

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

G 10/27/78

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of )  
 ) Docket 50-344  
PORTLAND GENERAL ELECTRIC COMPANY, )  
et al ) (Control Building Proceeding)  
 )  
(Trojan Nuclear Plant) )

LICENSEE'S RESPONSES TO  
COLUMBIA ENVIRONMENTAL COUNCIL  
INTERROGATORIES TO LICENSEE  
DATED OCTOBER 16, 1978

Following are Licensee's responses dated October 27, 1978 to CEC inter-rogatories dated October 16, 1978. Persons responding to each interroga-tory are indicated by their initials as follows: Ronald W. Johnson (RWJ), John L. Frewing (JLF), Lief W. Erickson (LWE), Donald J. Broehl (DJB), Bart D. Withers (BDW), and Richard C. Anderson (RCA).

Interrogatory 1

How many design errors were made? Were these entirely independent, or were some errors caused by earlier errors? Please provide details.

Response to Interrogatory 1

See written testimony of Messrs. Anderson, Katanics, Johnson and White, Pages 5 and 6; particularly footnote 3, Page 6 (Licensee's Exhibit 10). Also see Tr. 567.

(LWE)

Interrogatory 2

What methods of supervision were employed by those who had the duty to supervise the man who made the errors?

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Response to Interrogatory 2

Individual design engineers work under the supervision of a group leader. The design engineer for the Trojan Project Control Building shear walls was subject to direct-line, daily supervision by his supervisor. In this capacity, the supervisor provided guidance and specific instruction as necessary to the designer. He did not, however, perform a detailed daily check of the work produced within his group. Checking is part of a separate program whose implementation is the responsibility of the supervisor. Checking is performed by engineers with experience at least equal to that of the designer.

(RCA)

Interrogatory 3

What was the formal role and what was the actual role of the AEC Staff in supervising the original design of the Control Room?

Response to Interrogatory 3

The applicable design criteria were set out in the PSAR and FSAR, and the AEC Staff's review is set forth in the SERs dated October 1970 and October 1974. Any additional questions concerning AEC Staff activities can best be answered by the NRC Staff (CEC Interrogatory 1 to the NRC Staff).

(JLF)

Interrogatory 4

Did the supervisors of the man who made the original errors independently derive any of the information erroneously relied upon?

Response to Interrogatory 4

See Response to CEC Interrogatory 2, above.

(RCA)

Interrogatory 5

Why is it that such composite shear wall designs are not used on other nuclear plants constructed by Bechtel?

Response to Interrogatory 5

The response to this interrogatory can be found at Tr. 620-621.

(LWE)

Interrogatory 6

What was the precise reason that it was thought necessary in the Spring of 1978 to cut a hole in the Control Room Wall? Is the hole going to be cut? Are other holes in the Control Room or other buildings contemplated? Please provide details.

Response to Interrogatory 6

It was proposed to cut a window in a Control Building wall between El 45 ft and 59 ft, whereas the control room walls extend from El 93-116 ft. The proposed window was to provide a security viewing station for controlling access to the Auxiliary, Fuel and Containment Buildings. Guards performing this function currently sit in the hallway. The proposed window will not be cut.

Holes are planned in various walls to facilitate passage of piping and electrical conduit for design changes initiated by NRC regulations or for plant improvements. Details are given in Licensee's Exhibits 2, 3 and 4.

(DJB)

Interrogatory 7

In exactly what manner was the error discovered? Is it a fact that a Bechtel employee simply looked at the blueprints for the Control Room and "Thought they looked a little light"? Who had reviewed those blueprints before that moment, and why didn't they notice the same problem?

Response to Interrogatory 7

Responses to this interrogatory can be found at Tr. 599, Tr. 622-623, and Tr. 854-856.

(LWE)

Interrogatory 8

Describe in detail the planned and the actual on-site supervision of the construction of the Control Room by employees of PGE, and by employees of Bechtel.

Response to Interrogatory 8

PGE contracted with Bechtel for onsite Construction Management. PGE's Construction Manager was represented onsite by the Project Resident Engineer and his staff. Relative responsibilities of the two organizations are outlined in FSAR Section 1.4.3.1.

(LWE)

Interrogatory 9

Please state your response to the major paragraph on page two (2) of the letter to Dr. Fred Miller from Harold I. Laursen, Ph.D., P.E. of May 18, 1978. (See Control Building Docket Correspondence, No. 5.)

Response to Interrogatory 9

Responses to this question can be found at Tr. 623-627.

(LWE)

Interrogatory 10

The NRC Staff concluded on May 26, 1978 that there was "reasonable assurance" that the facility would "withstand the SSE," but that "the intended and desired margins of safety are not present." (See Control Room Docket Correspondence, No. 10.) The Staff (per Trammell) also estimated that the Control Building had approximately 50% of the seismic capacity originally intended and approved. In the light of the STARDYNE analyses, what would you now estimate the short-fall to be?

Response to Interrogatory 10

Response to this question can be found at Tr. 573-574 and Tr. 977-979.

(LWE)

Interrogatory 11

Licensee is requested to provide a copy of the recent order of the Public Utility Commissioner denying a 33 1/3% emergency rate increase request.

Response to Interrogatory 11

The requested Order (a public document) is provided as Attachment 1. (RWJ)

Interrogatory 12

The minutes of the Directors meeting of PGE of September 6, 1978 contain the following entry: "Nevertheless, there is general agreement among NRC Staff, Bechtel, the Company's consultants and the Company that no safety problems would arise due to interim operation." Please provide all information upon which the conclusion was made that the NRC Staff had decided by Sept. 6, 1978, that no safety problems would arise due to interim operation.

