NOV 13 1974

DISTRIBUTION
Docket File
L:Rdg
L:AD/SS
L:SAB

50-286

William P. Gammill, Chief, Site Analysis Branch, L
THRU: J. C. Stepp, Section Leader, Geology, Seismology, and Foundation Engineering

PROBABILITY OF EQUALLING OR EXCEEDING 0.15g AT THE INDIAN POINT SITE

We have completed an evaluation of the probability that 0.15g will be equalled or exceeded at the Indian Point site. Our best estimate is of the order of 10^{-4} per year.

Seth M. Coplan, Seismologist
Geology and Seismology Section
Site Analysis Branch
Directorate of Licensing

Renner B. Hofman, Seismologist
Geology and Seismology Section
Site Analysis Branch
Directorate of Licensing

Enclosure:
Indian Point Probability
Computation

MEMO 4

OFFICE ➤	L:SAB	L:SAB	L:SAB			
SURNAME ➤	SMCoplan:jab	RBHofman	JCStepp			
DATE ➤	11/11/74	11/ /74	11/14/74			

UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

NOV 13 1974

William P. Gammill, Chief, Site Analysis Branch, L
THRU: J. C. Stepp, Section Leader, Geology, Seismology, and Foundation Engineering

PROBABILITY OF EQUALLING OR EXCEEDING 0.15g AT THE INDIAN POINT SITE

We have completed an evaluation of the probability that 0.15g will be equalled or exceeded at the Indian Point site. Our best estimate is of the order of 10^{-4} per year.

Seth M. Coplan

Seth M. Coplan, Seismologist
Geology and Seismology Section
Site Analysis Branch
Directorate of Licensing

Renner B. Hofman

Renner B. Hofman, Seismologist
Geology and Seismology Section
Site Analysis Branch
Directorate of Licensing

Enclosure:
Indian Point Probability Computation

INDIAN POINT PROBABILITY COMPUTATION

0.15g Exceedence:

From Coulter, Waldron Devine (1973) 0.15g → I = 7.3

From Brazee (1972) Epicentral area of I = 7.3 earthquake is
800 mi^2 ≈ 2100 km^2

1. From Isacks and Oliver (1964)

$$\log N = 1.33 - 0.6I \text{ per year for a } 20{,}000 \text{ km}^2 \text{ area}$$

$$N_{7.3} = 8.9 \times 10^{-4}/\text{year} - 20{,}000 \text{ km}^2$$

$$\text{or } N'_{7.3} = \frac{2100}{20{,}000}\, 8.9 \times 10^{-4}/\text{year at the site}$$

$$\text{or } P_{0.15g} \simeq 9 \times 10^{-5}/\text{year}$$

2. From Davis (1974) data

$$\log N = 2.5 - 0.71I \text{ per year for a } 20{,}000 \text{ km}^2 \text{ area}$$

$$\text{then } N'_{7.3} = 2.2 \times 10^{-4}/\text{year at the site}$$

$$\text{and } P_{0.15g} \simeq 2 \times 10^{-4}/\text{year}$$

3. From Davis (1974) Data Constrained to Isacks and Oliver (1964) slope

$$\log N = 1.88 - 0.6I$$

$$N'_{7.3} = 3.3 \times 10^{-4}/\text{year at the site}$$

$$\text{or } P_{0.15g} \simeq 3 \times 10^{-4}/\text{year at the site}$$

4. For comparison Algermissen (1969) indicates that the mean number of occurrences of intensity VII earthquakes per century per 100,000 Km^2 is 0.88 for the East Coast (region 9). Then

$$N_7 = 0.88 \times \frac{1}{100 \text{ years}} \times \frac{20{,}000}{100{,}000}$$

$$N_7 = 1.8 \times 10^{-3}/\text{year for a } 20{,}000 \text{ km}^2 \text{ area}$$

and

$$N'_7 = 1.8 \times 10^{-4}\text{/year at the site}$$

so that

$$P_{I = VII} \simeq 2 \times 10^{-4}$$

and the probability of equalling or exceeding 0.15g would be marginally less than 1.8×10^{-4}