

March 19, 2008

MEMORANDUM TO: Nader Mamish, Deputy Director  
Licensing and Inspection Directorate  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

FROM: James R. Hall, Senior Project Manager /RA/  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

SUBJECT: SUMMARY OF THE FEBRUARY 5, 2008, MEETING WITH PACIFIC  
GAS AND ELECTRIC COMPANY ON THE HUMBOLDT BAY  
INDEPENDENT SPENT FUEL STORAGE INSTALLATION

On February 5, 2008, staff from the U.S. Nuclear Regulatory Commission's (NRC) Office of Nuclear Material Safety and Safeguards, Division of Spent Fuel Storage and Transportation (SFST), Office of Federal and State Materials and Environmental Management Programs, and NRC's Region IV office met with staff from the Pacific Gas and Electric Company (PG&E, or the licensee) at NRC headquarters in Rockville, Maryland, to discuss PG&E's spent fuel inspection and characterization efforts related to the Humboldt Bay independent spent fuel storage installation (ISFSI). The meeting was noticed on January 25, 2008. A list of meeting attendees is provided in Enclosure 1. The slides presented by PG&E are provided in Enclosure 2.

The NRC issued a site-specific license for the Humboldt Bay ISFSI to PG&E in November 2005, in accordance with the requirements of 10 CFR Part 72. PG&E has completed construction of the ISFSI and plans to commence the loading and storage of spent fuel in the next few months. During preparations for the NRC inspections related to the ISFSI, NRC RIV staff initiated discussions with PG&E about the characterization of the Humboldt Bay spent fuel. Those discussions were expanded to include SFST staff, and in the course of those discussions, it was mutually agreed that a meeting would be beneficial to provide further clarification on the issue.

At the meeting, PG&E briefly described the Humboldt Bay Unit 3 operating history, and the chronology of licensing and construction for the ISFSI. The licensee then described the inspection and evaluation methods used to characterize the 390 Humboldt Bay fuel assemblies currently stored in the plant's spent fuel pool as either intact or damaged. The presentation was intended to demonstrate the adequacy of PG&E's visual inspections in characterizing the fuel in accordance with the Humboldt Bay ISFSI licensing basis. From 2000-2001, external video examinations were performed of the full length of all 4 sides of each fuel assembly. PG&E described the training and qualifications of the personnel that performed and reviewed the video examinations, and also described the equipment and techniques used.

The Safety Analysis Report (SAR) previously submitted as part of the Humboldt Bay ISFSI license application indicated that these inspections were performed using the guidance of NRC Interim Staff Guidance ISG-1, Revision 0, and the Nuclear Energy Institute (NEI) protocol for fuel classification based on NEI's comments on ISG-1. The SAR further indicated that PG&E would perform a supplemental evaluation of the 2000-2001 video records prior to fuel loading, using guidelines meeting the intent of ISG-1, Revision 1.

Based on the results of the 2000-2001 inspections, PG&E initially characterized 27 assemblies as damaged. Following the licensee's 2006-2007 re-evaluation of those earlier inspections, an additional 40 assemblies were characterized as damaged. PG&E also reviewed available records of fuel shuffling operations from 1971-1975, and characterized an additional 29 assemblies as damaged. Thus, PG&E has concluded that a total of 96 of the 390 Humboldt Bay fuel assemblies are considered damaged; the remaining assemblies have been classified by the licensee as intact.

PG&E presented excerpts from the video examinations of 3 assemblies to support the adequacy of the method. The licensee's rationale for concluding that the video inspections provided a sufficient basis to support PG&E's characterization of the fuel included the following: the excellent water clarity; the high quality color video equipment used; the thoroughness of the inspection process (full-length exams of all 4 sides, with lighting and position adjustments); the small fuel assemblies, with fewer fuel rods (6x6 or 7x7) and more space between them; the training and certification of the inspection personnel; and the color enhanced indication of cladding damage.

The NRC staff asked PG&E if there were any records from the Humboldt Bay plant operating history, the fuel vendors, or other sources that would further support PG&E's fuel classification efforts. The licensee stated that the limited records available only supported the conservative determination to classify certain assemblies as damaged. PG&E also stated that a fuel vendor has advised them that due to the age of the Humboldt Bay fuel, further fuel shuffling evaluations would not provide useful information on fuel condition. The staff also asked PG&E to discuss the basis for their conclusions that the portions of the fuel rods not visible from the video inspections would be free from gross defects, and thus, intact. PG&E responded that they believed that gross defects in internal rods would be visible due to the associated deformation of the rod, or due to eruption and deposition of material on the rod surface.

Comments made by members of the public included: an observation that the oxide layer buildup on the fuel rods could mask defects, an observation on the limitations on the viewable portions of the fuel rods, a question on what document(s) the NRC will issue to address or resolve the issues discussed, and a question on whether NRC would release all information presented at the meeting. In response to the last 2 questions, the NRC staff stated that this meeting summary would be made public, and that the NRC would document further consideration of this issue in inspection reports or other written correspondence between NRC and PG&E, which would also be made public. The NRC staff also stated that all information presented in the meeting would need to be made publicly available as part of the meeting record. Following this clarification, PG&E elected not to show additional examples of the fuel video examinations, as previously planned.

In concluding the meeting, the NRC staff stated that it would consider the information presented by PG&E, and would contact the licensee either in the context of the ongoing NRC inspection or separately to address the issue further, as needed. The staff also pointed out to PG&E that the resolution of this issue for the Humboldt Bay ISFSI storage license under 10 CFR Part 72 could have potential implications for the staff's current review of the compatible transportation package (the HI-STAR HB), under 10 CFR Part 71.

No regulatory decisions were requested nor made at the meeting.

Docket No. 72-27  
TAC No. L24179

Enclosures: 1. Meeting Attendees  
2. PG&E Slides

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**OFFICIAL RECORD COPY**

**Meeting Between NRC and Pacific Gas and Electric  
Humboldt Bay ISFSI  
February 5, 2008**

**List of Attendees**

<u>NAME</u>	<u>ORGANIZATION</u>
James R. Hall	NRC/NMSS/SFST
Kim Hardin	NRC/NMSS/SFST
Robert Einziger	NRC/NMSS/SFST
Bill Brach	NRC/NMSS/SFST
Nader Mamish	NRC/NMSS/SFST
Ed Hackett	NRC/NMSS/SFST
Robert Nelson	NRC/NMSS/SFST
Larry Campbell	NRC/NMSS/SFST
Christopher Regan	NRC/NMSS/SFST
David Tarantino	NRC/NMSS/SFST
Ray Kellar	NRC/RIV
Blair Spitzberg*	NRC/RIV
John Hickman	NRC/FSME/RDB
Roy Willis	PG&E
Loren Sharp	PG&E
Stan Ketelsen	PG&E
David Sokolosky	PG&E
Mark Mayer	PG&E
Steven Kraft	NEI
David Lochbaum	UCS
John Greeves	Talisman International
Maureen Conley	Platts/McGraw-Hill
Steve Schulin	ABZ

\* participated by phone

Enclosure 2

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February 5, 2008**

**PG&E Presentation Slides**

(ADAMS Accession No. ML080780543)