

Diablo Canyon Power Plant

NFPA 805 Transition Project

Pre-Submittal Meeting with NRC



03/07/2013



Introductions

PG&E Representatives

Steve Baker.....Manager, Design Engineering

Rasool Baradaran.....Supervisor, Probabilistic Risk Assessment (PRA)

Michael Richardson.....Regulatory Services

Paul Bemis.....Strategic Projects Oversight (SPO)

John Pyo.....FPRA / FREs Lead (by phone)

Brent Waggener.....Independent Verifier (by phone)

Project Consultants – EPM

Ted Stanton.....Site Modifications Technical Coordinator

Paul Ouellette.....Division Manager, Safety & Systems Analysis (by phone)

Mark Crompton.....Project Manager (by phone)

Jim Gregerson.....Site Project Coordinator (by phone)

Ray Dyer.....Site Technical Lead (by phone)



Meeting Objectives

3

- **Last Presentation before submittal in June**
- **Present / Discuss LAR**
- **Receive feedback from Staff on LAR acceptability and information**



Meeting Agenda

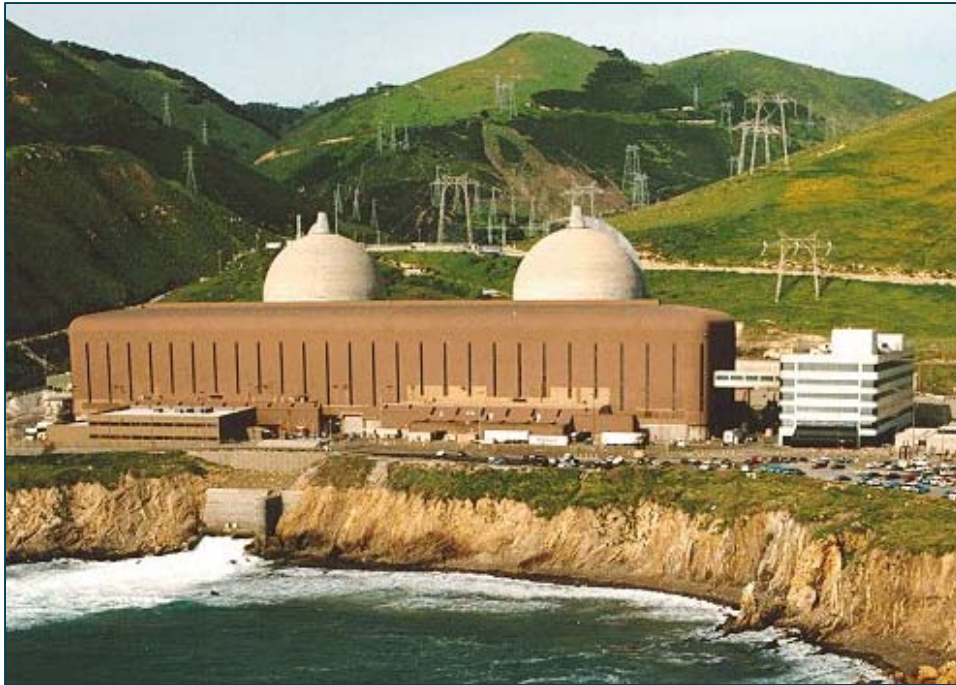
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- **Overview of NFPA 805 Transition Background**
- **Discuss Preliminary Results**
 - **NFPA 805 Chapter 3 Compliance**
 - **Internal Events/Internal Flooding, Fire, Seismic PRAs Peer Reviewed to RG 1.200 rev. 2; Turbine Building Fragilities included**
 - **Post-Transition Plant Risk-Includes IE/IF, Seismic and Fire PRAs in CDF**
 - **SSHAC Level 3 Schedule**
 - **Discuss Post-Submittal Implementation**
 - **Proposed Modifications**
 - **Other Implementation Items**
- **Questions / Discussion / Feedback**



Diablo Canyon Power Plant

5



- 2 PWR Units
- 4-Loop Westinghouse NSSS
- 1150 MWe / Unit
- Initial Operating License:
 - Unit 1: 1984
 - Unit 2: 1985

**Owned and Operated by Pacific Gas & Electric
Company (PG&E)**



Current Fire Protection Licensing Basis

- 10 CFR 50.48(a) and (b)
- 10 CFR 50, Appendix A, GDC 3, 1971
- 10 CFR 50, Appendix R, III.G, III.J, III.L, III.O
- License Conditions 2.C.(5) (Unit 1) and 2.C.(4) (Unit 2)
- Branch Technical Position APCSB 9.5-1 Appendix A
- Current Deviations
 - 39 Current Deviations
 - Current Plan: Transition 11 Deviations



