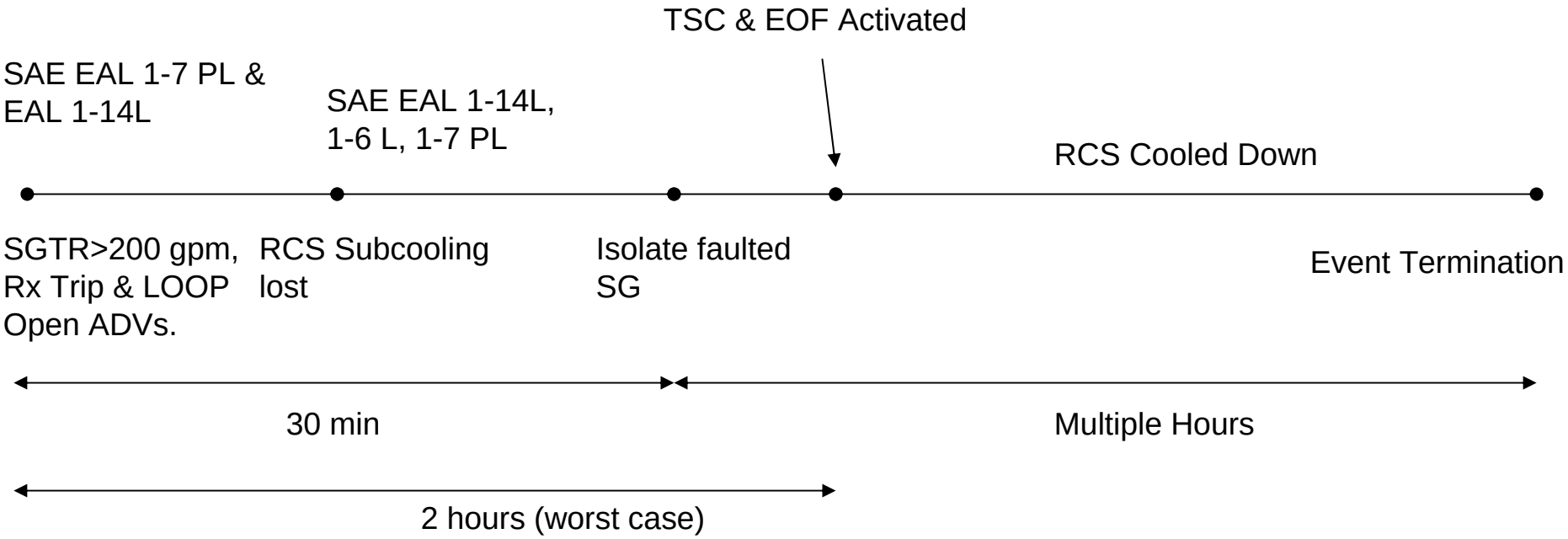


Table 1: Fission Product Barrier Reference (Modes 1-4)

FUEL CLAD BARRIER		RCS BARRIER		CONTAINMENT BARRIER	
POTENTIAL LOSS	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**
Highest valid CET temperature > 700ºF **[1-1]**	Highest valid CET temperature > 1200ºF **[1-1]**	RCS leak > 44 gpm **[1-6]**	RCS leak rate > available makeup capacity as indicated by a loss of RCS subcooling (i.e., RCS at saturation conditions) **[1-6]**	CTMT pressure 50 psig and increasing **[1-10]**	Rapid unexplained CTMT pressure decrease following initial increase **[1-10]**
	RCS activity > 300 µCi/gm Dose Equivalent I-131 **[1-3]**			CTMT pressure > 8.5 psig with both CTMT Spray Systems not operating **[1-10]**	CTMT pressure or sump level response not consistent with LOCA conditions **[1-10]**
	Time since shutdown=0.2 hrs: CTMT radiation monitor RU-148 > 2.1E+05 mrem/hr, or RU-149 > 2.4E+05 mrem/hr, **OR** Time since shutdown >.2 hrs: Refer to Appendix P [1-4] RU-148 / RU-149 curves **[1-4]**			CTMT radiation monitor RU-148 > 6.8E+06 mrem/hr, or RU-149 > 7.8E+06 mrem/hr **[1-11]**	Failure of both CTMT isolation valves in any one line to close and pathway to the environment exists **[1-13]**
	Time since shutdown=0.2 hrs: & total RCS leakage < 1 gpm: RCS radiation monitor RU-150 or RU-151 > 2.2E+04 mrem/hr **OR** Time since shutdown >.2 hrs & total RCS leakage < 1 gpm: Refer to Appendix P [1-4] RU-150 / RU-151curve **[1-4]**	SGTR > 44 gpm **[1-7]**	SGTR > 132 gpm with a prolonged release of contaminated secondary coolant occurring from the ruptured S/G to the environment (see limitations in Section 1) **[1-7]**		Release of contam. Secondary side to atmosphere (i.e., S/G safety or ADV) with S/G P/S leakage > Tech Spec allowable S/G P/S leakage **[1-14]**
Valid RVLMS level currently or previously < 21% plenum **[1-2]**		LOAF such that minimum acceptable feedwater flow cannot be maintained **[1-8]**		H_2 concentration > 3.5% by volume **[1-10]**	
				CET > 1200ºF and not restored w/i 15 min. or CET > 700ºF with RVLMS < 21% plenum and not restored within 15 min. **[1-12]**	
Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of Fuel Clad Barrier **[1-5]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of RCS Barrier **[1-9]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of CTMT Barrier **[1-15]**	

