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 50-323 Diablo Canyon Nuclear Power Plant, Unit 2, Pacific Gas & Electric Co. 05000323
 AUTH. NAME: CRANE, P.A. AUTHOR AFFILIATION: Pacific Gas & Electric Co.
 RECIP. NAME: MIRAGLIA, F.J. RECIPIENT AFFILIATION: Licensing Branch 3

SUBJECT: Submits responses to Questions 3 & 4 in NRC 800827 ltr re stress corrosion cracking & turbine missiles.

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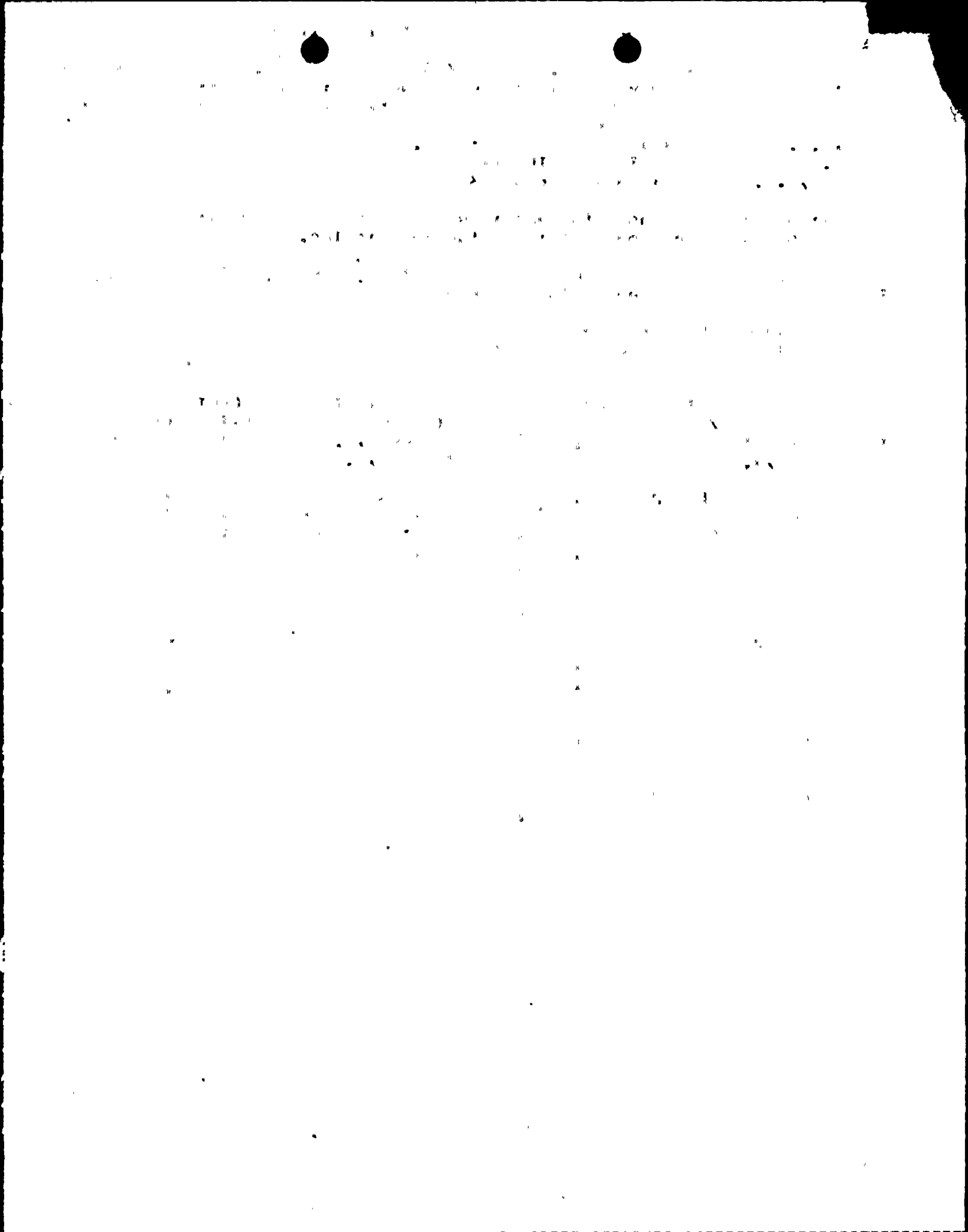
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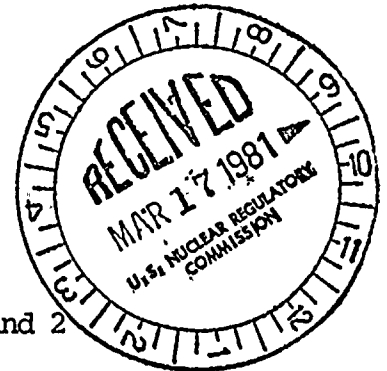
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Mr. Frank J. Miraglia, Jr., Chief
Licensing Branch No. 3
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Re: Docket No. 50-275
Docket No. 50-323
Diablo Canyon Units 1 and 2



