



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 19, 2000

MEMORANDUM TO: Susan F. Shankman, Deputy Director
Licensing and Inspection Directorate
Spent Fuel Project Office, NMSS

FROM: Steven Baggett, Project Manager 
Licensing Section
Spent Fuel Project Office, NMSS

SUBJECT: SUMMARY OF THE MAY 12, 2000, MEETING BETWEEN THE
NUCLEAR REGULATORY COMMISSION STAFF AND PACIFIC GAS
AND ELECTRIC COMPANY (TAC NO. L23073)

On May 12, 2000, the third in a series of meetings was held between the Nuclear Regulatory Commission (NRC) staff and representatives of Pacific Gas and Electric Company (PG&E) to discuss PG&E's plans for licensing independent spent fuel storage installations (ISFSIs) at Diablo Canyon and Humboldt Bay. At this meeting, PG&E provided a status update and specific information regarding the proposed ISFSIs. Members of the public also attended the meeting. Attachment 1 is an attendance list. Attachment 2 contains the slides used in PG&E's presentation. This meeting was noticed on April 21, 2000.

PG&E confirmed that the schedule for the submittal of the site-specific ISFSI license applications for both facilities remains October 2000. Responses to Request for Proposal (RFP) issued by PG&E, for the Diablo Canyon ISFSI work are under evaluation, and response to the RFP for Humboldt Bay is expected May 18, 2000. No contract award date has been set. PG&E also noted that the RFP respondents expressed concern that the application submittal date was very aggressive. PG&E also noted that amendments to the 10 CFR Part 50 licenses for both plants will be needed and requested the status of the formal coordination agreement between Spent Fuel Project Office (SFPO) and Nuclear Reactor Regulation (NRR) staff regarding technical assistance for the seismic review. SFPO staff indicated that the participation of NRR staff would be pursued, but the details of that participation would be worked out when an application is received and a schedule is developed.

During the March 2000 meeting, NRC staff indicated that it would provide clarification of several issues. These issues included the possible need for an exemption from 10 CFR 72.106 due to the close proximity of a public trail to the proposed Humboldt Bay ISFSI, the security requirements to be applied to the proposed Diablo Canyon ISFSI, and requirements for consultation with the State Historic Preservation Officer in the preparation of the environmental reports that are part of the license applications. PG&E was directed to recent correspondence between San Onofre and NRC's Office of General Counsel staff regarding an interpretation of 10 CFR 72.106, ADAMS package no. ML003713295. The security requirements were clarified during a April 11, 2000, conference call between NRC and PG&E staff.

PG&E and NRC staff agreed to hold future meetings to address specific technical issues resulting from vendor selections and associated design details and project status updates.

No proprietary information was disseminated or presented at this meeting. No regulatory decisions were requested or made.

Docket Nos. 72-26 (50-275, -323)
72-27 (50-133)

Attachments: 1. Attendance List
2. PG&E Slides

cc: Service Lists

DISTRIBUTION: (Closes TAC L23073/Review 030S)

Dockets	NRC File Center	PUBLIC	NMSS R/F	SFPO R/F
SGagner, OPA	BSpitzburg, RIV	VEverett, RIV	NJensen, OGC	FLyon, NRR
NRC attendees	Anorris	EHeumann, SFPO	SOConnor, SFPO	DWheeler, NRR

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ADAMS:

OFC:	SFPO <i>S</i>	<i>E</i>	SFPO <i>J</i>	<i>E2</i>	SFPO	<i>E</i>
NAME:	SBaggett		<i>J</i> Tharpe		JRHall	<i>JRH</i>
DATE:	5/18/00		5/16/00		5/18/00	

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S. Shankman

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May 19, 2000

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**May 12, 2000 Meeting
between the Nuclear Regulatory Commission and
Pacific Gas and Electric**

ATTENDANCE LIST

<u>Name</u>	<u>Affiliation</u>
Dave Miklush	PG&E
Terry Grebel	PG&E
Rich Klimczak	PG&E
Bruch Patton	PG&E
Jearl Strickland	PG&E
Jim Lyons	NRC/NMSS/SFPO
James R. Hall	NRC/SFPO
Lawrence Kokajko	NRC/SFPO
K.C. Leu	NRC/SFPO
Mahendra Shah	NRC/SFPO
David Tang	NRC/SFPO
Steven Baggett	NRC/SFPO
Robert Rothman	NRC/NRR
Steven Bloom	NRC/NRR
Cliff Munson	NRC/NRR
Richard Dudley	NRC/NRR
Goutam Bagchi	NRC/NRR
Geoffrey Quinn	Bechtel
Steve Schulin*	The Ibex Group

* Arrived at the end of the meeting.