APPLY THE CRITERIA ABOVE TO THE CONDITIONS BELOW

UNUSUAL EVENT (NUE)	ALERT	SITE AREA EMERGENCY (SAE)	GENERAL EMERGENCY (GE)
Any loss OR any potential loss of Containment	Any loss OR any potential loss of either Fuel Clad or RCS	Loss of both Fuel Clad and RCS **OR** Potential loss of both Fuel Clad and RCS **OR** Potential loss of either Fuel Clad or RCS AND loss of any additional barrier	Loss of any two barriers **AND** Potential loss of a third barrier

Table 1: Fission Product Barrier Reference (Modes 1-4)

FUEL CLAD BARRIER		RCS BARRIER		CONTAINMENT BARRIER	
POTENTIAL LOSS	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**
Highest valid CET temperature > 700ºF **[1-1]**	Highest valid CET temperature > 1200ºF **[1-1]**	RCS leak > 44 gpm **[1-6]**	RCS leak rate > available makeup capacity as indicated by a loss of RCS subcooling (i.e., RCS at saturation conditions) **[1-6]**	CTMT pressure 50 psig and increasing **[1-10]**	Rapid unexplained CTMT pressure decrease following initial increase **[1-10]**
	RCS activity > 300 µCi/gm Dose Equivalent I-131 **[1-3]**			CTMT pressure > 8.5 psig with both CTMT Spray Systems not operating **[1-10]**	CTMT pressure or sump level response not consistent with LOCA conditions **[1-10]**
	Time since shutdown=0.2 hrs: CTMT radiation monitor RU-148 > 2.1E+05 mrem/hr, or RU-149 > 2.4E+05 mrem/hr, **OR** Time since shutdown >.2 hrs: Refer to Appendix P [1-4] RU-148 / RU-149 curves **[1-4]**			CTMT radiation monitor RU-148 > 6.8E+06 mrem/hr, or RU-149 > 7.8E+06 mrem/hr **[1-11]**	Failure of both CTMT isolation valves in any one line to close and pathway to the environment exists **[1-13]**
	Time since shutdown=0.2 hrs: & total RCS leakage < 1 gpm: RCS radiation monitor RU-150 or RU-151 > 2.2E+04 mrem/hr **OR** Time since shutdown >.2 hrs & total RCS leakage < 1 gpm: Refer to Appendix P [1-4] RU-150 / RU-151curve **[1-4]**	SGTR > 44 gpm **[1-7]**	SGTR > 132 gpm with a prolonged release of contaminated secondary coolant occurring from the ruptured S/G to the environment (see limitations in Section 1) **[1-7]**		Release of contam. Secondary side to atmosphere (i.e., S/G safety or ADV) with S/G P/S leakage > Tech Spec allowable S/G P/S leakage **[1-14]**
Valid RVLMS level currently or previously < 21% plenum **[1-2]**		LOAF such that minimum acceptable feedwater flow cannot be maintained **[1-8]**		H_2 concentration > 3.5% by volume **[1-10]**	
				CET > 1200ºF and not restored w/i 15 min. or CET > 700ºF with RVLMS < 21% plenum and not restored within 15 min. **[1-12]**	
Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of Fuel Clad Barrier **[1-5]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of RCS Barrier **[1-9]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of CTMT Barrier **[1-15]**	

