

DIABLO CANYON INDEPENDENT SAFETY COMMITTEE

Report on

Special Fact-Finding Meeting at DCP on March 28, 2025

by

Najmedin Meshkati, Member, and Richard McWhorter and Andrew Kadak, Consultants

with

Thomas Jordan, Michael Oskin, and Scott Marshall, Seismic Consultants

1.0 SUMMARY

The results of the DCISC March 28, 2025, Special Fact-Finding Meeting at the Diablo Canyon Power Plant (DCPP) in Avila Beach, CA, are presented. The subjects addressed and summarized in Section 3 are as follows:

1. Site Tour to View Geologic Formations
2. Seismic Review Team Question and Answer Session with Geosciences Staff
3. Plant Tour

2.0 INTRODUCTION

At its February 2025 Public Meeting, the DCISC approved contracting with three technical experts/consultants, Professors Thomas Jordan, Michael Oskin, and Scott Marshall, who are experts in specific areas related to seismic safety (Reference 6.1). This group of three consultants formed a DCISC Seismic Review Team (SRT) and were provided with a detailed scope of work to be performed on behalf of the DCISC. The scope of work provides that the primary goal of the SRT's work is to review documents submitted by Dr. Peter Bird to the NRC and DCISC (References 6.2 and 6.3) challenging the adequacy of the seismic safety of DCP and to provide the DCISC with an evaluation of Dr. Bird's positions, claims, and conclusions. The goal of the work is to produce a written report and provide an accompanying presentation at the DCISC's Public Meeting on June 10 and 11, 2025. Additional details on the scope of the SRT's work and a full list of documents reviewed by the team (in addition to References 6.2 and 6.3) will be included in the SRT's written report.

This Special Fact-Finding Meeting at DCP was held specifically to provide the SRT with an opportunity to directly inspect the DCP site and its surrounding environment and to question PG&E Geosciences staff in-person on specific matters related to seismic safety at DCP.

Section 3 – Discussion, followed by Section 4 – Conclusions, highlights the work and conclusions of the Fact-Finding Team (FFT) and SRT. Section 5 – Recommendations, presents any specific

recommendations to the DCISC and PG&E proposed by the FFT. After review and approval by the DCISC at its June Public Meeting, this Special Fact-Finding Report, including its recommendations, will be provided to PG&E. The Special Fact-Finding Report will also appear in the DCISC Annual Report.

During the extensive day of field geological inspections, face-to-face discussions, and plant tour, the SRT, comprising three independent scholars with widely recognized expertise, shared preliminary observations and recommendations that could strengthen PG&E's geoscience analyses and practices in the future.

3.0 DISCUSSION

3.1 Site Tour to View Geologic Formations

The DCISC FFT and SRT met with Tom Jones, Senior Director, Regulatory, Licensing and Repurposing; Jeff Bachhuber, Director, Geosciences; Albert Kottke, Principal Geotechnical Earthquake Engineer; Chris Madugo, Geosciences Consultant; Jearl Strickland, Consultant (PG&E); and Steve Thompson, Consultant (Lettis Consultants International, Inc.), for an overview and tour of geologic formations on and near the DCPD site.

Prior to this meeting, the SRT received its scope of work from the DCISC, received and reviewed multiple documents related to the existing site seismic evaluations, and remotely met with Dr. Peter Bird to discuss his concerns. The SRT began by briefing the PG&E staff on the purposes of the SRT's work and the focus of its questions for PG&E. During this site visit, the SRT desired to focus on questions related to evidence and analyses used to characterize the faults underlying the Irish Hills and DCPD. Questions fell into three main areas: 1) geology, 2) geodesy*, and 3) seismic source characterization. Regarding geology, the SRT requested to go into the field and directly observe sites that were important to understand the geology of the Irish Hills and the marine terraces near DCPD.