NFPA 805 Transition Overview

7

- **License Amendment Request (LAR) submittal date: June 28, 2013**
- **Program Improvements Realized:**
 - **Development and Peer Review of IE /IF, Seismic PRAs as well as Fire PRA per RG 1.200 revision 2**
 - **Multiple Fire Risk Evaluation Iterations**
 - **Seismic Fragilities complete in Turbine Building; remainder in progress**
 - **DCPP's reported Total CDF/LERF represent true overall risk**
 - **Additional 3rd party reviews by Industry/Legal/Academic Experts of:**
 - **PRA (complete)**
 - **Fire Models (complete & planned)**
 - **Circuit Analysis (complete)**
 - **NUREG CR6850 compliance (complete)**
 - **LAR Package (planned)**
- **LAR Transition Report draft complete**
 - **Preparation and Internal Review in Progress**



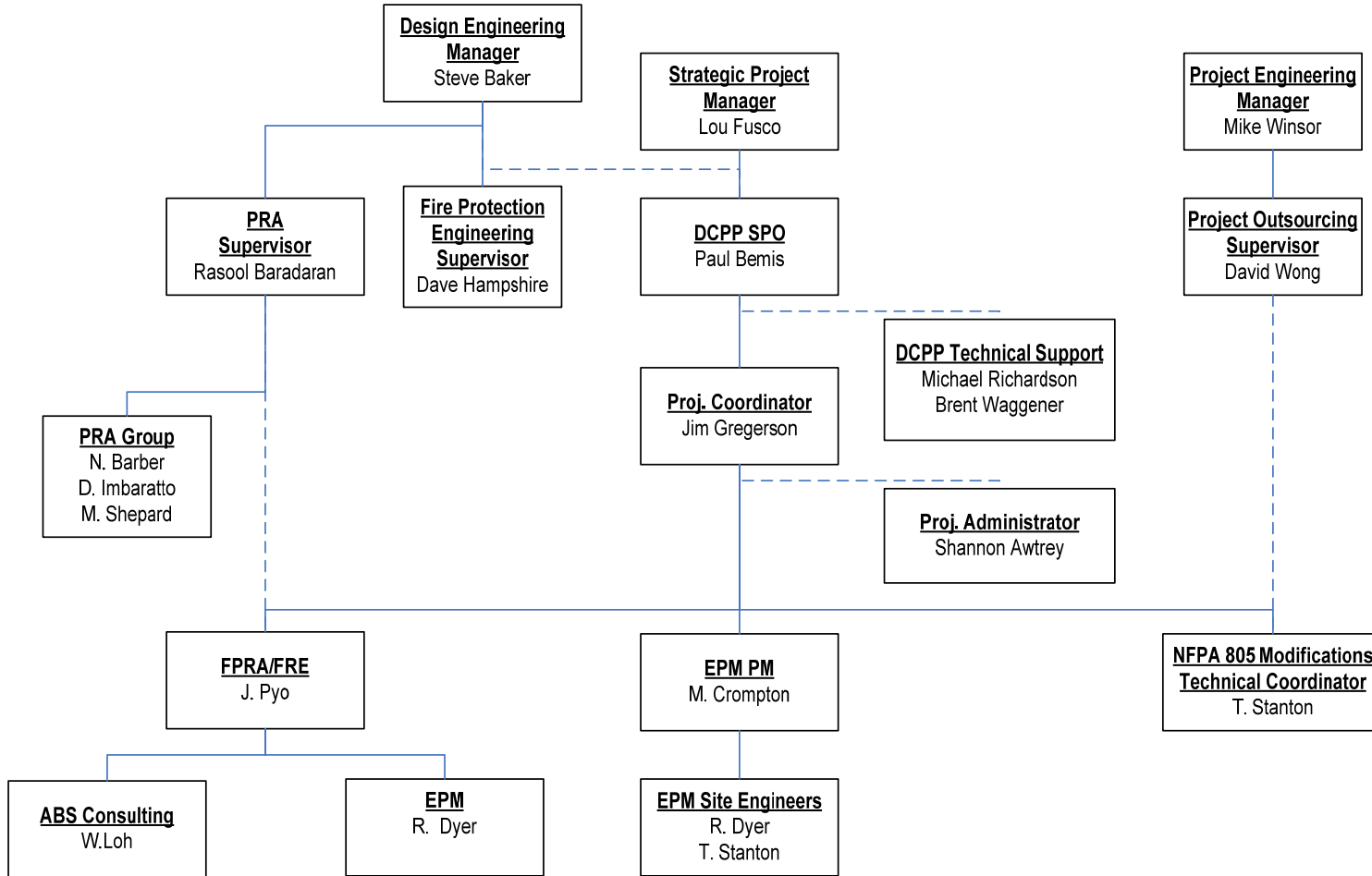
NFPA 805 Transition Guidance

8

- **DCPP NFPA 805 License Amendment Request Meets:**
 - NEI 04-02, revision 2
 - NEI 00-01, revision 2
 - **Regulatory Guides:**
 - 1.205 revision 1
 - 1.200 revision 2
 - 1.174 revision 1
 - **Industry Guidance (FAQs, LAR Template Revision 1P, etc.)**



NFPA 805 TRANSITION PROJECT ORGANIZATION CHART



DIABLO CANYON POWER PLANT



Fundamental FP Program & Design¹⁰ Elements (LAR Attachment A)

• 135 Total Sections

- Note: Several Sections Require Two Responses (e.g., Complies with use of Existing Engineering Equivalency Evaluation (EEEE) and Required Action)
- Complies: 84
- Complies with Clarification: 6
- Complies by previous NRC Approval: 10
- Complies with use of EEEE: 13
- Submit for NRC Approval: 6
- Complies with Required Action: 19



Non-Power Operations Review (LAR Attachment D)

11

- **High Risk Evolutions**
 - **Consistent with Existing Procedure**
 - **AD8.DC50, Outage Safety Management**
 - **Mid-Loop (Plant Operating State (POS) 2)**
 - **Consistent with FAQ 07-0040**
- **Pinch Points Identified:**
 - **Unit 1: 45 areas containing pinch points**
