

June 14, 2002

MEMORANDUM TO: File

FROM: Girija S. Shukla, Project Manager, Section 2  
Project Directorate IV /RA/  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF TELECONFERENCE ON MAY 21, 2002, WITH PACIFIC GAS AND ELECTRIC (PG&E) REGARDING DIABLO CANYON UNIT 1 REACTOR VESSEL HEAD INSPECTION PERFORMED DURING THE 11TH REFUELING OUTAGE, AS REQUIRED BY NRC BULLETINS 2001-01 AND 2002-01

On May 21, 2002, a conference call was held between PG&E and the NRC staff to discuss the preliminary results of the inspection of the Diablo Canyon Power Plant (DCPP) Unit 1 reactor vessel head and reactor vessel head penetration tubes as required by NRC Bulletins 2001-01, "Circumferential Cracking of Reactor Pressure Vessel Head Penetration Nozzles," and 2002-01, "Reactor Pressure Vessel Head Degradation and Reactor Coolant Pressure Boundary Integrity."

PG&E performed a qualified visual bare metal examination of the DCPP Unit 1 reactor vessel head and a 100 percent examination of the reactor vessel head penetration tubes during the eleventh refueling outage. No evidence of leakage from the head penetrations or degradation of the head surface area was detected.

PG&E's examination preparations included the configuration of a low profile robotic crawler with traction devices, high-resolution forward and rear facing cameras, debris scraping attachments and a video probe delivery system. Access to the head was provided with a specially designed work platform and a photographic survey of the insulation configuration was conducted to brief insulation removal personnel to minimize doses received for this work. All examiners engaged in the project were certified as a minimum as VT 2 Level II, and had received familiarization training on photographs of industry examination results and the use of the examination procedure's decision tree for evaluation of indications.

PG&E's examination scan plan detailed the paths to be taken with the robotic crawler that would assure complete visual coverage of all reactor vessel head penetration tubes. Inspection personnel used exam data sheets to record the videotape counts of each quadrant of a tube's inspection, providing independent verification of exam coverage for each reactor vessel head penetration tube. The entire examination was recorded on multiple high quality videotapes.

The proximity of the insulation to the head close to top dead center precluded direct robotic access to a number of tubes. This portion of the exam was conducted using the robot as a delivery vehicle for a video probe that had also been verified to have suitable visual resolution prior to the exam. This same video probe was used to examine the 10 peripheral reactor

vessel head penetration tubes that because of the stepped insulation design were not accessible with the robot. Bronze wedges were used to shim up the insulation at the outer shroud ring/head interface allowing video probe access for a 360-degree examination of these reactor vessel head penetration tubes. There was one reactor vessel head penetration tube (number 67) where the proximity of the insulation allowed less than a 360-degree (approximately 350-degree) examination. This tube is on the upper tier (top) and in a corner of the insulation.

The examination encountered a number of areas that were obscured by debris, consisting mostly of machining chips which resulted from repair of canopy seal welds. A 40 psi nitrogen line carried by the robot was used to displace the machining chips affording complete coverage of the area of interest. Debris on the peripheral tubes was moved using a manually inserted special purpose tool.

Some penetrations had an occasional minor spatter of white residue, none of which were indicative of leakage from the penetrations. There were no areas of boric acid accumulation, nor signs of leakage from the reactor vessel head penetration tube/head juncture areas. In addition, the licensee stated that they have a qualified visual analysis which was performed by Dominion Engineering.

A list of those participating in the teleconference is provided in the attachment.

Docket No. 50-275

Attachment: Teleconference Participant's List

accessible with the robot. Bronze wedges were used to shim up the insulation at the outer shroud ring/head interface allowing video probe access for a 360-degree examination of these reactor vessel head penetration tubes. There was one reactor vessel head penetration tube (number 67) where the proximity of the insulation allowed less than a 360-degree (approximately 350-degree) examination. This tube is on the upper tier (top) and in a corner of the insulation.

The examination encountered a number of areas that were obscured by debris, consisting mostly of machining chips which resulted from repair of canopy seal welds. A 40 psi nitrogen line carried by the robot was used to displace the machining chips affording complete coverage of the area of interest. Debris on the peripheral tubes was moved using a manually inserted special purpose tool.

Some penetrations had an occasional minor spatter of white residue, none of which were indicative of leakage from the penetrations. There were no areas of boric acid accumulation, nor signs of leakage from the reactor vessel head penetration tube/head juncture areas. In addition, the licensee stated that they have a qualified visual analysis which was performed by Dominion Engineering.

A list of those participating in the teleconference is provided in the attachment.

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**PARTICIPANTS LIST**

**TELECONFERENCE WITH PACIFIC GAS AND ELECTRIC (PG&E) REGARDING  
DIABLO CANYON UNIT 1 REACTOR VESSEL HEAD INSPECTION  
PERFORMED DURING THE 11TH REFUELING OUTAGE,  
AS REQUIRED BY THE NRC BULLETINS 2001-01 AND 2002-01**

**MAY 21, 2002**

**NRC Participants:**

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Jeff Portney  
Dave Gonzalez  
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