

November 17, 2005

MEMORANDUM TO: Michele G. Evans, Branch Chief
Engineering Research Applications Branch
Division of Engineering Technology
Office of Nuclear Regulatory Research

Eugene V. Imbro, Deputy Director
Division of Engineering
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FROM: Andrew J. Murphy, Chairman */RA/*
Seismic Issues Technical Advisory Group
Engineering Research Applications Branch
Division of Engineering Technology
Office of Nuclear Regulatory Research

SUBJECT: Transmittal of Seismic Issues Technical Advisory Group
Evaluation of Tsunami Hazard Report and Tsunami Hazard
Research Plan

In a memorandum dated May 5, 2005, the Seismic Issues Technical Advisory Group (SITAG) was asked to review and comment on a report on tsunami hazards for an independent spent fuel storage installation (ISFSI) sited at the Diablo Canyon Nuclear Power Plant (DCNPP). SITAG was also asked to recommend the appropriate disposition of the report in a regulatory context. The report, "A Preliminary Numerical Study of the Hazard from Local Landslide Tsunami Scenarios at the Diablo Canyon Site in Central California, Summary Report (Draft)," November 22, 2003, was prepared by a consultant (Dr. Robert Sewell) for the Center for Nuclear Waste Regulatory Analysis, which was supported by the Spent Fuel Project Office.

The purpose of Dr. Sewell's study is to make a preliminary assessment of the tsunami hazard at the Diablo Canyon site based on current scientific understanding and analysis methods using a number of postulated tsunami scenarios. The study focuses on locally generated tsunami due to potential submarine landslides, which were not explicitly considered in the development of the DCNPP tsunami design basis. A number of tsunami scenarios identified in the study produce flooding levels exceeding the critical level for the plant. The ISFSI is to be placed at about 300 feet above mean sea level and, at such an elevation, the ISFSI is well above the flooding levels from the tsunami scenarios postulated by the author. Thus, these postulated tsunamis are not a threat to the ISFSI and licensing of the facility has been completed.

The study concludes that the existing tsunami design bases and perceptions of tsunami risk for the Diablo Canyon site no longer reflect modern scientific understanding and methods. Based on this conclusion, the author recommends that the licensee justify or re-evaluate the tsunami design bases and perform a state-of-the-art assessment of tsunami hazard and risk for the Diablo Canyon site.

SITAG has completed its review of the report and concludes that the tsunami scenarios, developed in the study, are based on rudimentary modeling with little geologic and geotechnical data. In addition, the report lacks adequate consideration of the probability of initiating events, submarine landslides, and tsunamis (Enclosure 1). Therefore, SITAG questions the applicability of the study for making conclusions regarding the plausibility of the tsunami scenarios and the safety of the DCNPP and other coastal nuclear facilities with regard to tsunami hazards. SITAG further concludes that this study should not be used in any licensing actions.

Even though the tsunami hazard study in the Sewell report is limited in scope and application, SITAG recognizes that there is a need to re-assess the tsunami hazard at the DCNPP site considering the recent developments in probabilistic hazards analysis and the occurrence of the 2004 Indian Ocean tsunami. Therefore, because of the new data and analysis techniques that could be applied to tsunami hazard assessment and the length of time since the NRC last assessed tsunami hazard generically, SITAG recommends further studies to realistically define the tsunami hazard at coastal nuclear facilities be undertaken with the assistance of a group of tsunami experts (Enclosure 2).

SITAG also recommends that the NRC provide a copy of the Sewell report along with the SITAG evaluation of the report (Enclosure 1) to PG&E for consideration in its current tsunami studies, thus, making the Sewell report public. Subsequent to the completion of the work to realistically define tsunami hazards, SITAG will make a recommendation on whether it would be necessary for licensees of all nuclear facilities in coastal areas of the U.S. to address the issues raised in this report.

Enclosures:

1. SITAG Evaluation of the Sewell Report on Tsunami Hazard at the Diablo Canyon Site
2. Research Needs for Tsunami Hazard Assessment

cc: R. Barrett, RES
M. Mayfield, NRR

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