APPLY THE CRITERIA ABOVE TO THE CONDITIONS BELOW

UNUSUAL EVENT (NUE)	ALERT	SITE AREA EMERGENCY (SAE)	GENERAL EMERGENCY (GE)
Any loss OR any potential loss of Containment	Any loss OR any potential loss of either Fuel Clad or RCS	Loss of both Fuel Clad and RCS **OR** Potential loss of both Fuel Clad and RCS **OR** Potential loss of either Fuel Clad or RCS AND loss of any additional barrier	Loss of any two barriers **AND** Potential loss of a third barrier

Table 1: Fission Product Barrier Reference (Modes 1-4)

FUEL CLAD BARRIER		RCS BARRIER		CONTAINMENT BARRIER	
POTENTIAL LOSS	**LOSS**	**POTENTIAL LOSS**	**LOSS**	**POTENTIAL LOSS**	**LOSS**
Highest valid CET temperature > 700ºF **[1-1]**	Highest valid CET temperature > 1200ºF **[1-1]**	RCS leak > 44 gpm **[1-6]**	RCS leak rate > available makeup capacity as indicated by a loss of RCS subcooling (i.e., RCS at saturation conditions) **[1-6]**	CTMT pressure 50 psig and increasing **[1-10]**	Rapid unexplained CTMT pressure decrease following initial increase **[1-10]**
	RCS activity > 300 µCi/gm Dose Equivalent I-131 **[1-3]**			CTMT pressure > 8.5 psig with both CTMT Spray Systems not operating **[1-10]**	CTMT pressure or sump level response not consistent with LOCA conditions **[1-10]**
	Time since shutdown=0.2 hrs: CTMT radiation monitor RU-148 > 2.1E+05 mrem/hr, or RU-149 > 2.4E+05 mrem/hr, **OR** Time since shutdown >.2 hrs: Refer to Appendix P [1-4] RU-148 / RU-149 curves **[1-4]**			CTMT radiation monitor RU-148 > 6.8E+06 mrem/hr, or RU-149 > 7.8E+06 mrem/hr **[1-11]**	Failure of both CTMT isolation valves in any one line to close and pathway to the environment exists **[1-13]**
	Time since shutdown=0.2 hrs: & total RCS leakage < 1 gpm: RCS radiation monitor RU-150 or RU-151 > 2.2E+04 mrem/hr **OR** Time since shutdown >.2 hrs & total RCS leakage < 1 gpm: Refer to Appendix P [1-4] RU-150 / RU-151curve **[1-4]**	SGTR > 44 gpm **[1-7]**	SGTR > 132 gpm with a prolonged release of contaminated secondary coolant occurring from the ruptured S/G to the environment (see limitations in Section 1) **[1-7]**		Release of contam. Secondary side to atmosphere (i.e., S/G safety or ADV) with S/G P/S leakage > Tech Spec allowable S/G P/S leakage **[1-14]**
Valid RVLMS level currently or previously < 21% plenum **[1-2]**		LOAF such that minimum acceptable feedwater flow cannot be maintained **[1-8]**		H_2 concentration > 3.5% by volume **[1-10]**	
				CET > 1200ºF and not restored w/i 15 min. or CET > 700ºF with RVLMS < 21% plenum and not restored within 15 min. **[1-12]**	
Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of Fuel Clad Barrier **[1-5]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of RCS Barrier **[1-9]**		Any condition that, in the opinion of the SM/EC, indicates loss or potential loss of CTMT Barrier **[1-15]**	

APPLY THE CRITERIA ABOVE TO THE CONDITIONS BELOW

UNUSUAL EVENT (NUE)	ALERT	SITE AREA EMERGENCY (SAE)	GENERAL EMERGENCY (GE)
Any loss OR any potential loss of Containment	Any loss OR any potential loss of either Fuel Clad or RCS	Loss of both Fuel Clad and RCS **OR** Potential loss of both Fuel Clad and RCS **OR** Potential loss of either Fuel Clad or RCS AND loss of any additional barrier	Loss of any two barriers **AND** Potential loss of a third barrier

Conditions for Misclassification Unlikely

- Given the Assumed Knowledge Deficiency, the Following Must All Occur for There to be a Misclassification
  - SGTR >132 gpm
  - Must be a Loss of Condenser Forcing ADVs to be Used (i.e., Containment Loss)
  - Fuel Clad Barrier Potential Loss
  - These Conditions Must All Exist Prior to Isolation of the Affected SG