***NRC/PG&E
Engineering Analysis
and Design Meeting
May 12, 2000***

Diablo Canyon and Humboldt Bay
ISFSI Projects



Agenda

- Purpose of Meeting Terry Grebel
- Introduction Terry Grebel
- Diablo Canyon Bruce Patton
 - ISFSI Considerations Jearl Strickland
 - Plant - ISFSI Transfer Considerations Jearl Strickland/
Rich Klimczak
- Humboldt Bay Bruce Patton
 - Level of Detail Terry Grebel
 - Hazards Analyses Terry Grebel
- Future Meetings / Summary Terry Grebel



Purpose of Meeting

- Identify Diablo Canyon and Humboldt Bay unique design and analysis considerations
- Reach agreement on:
 - types of engineering analysis
 - level and state of engineering design

which are necessary to support Part 50 and 72 licensing (e.g., design criteria vs. design calculations, drawings, etc.)



Introduction

- PG&E has reviewed
 - NRC regulations, (Reg Guide 3.62), and
 - The SRP (NUREG 1567), and
 - Other licensing submittals
- PG&E will propose the type and level of information we plan to submit based on:
 - PG&E's understanding of NRC's requirements
 - Other utilities licensing applications
- These expectations may change based on vendor selection



Diablo Canyon

- ISFSI Project Summary Status
 - Supplier bids received 4/20/00
 - Evaluation in progress
 - Project Organization/Schedule Development
 - Coastal Commission and other permits
- Photos and Maps
 - Site photo with ISFSI
 - Site Map
 - Preliminary cross-section



Diablo Canyon ISFSI Considerations

- Site Investigation
- Site Development
- Pad and Cask Anchorage System Design
- Transmission Line



Site Investigation

- **Key requirements:**
 - NUREG 1567, Sections 2.4.6, 2.5.6
- **PG&E approach and submittal level of detail**
 - Initial site geophysical investigation performed per governing standards
 - assessment of Rock Mass strength
 - slope stability of the excavated site during a seismic event
 - All existing bedding, joint, and fault orientation data was plotted and considered in site analysis
 - No evidence of past landsliding or incipient failure observed



Site Investigation (Continued)

- **Submittal:**
 - Will include report describing above activities and defining criteria for remaining design and work done as excavation proceeds.
 - We believe the above information is sufficient to demonstrate compliance with the Part 72 requirements, in accordance with NUREG 1567.



Site Development

- **Key requirements**
 - NUREG 1567, Sections 2.4.6, 2.5.6
- **PG&E approach and submittal level of detail**
 - Excavation and removal of approximately 200,000 cu. yds of rock material
 - ISFSI pad will be approximately 50,000 sq. ft.
 - Slope cut at 45 - 70 degrees w/ 20 foot cuts and 10 - 15 foot benches
 - Rock slope stabilized with rock anchors
 - 25 ft. long anchors at 5 ft. by 5 ft. intervals
 - Construction criteria
 - Ripping of rock, no blasting, dust control, relocation of 500kv grounding grid, tower protection



Site Development (Continued)

- Will provide reports and information used to establish the criteria for slopes, cuts, and rock bolting as described on the previous slide

- **Submittal**

- We believe the above information is sufficient to demonstrate compliance with the Part 72 requirements in accordance with NUREG 1567.
- We do not plan to provide construction drawings or details (available for inspection)



Pad and Cask Anchorage System Design

- **Key requirements**
 - NUREG 1567, Sections 5.4.3.2; 5.5.1.4; 5.5.3.4; 5.6
- **PG&E approach and submittal level of detail**
 - Pad final design requirements to be specified by cask supplier
 - Cask storage system is expected to be anchored to the pad
 - Pad(s) are expected to be considered Important to Safety



Anchorage System Design (Continued)

- **Submittal**

- Will provide above design detail to support seismic and structural analysis
- Will include analyses demonstrating qualification to seismic inputs as discussed in previous meetings
- We believe this is sufficient to demonstrate compliance with the Part 72 requirements, in accordance with NUREG 1567.



