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U. S. ATOMIC ENERGY COMMISSION

DIVISION OF REACTOR LICENSING

REPORT TO ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

IN THE MATTER OF

PRELIMINARY ASPECTS OF PACIFIC GAS AND ELECTRIC COMPANY'S APPLICATION FOR

A CONSTRUCTION PERMIT FOR A NUCLEAR POWER PLANT

AT ITS PROPOSED DIABLO CANYON SITE

Note by the Director, Division of Reactor Licensing

The attached report has been prepared by the Division of Reactor Licensing for use by the Advisory Committee on Reactor Safeguards.

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PRELIMINARY ASPECTS OF PACIFIC GAS AND ELECTRIC COMPANY'S APPLICATION FOR A CONSTRUCTION PERMIT FOR A NUCLEAR POWER PLANT AT ITS PROPOSED DIABLO CANYON SITE

Introduction

The Pacific Gas and Electric Company (PG&E) submitted an application on January 18, 1967, for a construction permit and facility license for its Diablo Canyon nuclear power plant. The proposed site borders on the Pacific Ocean. The nearest population center is San Luis Obispo, California (approximately 10 miles wsw of the site) which has a population of some 26,000 people.

Discussion

The location of the site in California will necessitate a thorough review of the site's related design criteria. We have already initiated our review of the site features at a meeting (March 21, 1967) with the applicant and our consultants. We understand that the elevation of the site (approximately 70 feet above sea level) should preclude the adverse effects of tsunamis. Seismic design criteria, however, will warrant further evaluation as our consultants believe that the seismic criteria proposed by PG&E are low with regard to the earthquake magnitude in the site area.

The Diablo Canyon plant will be a Westinghouse Indian Point II type PWR. The design thermal rating is for 3250 Mwt with an ultimate capability of 3391 Mwt.

The most significant difference between the Diablo Canyon reactor design and that of Indian Point II lies in the core design. Fuel enrichments have been changed and a three region configuration will be used with the central regions arranged in a checkerboard fashion. This configuration is predicted to reduce the nuclear peaking factor, and along with the increased linear heat generation rate, will enable a thermal output 18% higher than that of Indian Point II for

the same size core. The engineering hot channel factors and DNBR correlation and other core parameters will be essentially identical to those of Indian Point II. Our review will include an investigation of clad damage limits in terms of temperature, pressure, and specific power for normal, transient, and accident conditions.

This plant will be provided with an emergency core cooling system similar to that of other PWR's consisting of accumulators and core deluge pumps. The containment cooling systems are also similar in that fan-coolers and containment spray systems will be used. The containment design incorporates reinforced concrete and a steel liner. It is similar in size, design pressure and design concept to that of Indian Point II. The containment will be founded on bedrock.

We will place particular importance in our analysis on loss-of-coolant accidents in view of the proposed increase in power density. The effects of any positive moderator temperature coefficient and pipe break location will be appropriately evaluated.

Conclusion

In summary, the most significant differences between the Diablo Canyon plant design and other Westinghouse PWR's are apparent in the increased core power density and the site characteristics. These differences will be thoroughly evaluated for assurance of plant safety under all normal operating and credible accident conditions. We do not foresee any major problem with the proposed design other than the effects of site characteristics unique with California. An August 1967 meeting with the Committee is anticipated.