Summary

- JPM Does Not Reflect the Conditions of an Actual Event
  - Timing/Sequence Not Provided
    - Faulted SG Would Be Isolated, Terminating Release
  - Integrated Control Room Information Not Available
  - SGTR Events Generally Not Associated With a Potential Loss of Fuel Clad
- Assumed Knowledge Deficiency Created by the JPM is Inconsequential to Classification of SGTRs Not Leading to Potential Loss of Fuel Clad
- JPM Does Not Exercise Classification As It Would Be Done During an Actual Event
  - Classification Would Occur in Stages As the Event Progresses
  - Classifications Would Take Into Account <u>Actual</u> Changes in Plant Conditions
  - Multiple Personnel Would Be Involved Depending on Timing/Sequence
  - Integration/Multiple Information Sources Available

Additional Information

- During an Event, a Peer Check is Directed and a Final Review is Performed as Time Permits
  - EPIP-01 and -03 Used for Classification
  - Procedures Direct the EC to Have Another EC-qualified Person Independently Verify the Classification (Normally the STA)
  - If Technical Support Center and Emergency Operations Facility are Manned, Additional EC-qualified People Would Be Checking Classification
- These Independent Checks Not Available During JPM
- STAs Received Specific “Prolonged Release” Training Independent of JPM Error Corrective Actions

Conclusion

- APS Agrees This Was a Performance Deficiency
  - CAP Not Initially Used Which Propagated Error and Delayed Corrective Actions
- Job Performance Measures Have Limited, Specific Application
- Deficiency Did Not Result in the Inability to Properly Classify an Emergency Condition in an Actual Event
- Broad-based Corrective Actions Taken and Planned to Improve Emergency Preparedness

Terry Radtke

General Manager
Emergency Services and Support

Leadership Training

Accountability Model

Assessment

- Nuclear Assurance Audit (Feb) / Evaluated Exercise (March)
  - Developed EP Improvement Plan
- Management Review / ImPACT Review (June)
  - Independent Assessment
  - ImPACT Assessment Activities
  - Revision of the EP Improvement Plan

Assessment

- ImPACT Root Cause Investigation (August)
  - Business Plan Building Block Status
  - Site Integrated Business Plan (SIBP)
  - Site Integrated Improvement Plan (SIIP)
- EAL 1-7 Root Cause Investigation (October)
  - EC Advisors Established
  - Accelerated Knowledge / Training Improvement Actions
  - EAL Reviews