500 kV Transmission Lines

- **Background**

- Part of the ISFSI will be located under the Unit 1 500 kV transmission lines
- The minimum clearance from the top of the ISFSI pad to the 500 kV lines is 65 feet
- The closest 500 kV tower will be approximately 170 feet east of the ISFSI pad

- **Key Requirements**

- 10 CFR 72 requires that natural phenomena must be identified and assessed (72.92 Design basis external natural phenomena)
- 10 CFR 72 requires that the man-induced events which could affect the ISFSI must be identified and evaluated (72.94 Design basis external man-induced events)



500 kV Transmission Lines (Continued)

- PG&E approach and submittal level of detail
 - Electromagnetic and Electrostatic fields
 - Effect on instrumentation
 - Rebar corrosion
 - Cask handling activities at the ISFSI
 - Maintain 30 feet vertical clearance to the 500 kV lines
 - Tower collapse from wind, tornado, or an earthquake or a line break
 - Collapsed tower will not strike the storage casks
 - Postulated break of 500 kV line(s)
 - Casks attached to a grounding grid and connections sized to handle fault current until interrupted



500 kV Transmission Lines (Continued)

- **Submittal**
 - Will provide descriptions noted above
 - We believe this is sufficient to demonstrate compliance with the Part 72 requirements, in accordance with NUREG 1567.



Plant → ISFSI Cask Transfer Considerations

- Transporter
- Access road



Transporter

- **Key Requirements**

- NUREG-1567, 5.4.1 “Confinement Structures, Systems, and Components” - Design to preclude risk of: Criticality, radioactive release, dose, and impairment of retrievability during normal, off-normal and accident conditions.
- NUREG-1536, V.2.b “External Conditions” - “Normal conditions (including conditions involving handling and transfer) and the extreme ranges of normal conditions are presumed to exist during design-basis accidents or design-basis natural phenomena, with the exception of irrational or readily avoidable combinations....”
- Protect 10 CFR 50 SSCs.



Transporter (Continued)

- **PG&E approach and submittal level of detail**
 - Transporter will be designed to retain the DPC, without overturning or sliding off the roadway under all design conditions
 - Key mechanical features will be categorized as Important to Safety.
 - Tow hooks or rigging points allow it to be towed and temporarily secured
 - Employs devices to preclude uncontrolled movement



Access Road

- **Key Requirements:**
 - NUREG 1567, Section 2.5.6.5
- **PG&E approach and submittal level of detail**
 - ISFSI access road on slope
 - Approximately 85% is cut into rock similar to plant site (6% slope)
 - Approximately 15% (below elevation 190 feet) is founded on engineered fill
 - Slope stability analysis will be performed for the road with weight of a loaded transporter
 - Submittal will include reports with necessary design detail to support adequacy of road



Plant → ISFSI Cask Transfer

- **Submittal:**
 - Submittal will include:
 - Descriptive material covered above,
 - Probabilistic approach and analyses,
 - Transporter seismic analyses, and
 - Reports demonstrating compliance with applicable requirements and standards discussed above
 - We believe the above information is sufficient to demonstrate compliance with Part 72 requirements, in accordance with NUREG 1567



Humboldt Bay

- Summary of Project Status
- Design Detail
- Hazard Analyses



Humboldt Bay

- Summary of Project Status

- Supplier Bids Due 5/18/00
- Evaluation & Award TBD
- Planned Construction begin 2003
- Planned Loading first cask 2004



Humboldt Bay Design Detail

- Design requirements and submittal details are generally expected to be similar to those used in the Diablo Canyon application
- As issues arise additional discussion will be initiated



Humboldt Bay Hazard Evaluation

- Guidance found in NUREG 1567, 0800 and RG 1.91
- Hazards will be evaluated for their impact or verified to have acceptable risk



Types of Hazards to be Evaluated

- On-Site Hazards
 - Fuel Oil Tanks
 - 12 inch Natural Gas Line
 - Hydrogen Storage Facility
 - Propane Storage Tank
 - Fossil Unit Boiler Explosion



Types of Hazards, (continued)

