

# **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

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- **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

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- 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

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- **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 3<sup>rd</sup> 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

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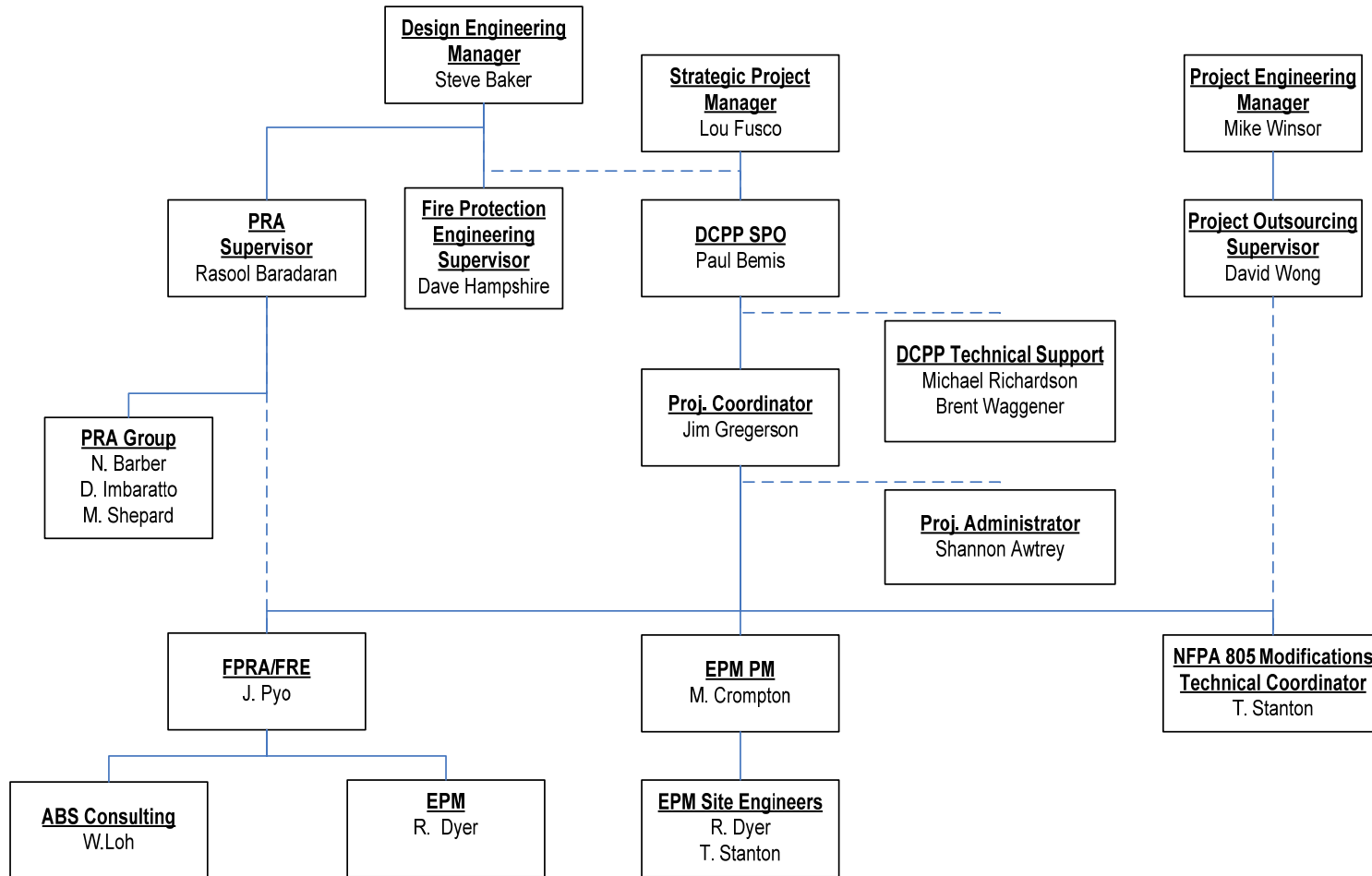
- **DCPP NFPA 805 License Amendment Request Meets:**
  - NEI 04-02, revision 2
  - NEI 00-01, revision 2
  - **Regulatory Guides:**
    - 1.205 revision 1
    - 1.200 revision 2
    - 1.174 revision 1
  - **Industry Guidance (FAQs, LAR Template Revision 1P, etc.)**





# NFPA 805 TRANSITION PROJECT ORGANIZATION CHART

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DIABLO CANYON POWER PLANT



# Fundamental FP Program & Design Elements (LAR Attachment A)<sup>10</sup>

## • 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)

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- **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)

- **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

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- **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 $\Delta$ Risk

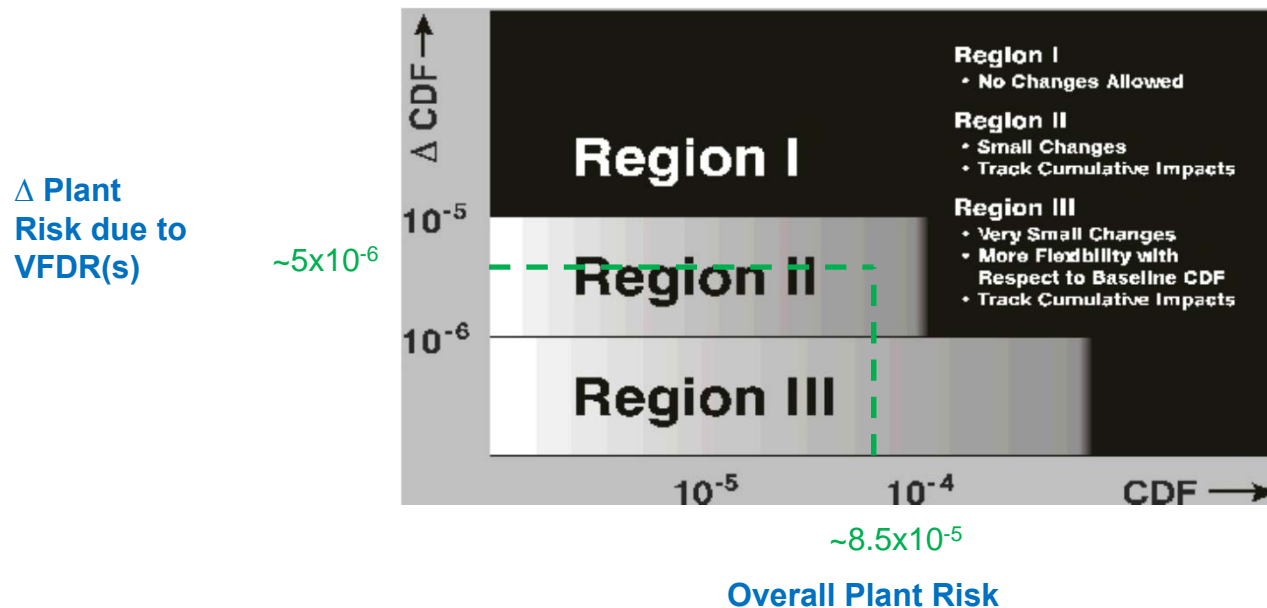
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- **Based on Fire Risk Evaluations, revision 0**
  - Includes proposed modifications
  - Revision 1 in progress based on self-assessment of Fire PRA and modeling
    - Will be complete by time of LAR Submittal
- **Fire  $\Delta$ CDF:**
  - Unit 1: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





# Implementation (1/2) (LAR Attachment S)

- **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)

- **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

- **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?**