 - **Unit 2: 47 areas containing pinch points**



Radioactive Release Review (LAR Attachment E)

- **Performed per NEI 04-02, revision 2 (4.3.4 and Attachment G) supplemented by FAQ 09-0056**
- **Evaluated by Fire Area / Fire Zone**
- **Pre-Fire Plans Revisions & Training Updates Scheduled**
 - **Tracked as Implementation Item (IMP-038)**



Nuclear Safety Capability Assessment

- **110 Fire Areas in Power Block (LAR Attachment C)**
 - 44 Deterministic (4.2.3) Fire Areas
 - 66 Performance-Based (4.2.4) Fire Areas
- **Safe and Stable (LAR Section 4.2.1.2)**
 - Hot Standby (Mode 3)
 - Qualitative Discussion of Long-Term Safe and Stable



Recovery Action Transition (LAR Attachment G)

14

- **As of current LAR draft:**
- **Unit 1:**
 - **9 Credited Recovery Actions**
- **Unit 2:**
 - **9 Credited Recovery Actions**
- **Additional Defense-in-Depth Actions**
 - **Not Credited in PRA**



Monitoring Program (LAR Section 4.6)

15

- **FAQ 10-0059 Guidance**
- **High Safety Significance / FPRA Components:**
 - Maintenance Rule program
- **Low Safety Significant / NPO, Rad Release, FP Program:**
 - System and Program Health Monitoring



Fire PRA (LAR Section 4.5)

16

- **Based on Peer Reviewed Internal Events PRA**
- **Fire PRA Peer Review (2010)**
 - **Facts and Observations:**
 - **80% Addressed / Closed**
 - **Remainder scheduled to complete by time of submittal**
 - **No Unreviewed Methods Used**
- **IE/IF, Fire, and Seismic PRAs per RG 1.200, revision 2**
 - **Peer Reviewed**



Overall Plant Risk

17

- **Based on Peer Reviewed Models with Additional Refinements**
 - Includes proposed modifications
 - Updates still in progress; will complete by time of submittal
 - SSHAC Level 3 to be complete by March 12, 2015 (consistent with 50.54(f) letter)
- **Fire CDF: $\sim 5 \times 10^{-5}$ / unit (still in refinement)**
- **Overall Plant CDF: $\sim 8.5 \times 10^{-5}$ / unit (still in refinement)**
 - Includes Fire, IE/IF, and Seismic