Dear Mr. Miraglia:

The following is PGandE's response to questions 3 and 4 contained in Mr. A. Schwencer's letter dated August 27, 1980.

Question 3

Indicate discs that will have sufficient moisture in the hub to cause a propensity for stress corrosion cracking.

Response

Stress corrosion crack growth was investigated by Westinghouse Electric Corporation. In Project Letter WIG1-192 they state that, "the percent moisture (water) is not considered in stress corrosion crack growth." The Westinghouse methodology for calculating the probability of missile generation from a rupture of a low pressure turbine disc assumes that crack growth is time dependent and is also a function of temperature and yield strength.

An analysis of the probability of disc rupture due to stress corrosion has been performed by Westinghouse (Project Letters WIG1-185, Unit 1; WIG2-114, Unit 2). PGandE review of the results

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of this analysis indicates that rupture due to stress corrosion can occur at each disc. The probability varies within each LP turbine with the highest probability being in the center (disc 1) and decreasing toward the outside (disc 6).

Question 4

Indicate whether an analysis and evaluation regarding turbine missiles has been performed for your plant and provided to the staff. If such an analysis and evaluation has been performed and reported, please provide appropriate references to the available documentation. In the event that such studies have not been made, consideration should be given to scheduling such an action.

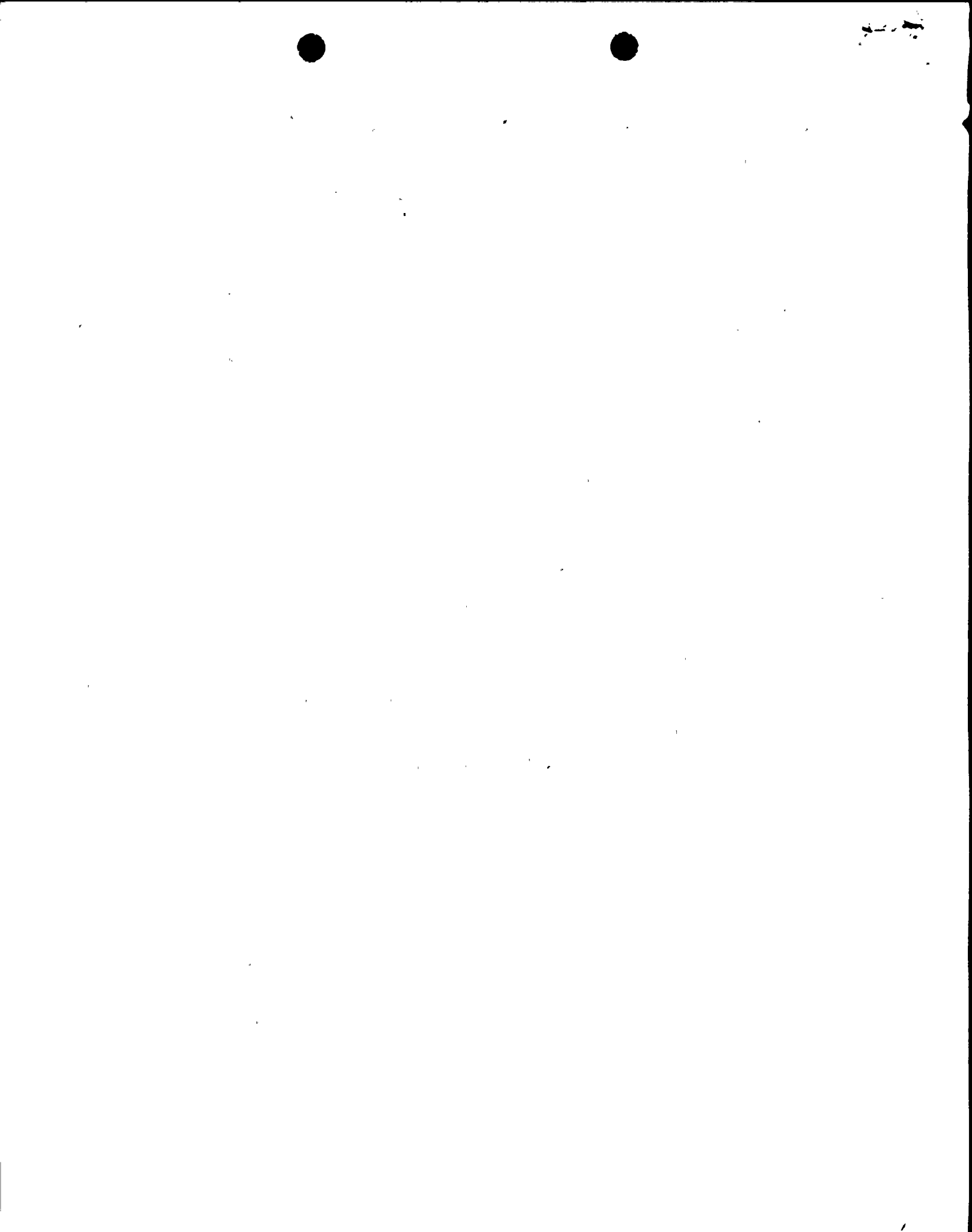
Response