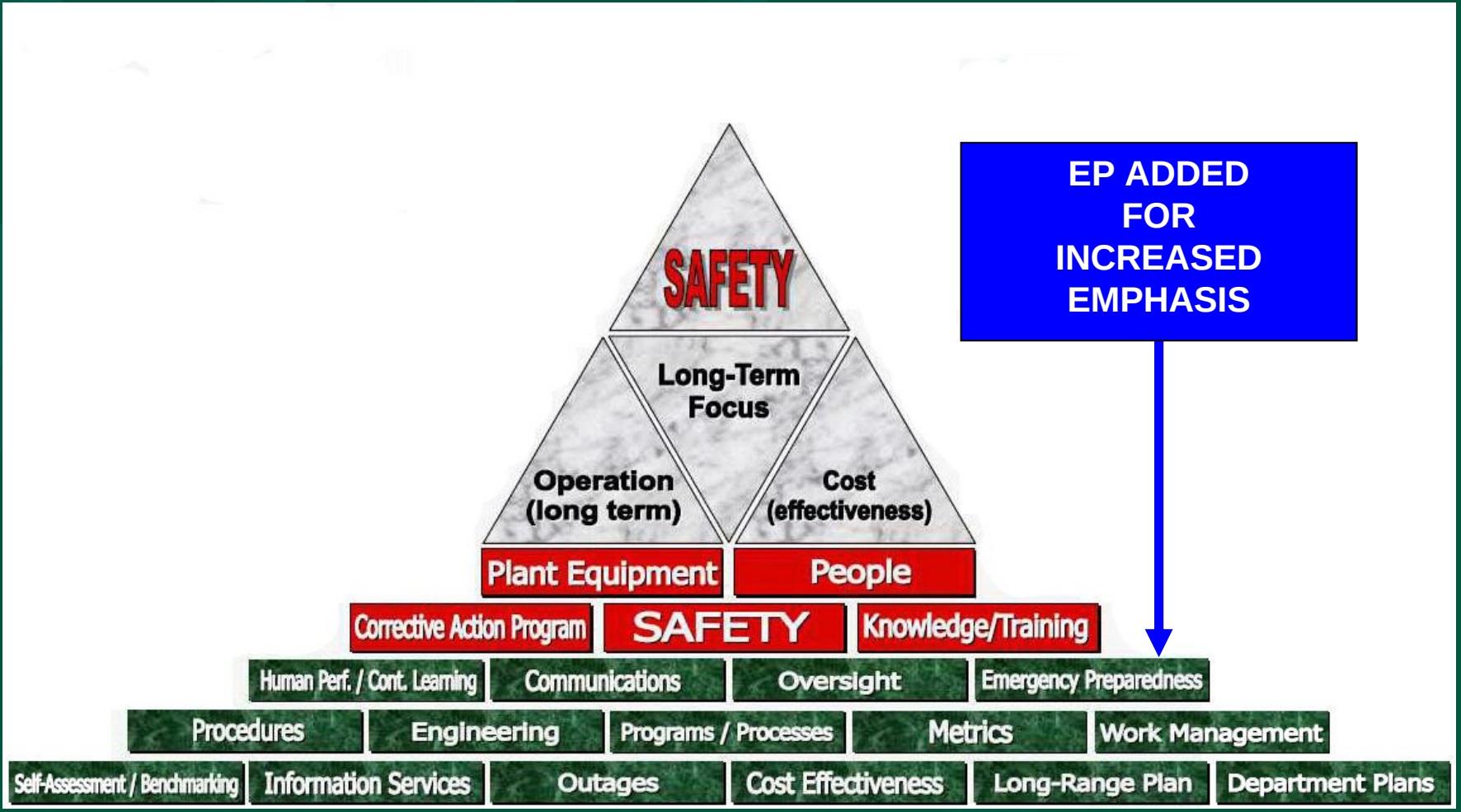
Benchmarking

- Site visits in 2007 / 2008

Pilgrim	River Bend	Waterford
Callaway	FitzPatrick	Turkey Point
Nine Mile Point	SONGS	St. Lucie

- Industry and Peer Expert Assistance
- Best Practice Improvement Plans
- Performance Metrics