Response to Interrogatory 12

The quoted passage is from a statement relating a chronology of events to the Board of Directors. It was based upon the Safety Evaluation Report dated May 26, 1978 attached to the May 26, 1978 Order for Modification of License (Control Building Docket Correspondence, No. 10) and the speaker's assessment that the information to be provided to the NRC Staff concerning the finite element analysis (some of which had been preliminarily provided on September 1) would not change the NRC Staff's view concerning safety aspects of interim operation. As the next paragraph in the minutes states explicitly, the speaker made clear that NRC Staff evaluation of the new information had not yet taken place, since the information was to be filed on September 11, and NRC Staff review would require about two weeks. (RWJ)

Interrogatory 13

With regard to the minutes of the Directors meeting of Sept. 6, 1978, it is noted that after the finite element analysis had been performed,

Interrogatory 13 (Concluded)

that Doctor Holley and Bresler still felt that there were "substantial questions which needed more work." What were those questions, and what answers were arrived at?

Response to Interrogatory 13

The quoted speaker was relating a chronology of developments in the Control Building matter to the Board of Directors. The interrogator has made an incorrect inference from the quote. Professors Holley and Bresler did not have "substantial questions" after the finite element analysis had been performed. See report entitled "Response of Trojan Nuclear Power Plant Control Building to Specified SSE Event" dated September 20, 1978 prepared by Professors Holley and Bresler (Licensee's Exhibit 12). (RWJ)

Interrogatory 14

Has Licensee shown the Public Utility Commissioner for Oregon the construction and design contracts with Bechtel regarding the Trojan Nuclear Plant?

Response to Interrogatory 14

Bechtel did not have a contract for "construction" of the Trojan Nuclear Plant. Counsel for PGE has shown counsel for the PUC copies of contracts between PGE and Bechtel (Board Exhibit 1). (RWJ)

Interrogatory 15

In what regard if any does the structure and composition of the ceiling of the Control Room differ from that of the walls?

Response to Interrogatory 15

The Control Building roof consists of a 2-1/2-ft thick reinforced concrete slab, whereas the major walls consist of double masonry block

Response to Interrogatory 15 (Concluded)

wythes sandwiching a concrete core. There is a suspended false ceiling with soundproofing panels and lighting over the major portion of the control room itself. See also Tr. 628.

(DJB)

Interrogatory 16

Has the state of the art developed to the point where the effect of an earthquake on the Trojan facility could be tested by the use of scale models?

Response to Interrogatory 16

Response to this interrogatory can be found at Tr. 629.

(LWE)

Interrogatory 17

If the SSE represents the maximum potential earthquake for the site and OBE represents the maximum earthquake which can be expected to occur at the site during the life of the plant, on what basis is the distinction between these two made? (See letter from A. Schwencer to Dr. Miller, Control Building Docket Correspondence, No. 12)

Response to Interrogatory 17

Since the referenced letter originated from the NRC, the basis on which they distinguished between the definitions will best be answered in the NRC Staff's response to CEC Interrogatory 10.

(RWJ)

Interrogatory 18

Please supply the study or other materials on which it was concluded that the concerns expressed in a June 23, 1970 review of the seismic design criteria for the Trojan Nuclear Plant by John A. Bloom and Associates could be disregarded.

Response to Interrogatory 18

The recommendations of John Bloom and Associates, related to Comment 5 of their June 23, 1970 report, were satisfactorily resolved in subsequent discussions with the AEC Staff and their consultants. The agreed upon seismic design criteria were first documented in Amendment 9 to the PSAR on October 5, 1970.

(DJB)

Interrogatory 19

Please provide details on all communications in any form which the Licensee has had with the office of the Public Utility Commissioner of Oregon, with the news media, or the NRC Staff, with regard to the possibility of recovering consequential damages from Bechtel Corporation.

Response to Interrogatory 19

There have undoubtedly been a great number of communications between the Licensee and both the Public Utility Commissioner of Oregon and the news media with respect to this subject. It would be impossible to detail all such communications. To the best of my knowledge and belief the subject of this interrogatory has not been discussed with the NRC Staff. In any event, the subject matter of this interrogatory is irrelevant to the instant proceeding.

(RWJ)

Interrogatory 20

If possible, please compute the horizontal ground displacement of an earthquake at .25g.

Response to Interrogatory 20

Estimated displacements can be found at Tr. 993-994.

(LWE)



Interrogatory 21

Why have there been no OBE and SSE test shutdowns? In the absence of such tests, how has it been determined that all relevant employees would respond properly in such an event?

Response to Interrogatory 21

Without off-normal or emergency conditions (other than earthquake), operator response to an SSE or OBE would be a reactor trip and a normal controlled cooldown. If off-normal or emergency conditions occur following or as a result of an earthquake, the appropriate Off-Normal or Emergency Instructions would be followed. Plant employees (operators) are experienced with plant shutdowns and cooldowns. Review of Off-Normal and Emergency Instructions is part of the continuous, annual retraining program. (BDW)

Interrogatory 22

Provide a history of reportable occurrences which have involved design errors.

Response to Interrogatory 22

Licensee Event Reports for occurrences attributed to design errors are provided as Attachment 2. (LWE)