The PG&E staff reviewed with the FFT and SRT the locations of geologic formations around the DCPD site that were of particular significance to the site's seismic evaluations. These formations included several significant sites near Avila Beach and others along the plant south access road. Following a safety brief by PG&E, the FFT and SRT proceeded with PG&E to observe the geology of the site via a drive along the south access road with a stop in Avila Beach. During the drive along the south access road, several rock formations were observed from the vehicle including those along the ocean side of the marine terraces as well as various rock outcroppings along the southwest side of the Irish Hills. The group disembarked in Avila Beach to directly observe the geologic formations where evidence of the San Luis Bay Fault becomes visible at the surface. The following photographs show some of the group's work in observing, inspecting, and analyzing

* Geodesy is the science of measuring and quantifying Earth's geometric shape and associated gravity field. In earthquake science, geodesy most commonly involves using precise measurements (often satellite-based) of motions of the surface of the Earth to identify locations of deformation, which can be caused by a variety of factors, including but not limited to, active faulting and earthquakes, landslides and other mass movements, and natural and human-induced water cycle effects (e.g., groundwater pumping and injection).

geologic formations in the Avila Beach area:



SRT Observing Rock Formations in Avila Beach



PG&E Consultant Briefing SRT on Rock Formations in Avila Beach



Formation Showing Squire Formation (Tan) on Top of Franciscan Bedrock (Black) at San Luis Bay Fault which comes to the surface near the mouth of San Luis Obispo Creek.



PG&E Staff Briefing the SRT on Rock Formations Off Avila Beach Drive



SRT Examining Rock Formation Showing Folding of Layers where the San Luis Bay Fault can be seen on the surface near the mouth of San Luis Obispo Creek.

The FFT and SRT were satisfied with the openness and information provided by PG&E and were able to successfully observe geologic locations significant to understanding faults underlying the Irish Hills.

Conclusions: The DCISC’s Seismic Review Team and Fact-Finding Team observed geologic formations near DCPD that were significant to understanding faults underlying the Irish Hills, including inspecting rock formations at surface locations of the San Luis Bay Fault. Conclusions drawn from the information provided will be included in the Seismic Review Team’s report scheduled to be completed in June 2025 for presentation at the DCISC’s June Public Meeting.

Recommendations to the DCISC or PG&E: None.

3.2 Seismic Review Team Question and Answer Session with Geosciences Staff

The DCISC FFT and SRT, with DCISC Consultant Andrew Kadak attending remotely, met with the same group as described in Section 3.1 above to discuss PG&E’s responses to a set of questions provided by the SRT in advance of the meeting regarding various seismic evaluations performed in the past to evaluate the seismic safety of DCPD. The SRT’s questions and discussions with PG&E centered around the following major areas:

- Status of the DCPD Seismic Source Characterization Model: The SRT and PG&E discussed various aspects of the current model including fault slip rates and their use in the model, hazard curves and their uncertainties, and changes made in response to Dr. Bird's concerns.
- Marine Terrace Uplift Data: The SRT and PG&E discussed various aspects of the current understanding of marine terrace data including marine terrace dating, uplift rates, and characteristics of possible thrust faults.
- Fault Geometry: The SRT and PG&E discussed various details about the geometry of faults currently used in seismic evaluations including supporting evidence for fault locations, dip angles, depths used in analyses, and available geologic mapping data.
- Geodetic Data (direct measurements of fault movement primarily using GPS data) and modeling: The SRT and PG&E discussed various details on the current use of geodetic data in seismic evaluations including databases and stations used along with the consistency of geodetic data with current seismic evaluations. Dr. Marshall also provided PG&E with a demonstration of some of his modeling work in geodetic data analysis (using data accessible to PG&E) and how it could be applied to the central coast region surrounding DCPD.
- Seismic Source Characterization model differences between the 2015 and 2024 updates: The SRT and PG&E discussed various details of the differences between the 2015 model and the 2024 update including distributions of magnitudes and recurrence intervals, source geometries, logic trees, and uncertainties.
- Information gained from the 2024 Noto Peninsula earthquake in Japan and its applicability to DCPD: Discussions in this area centered around reviewing details about the conclusions contained in a study completed by Lettis Consultants International, Inc., for PG&E in 2024 (Reference 6.4).