In 1974, PGandE completed an evaluation of turbine missiles. The results were included in the Diablo Canyon Final Safety Analysis Report, Section 3.5. The analysis concludes that the existing structures, with the exception of the fuel handling building, are capable of preventing damage caused by turbine missiles due to penetration or spalling. The analysis also indicates that for the fuel handling building the combined probability of a main turbine generated missile hitting the spent fuel pool is extremely remote (8.4×10^{-12} /year).

Since this evaluation was performed, several changes have occurred.

1. The manufacturer is re-evaluating the Diablo Canyon turbines for generation of turbine missiles. The revised report for Unit 1 indicates that missiles may exit the turbine casing with higher energies than initially calculated.
2. New methods of analysis have been developed which more accurately predict what will happen when a missile strikes reinforced concrete.
3. Studies are now underway by EPRI which have so far demonstrated that containment building walls are substantially more resistant to impact than reflected by current design methods. (Ref. Status of EPRI Turbine Missile Research Program by George E. Sliter, October 27, 1980).

PGandE plans to re-evaluate FSAR Section 3.5 when the turbine manufacturer and EPRI studies have been completed. A communication informing you of our evaluation and resolution will be forwarded to your office at that time.



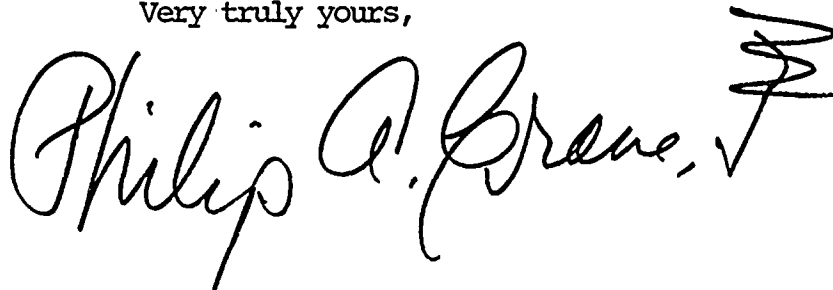
Mr. Frank J. Miraglia, Jr.

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Kindly acknowledge receipt of this material on the enclosed copy of this letter and return it to me in the enclosed addressed envelope.

Very truly yours,

Philip A. Grane, 

CC: Service List