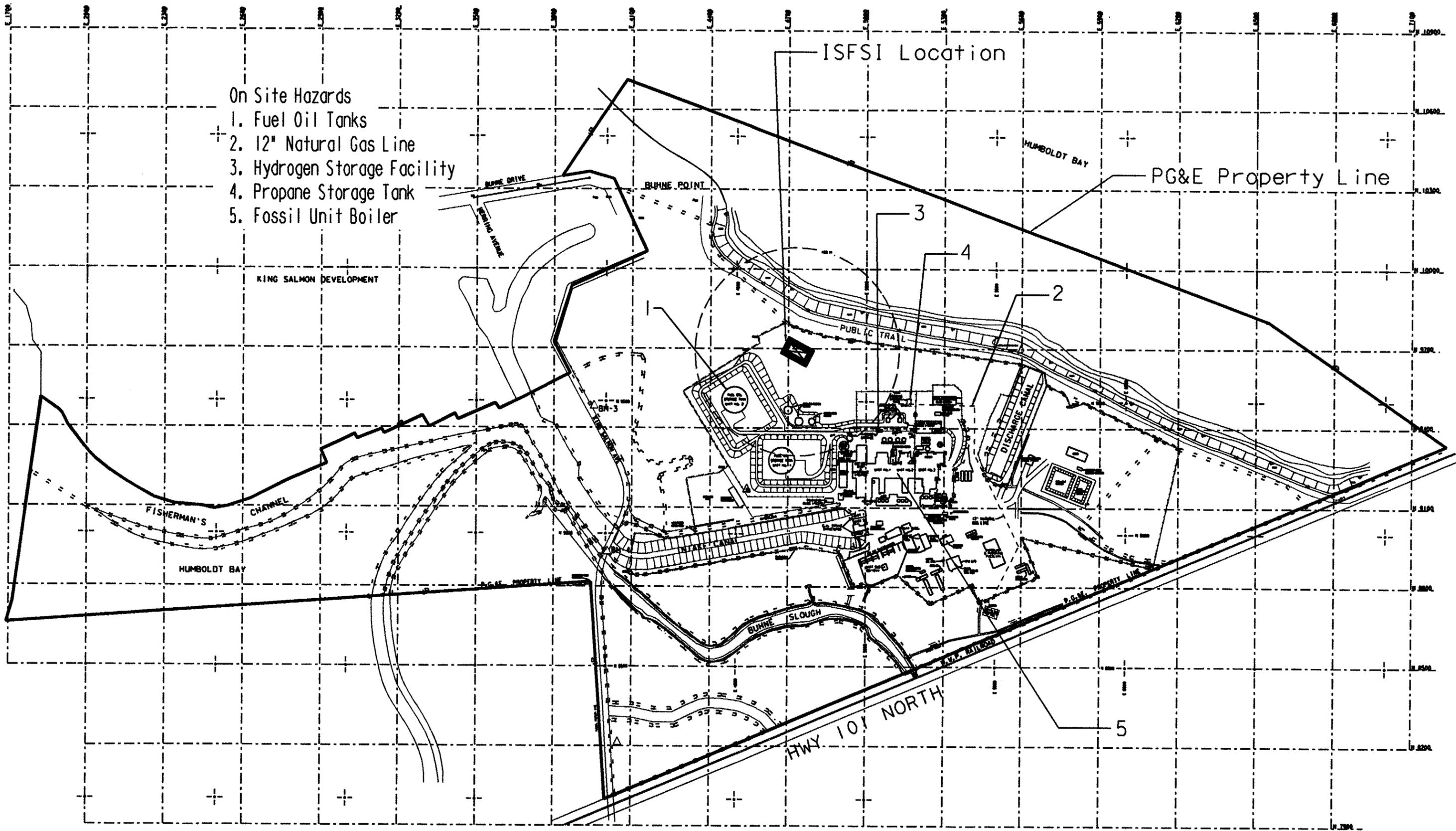
- **Off-Site Hazards**
 - Near by Truck Transport
 - Aircraft
 - Shipping in Bay
 - Other local Industrial or Military Facilities
- **Missile Hazards**
 - Tornado Missiles
 - Explosion Missiles (Boiler, Tank, Vapor Cloud, etc.)
 - Rotating Equipment Missiles



Future Meetings

- Issues Resulting from Vendor Selection and Associated Design
- Schedule Update After Vendor Selection
- Project Status Updates





- On Site Hazards
- 1. Fuel Oil Tanks
 - 2. 12" Natural Gas Line
 - 3. Hydrogen Storage Facility
 - 4. Propane Storage Tank
 - 5. Fossil Unit Boiler

ISFSI Location

PG&E Property Line

SITE HAZARDS MAP