Fire Δ Risk

18

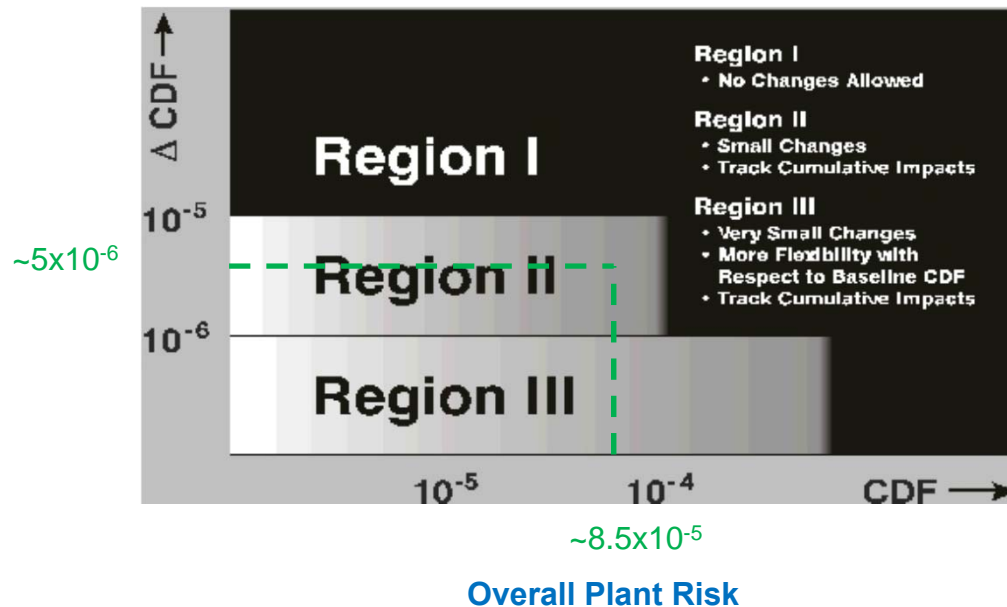
- **Based on Fire Risk Evaluations, revision 0**
 - Includes proposed modifications
 - Revision 1 in progress based on self-assessment of Fire PRA and modeling
 - Will be complete by time of LAR Submittal
- **Fire Δ CDF:**
 - Unit 1: Goal $\sim 5 \times 10^{-6}$ (still in refinement)
 - Unit 2: Goal $\sim 5 \times 10^{-6}$ (still in refinement)
- **Fire Δ LERF:**
 - Unit 1: Goal $\sim 5 \times 10^{-7}$ (still in refinement)
 - Unit 2: Goal $\sim 5 \times 10^{-7}$ (still in refinement)



Regulatory Guide 1.174 Risk Assessment

- **Planned** (post transition, post modification) Risk in Region II
- *Note: LERF and Δ LERF are less limiting than CDF and Δ CDF.*

Δ Plant Risk due to VFDR(s)





Implementation (1/2) (LAR Attachment S)

20

- **Four Proposed Modifications** (each applicable to both units)
 - **Incipient Fire Detection Installation**
 - SSPS and Cable Spreading Room Cabinets
 - **RCP Seal Upgrade**
 - **ERFBS Installation and Circuit Re-Route**
 - **Hot Shutdown Panel Upgrades**



Implementation (2/2) (LAR Attachment S)

21

- **32 Implementation Items**

- **Significant Implementation items include:**

- Finalization of Configuration Control process revisions (in progress)
- Review of PRA model following implementation of modifications
- Incorporation of Code Conformance Review (including Codes of Record) into Engineering Equivalency Evaluation (EEE) program
- Revise Pre-Fire Plans and Training Materials to address Radioactive Release Requirements

- **Implementation Items to be Complete prior to Implementation**



Post-Implementation Program Maintenance

- **Change Management Plan**

- Per Plant Procedure
- Includes Detailed Plan of Actions and Milestones, Tracked in SAP

- **Transition Plan**

- Maintain close Fire Protection Engineering group liaison with NFPA 805 Transition Project throughout RAI and Implementation phase



Summary

23

- **Complete LAR to be submitted by June 28, 2013**
 - **In-process reviews along with planned reviews by Industry/Legal/Academic experts**
- **Transition is Based on Peer Reviewed Internal Events/ Internal Flooding, Seismic, and Fire PRAs**
- **In-house PRA staff intimately involved with PRA development and upgrade; Presented/Responded to Peer Review Teams**
- **Four Proposed Modifications to improve plant fire risk**
- **Transition:**
 - **Developing procedure changes and training programs**
 - **Complete modifications not later than 2R20, spring 2018**

Comments?

Questions?

Feedback?