Conclusion: The DCISC's Seismic Review Team and Fact-Finding Team met with PG&E staff to discuss several technical questions regarding site geology and PG&E's seismic evaluations. Conclusions drawn from the information provided will be included in the team's report scheduled to be completed in June 2025.

Recommendation to the DCISC or PG&E: None.

3.3 Plant Tour

The DCISC FFT and SRT met with the same group as described in Section 3.1 above for a tour inside the Protected Area at DCPD. Mr. Jones led the group to observe the general arrangement along with specific examples of seismic support structures in the following locations:

- Unit 2 Turbine Deck

- Main Control Room
- Unit 1 Turbine Deck
- Unit 2 Turbine Building 85' Level, Turbine Support Structures
- Unit 2 Turbine Building 85' Level, Electrical Room Wall Support Structures



SRT and FFT at Unit 1 High-Pressure Turbine

The FFT and SRT found that all observed equipment and areas of the facility appeared to be clean, well maintained, and in good material condition.

Conclusion: The DCISC's Seismic Review Team and Fact-Finding Team toured the DCP Turbine Building to observe the general arrangement and specific examples of seismic support structures.

Recommendation to the DCISC or PG&E: None.

4.0 CONCLUSIONS

4.1 The DCISC's Seismic Review Team and Fact-Finding Team observed geologic formations near DCP that were significant to understanding faults underlying the Irish Hills, including inspecting rock formations at surface locations of the San Luis Bay Fault. Conclusions drawn from the information provided will be included in the

Seismic Review Team’s report scheduled to be completed in June 2025 for presentation at the DCISC’s June Public Meeting.

4.2 The DCISC’s Seismic Review Team and Fact-Finding Team met with PG&E staff to discuss several technical questions regarding site geology and PG&E’s seismic evaluations. Conclusions drawn from the information provided will be included in the team’s report scheduled to be completed in June 2025.

4.3 The DCISC’s Seismic Review Team and Fact-Finding Team toured the DCPD Turbine Building to observe the general arrangement and specific examples of seismic support structures. Conclusions drawn from the information provided will be included in the team’s report scheduled to be completed in June 2025.

5.0 RECOMMENDATIONS

Recommendations to the DCISC or PG&E:

5.1 None. Further recommendations may be included in the DCISC’s Seismic Review Team’s report scheduled to be completed in June 2025.

6.0 REFERENCES

6.1 “Diablo Canyon Independent Safety Committee Thirty-Fifth Annual Report on the Safety of Diablo Canyon Nuclear Power Plant Operations, July 1, 2024 – June 30, 2025,” Scheduled for approval at the October 2025 DCISC Public Meeting, Volume II, Exhibit B.6, “Minutes of February 19-20, 2025, Public Meetings.”

6.2 P. Bird, “Re: Response to PG&E SSC and 2024 Update,” Letter from Dr. Peter Bird to the DCISC, May 16, 2024.

6.2 P. Bird, “High Seismic Hazard and Risk at Diablo Canyon Power Plant Due to Thrust Faulting Under the Irish Hills,” Report Provided by Dr. Peter Bird to the DCISC, October 30, 2024.

6.4 “Phase 1 Review of the Tectonic and Geomorphic Setting of the January 1, 2024, M7.5 Noto Earthquake, Noto Peninsula, Japan,” by Lettis Consultants International, Inc. for PG&E, submitted to the Nuclear Regulatory Commission as Enclosure 2 to PG&E letter DCL-24-103, “PG&E’s Voluntary Submittal of Information Related to 10 CFR 2.206 Petition Regarding Seismic Core Damage Frequency for DCPD, Units 1 and 2,” October 24, 2024, NRC ADAMS Accession Number ML24298A234.