Ownership and Accountability

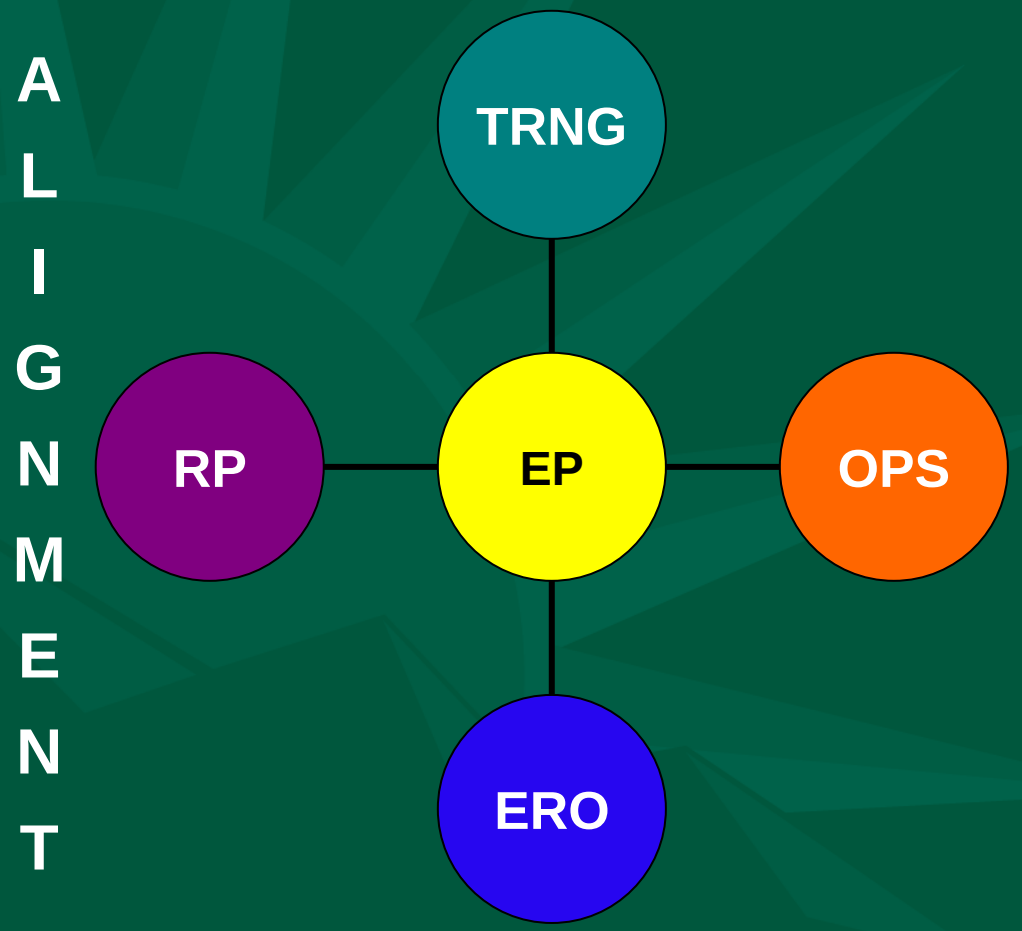


Senior Management Reinforced EP Importance and Priority

Ownership and Accountability

- Policy Guide 1503 EP Expectations
- Leader Briefings on ERO Expectations at Alignment Meetings
- ERO Duty Team Weekly Meetings and Associated Metric
- EC and EOD Alignment Meetings
- Established Cross-discipline EP Steering Committee
  - Extensive Revision to Emergency Plan Implementing Procedures (EPIPs)

Ownership and Accountability



Knowledge and Training

- Increased Drills and Exercises
- Implementing Systematic Approach to Training for ERO Positions
- Focused EAL and PAR Training
- Emergency Services and Support General Manager Added to Site Training Oversight Committee
- EC EAL Knowledge Improvement Plan

Resources

- Key Stakeholders Embedded into EP
  - RP / Operations
- Organization Realignment
  - EP Leader Direct Report to General Manager
  - New EP Director-level Position
  - EP Communications Equipment Staff
- Temporary Assignments

Facilities and Equipment

- Communication
  - Audio / Video
  - ERO Pagers
  - NAN / PBX Phones
- Software
  - RADDOSE
  - Web EOC (Implementing)
- Sirens

Corrective Actions

- Computer-based Training and Face-to-Face Training Briefings for EAL 1-7 Knowledge Between Training Cycles
- Errors in Exam Materials (e.g., Exam Questions, JPMs) Entered Into CAP
- Simulator, Exam and JPM Failures Entered Into CAP
- Trending of Operator Training Weaknesses
- EAL 1-7 JPM Corrected and Initiating Cues Revised

Corrective Actions

- Operator Training EAL JPMs and Training Simulator Exercises Receive Emergency Planning Review and Concurrence
- Training on the EP Significance Determination Process Elements
- EAL Improvements
- NEI 99-01 Revision 5 EAL Methodology Conversion

Conclusion

- Broad-based Improvement Plan
- Specific EAL Improvement Actions
- Increased Ownership and Accountability
- Driving Knowledge and Standards
- Improved Alignment of ERO Stakeholders

Dwight Mims

Vice President

Regulatory Affairs and Plant Improvement

Closing

- APS Failed to Enter the Identified Deficiency in the Corrective Action Program
- Corrective Actions Were, Therefore, Delayed and the Error Recurred
- After Evaluation, APS Concluded There Was Not an Inability to Properly Classify an Actual Event
- The Deficiency Should Be Very Low Safety Significance

Closing

- SDP application
  - Current: Loss of b(14) PS Function for Failing to Correct a b(4) RSPS Weakness
  - Alternative: Same as Above With Timeliness Determined Not to Be Inappropriate in View of Final Evaluation of Significance of Time to Correct the Weakness
    - Similar to Disposition of Finding in IR 2005002
  - Could Also Be Addressed as a Deficiency in Training of Emergency Response Personnel Under PS b(15)

Closing

- APS Initiated and Made Significant Improvements in Emergency Preparedness Throughout 2007
- APS Will Continue to Implement the Planned Actions to Further Improve Performance
- APS Will Continue to Monitor and Assess Emergency Preparedness Performance and Actively Engage With the Industry
- Goal: Be Recognized as an Industry Leader in Emergency Preparedness