

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
PORTLAND GENERAL ELECTRIC COMPANY,) Docket 50-344
et al)
) (Control Building Proceeding)
)
(TROJAN NUCLEAR PLANT))

AFFIDAVIT OF DONALD J. BROEHL
REGARDING IE INFORMATION NOTICE 80-21

1. I am employed by Portland General Electric Company (PGE or Licensee) as Assistant Vice President, Generation Engineering-Construction. I supervise the Generation Engineering-Construction Division which consists of the Generation Engineering, Generation Licensing & Analysis and General Construction Departments, each of which has responsibilities related to reviews, investigations and evaluations performed by PGE in connection with matters such as those described in the NRC's IE Information Notice 80-21.
2. In the course of seismic design evaluations related to the NRC's Systematic Evaluation Program (SEP), potential safety deficiencies were identified in the anchorage and support of certain safety-related electrical equipment at some of the older plants involved in SEP. The NRC's Office of Inspection and Enforcement described the circumstances of these deficiencies in IE Information Notice 80-21, which was issued to all holders of NRC construction permits and operating licenses on May 16, 1980. Typically, IE Information Notices are provided as early notification of possibly significant matters. Licensees are expected

8007020594

6

DS03
S 0/1

to review the information for possible applicability to their facilities, but are not required either to take specific actions or provide written responses. If NRC evaluations so indicate, guidelines and criteria for further actions and requirements for special reports are promulgated in IE Bulletins.

3. As indicated in the NRC's Notification to the Board in the Trojan Control Building Proceeding dated June 12, 1980, the problems addressed by IE Information Notice 80-21 are not directly related to the Control Building design deficiencies or the proposed structural modifications. However, by their letter dated June 12, 1980, the NRC Division of Licensing requested that PGE provide a written response to the subject Notice for the information of the Board and parties in this proceeding. The information provided below reflects Licensee's review of the applicability to the Trojan Nuclear Plant (Plant) of the potential concern described in IE Information Notice 80-21.

4. The specific potential concern of IE Information Notice 80-21 is that certain electrical equipment may not have adequate seismic resistance capability due to limited anchorage capacity. The Information Notice explains that the NRC's acceptance criteria for the seismic qualification of Category I electrical equipment include IEEE Standard 344, which was first issued in 1971. The Information Notice then expresses the concern that in facilities containing certain electrical equipment designed without the benefit of the design and testing criteria of that standard, there may be some anchorage deficiencies with respect to that equipment.

5. There is no evidence or indication that the potential deficiencies described in IE Information Notice 80-21 exist at the Plant. Final design and procurement of most safety-related electrical equipment for the Plant was completed in 1971 and thereafter, which was several years after the older plants being reviewed under SEP were designed and constructed. During this period there was significant development of seismic criteria. Thus, bid specifications for all safety-related electrical equipment purchased for the Plant included requirements for seismic design, analysis and testing. Although the specifications do not provide the detailed procedural guidance found in IEEE 344-71, the intent is the same in that they both required documented seismic qualification of equipment either by testing or analysis.

6. With respect to equipment anchorages and supports, IEEE 344-71, as did the specifications for the safety-related electrical equipment procured for the Plant, provided that qualification tests and analyses include anchorages and supports representative of those which would be used to install the equipment. Thus, it would be expected that the analysis and testing performed to satisfy the equipment specifications would have identified any inadequate anchorage or support designs. The equipment vendors who were responsible for satisfying the requirements of the specifications with respect to analysis and testing were also responsible for specifying the required anchorage and support against seismic loads. Based on the vendor's anchorage specifications, the safety-related electrical equipment in the Plant was attached by anchor bolts in concrete or by bolting or welding to structural steel members.

7. Since safety-related electrical equipment was seismically qualified in conformance with the requirements specified for such equipment and we believe the equipment is anchored according to the suppliers' specifications, Licensee does not consider that the potential safety deficiencies described in IE Information Notice 80-21 are generally applicable to the Plant.

8. Several recent investigations and reviews provide additional bases for Licensee's judgment that the safety-related electrical equipment is properly supported and anchored. Licensee has performed an engineering inspection of electrical equipment anchorages and supports. In addition, engineers from Bechtel, the Plant's Architect Engineer, recently reviewed electrical equipment anchorages to confirm that the installed anchorages met or exceeded those specified and either tested or analyzed by the equipment supplier. Finally, Licensee's inspection of expansion anchor bolts for anchorage of piping in accordance with IE Bulletin 79-02 provides confidence in that type of anchorage, particularly in concrete. Most electrical equipment is anchored in concrete. None of these reviews, which are described in subparagraphs a-c below, have identified significant deficiencies such as those described in Information Notice 80-21.
 - a. During discussions in the fall of 1978, the NRC Staff described some of the unsatisfactory attachment conditions found at other plants which eventually resulted in issuance of IE Bulletin 79-02 and IE Information Notice 80-21. Based on those discussions, Licensee performed preliminary

investigations of pipe support and electrical equipment anchorages. Licensee engineers inspected and evaluated the bolts used to anchor approximately 100 items of safety-related equipment. Equipment inspected included control panels, switch gear motor control centers, station batteries and battery racks. No instances of free standing equipment were identified. In addition, the support capability of the battery racks was specifically confirmed by analysis.

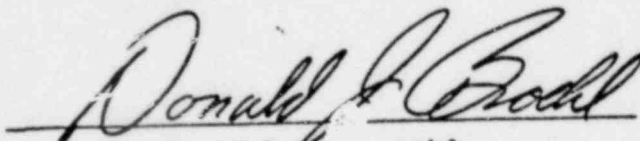
- b. Bechtel engineers recently conducted a field walkdown to inspect critical electrical equipment and verify that the anchorage and support of the equipment was provided in accordance with the manufacturers' requirements. Equipment verified included safety-related switchgear, load centers, battery racks and station transformers. No deviations from the manufacturers' requirements were found.
- c. Pursuant to IE Bulletin 79-02, Licensee performed detailed investigations and evaluations of anchor bolts used in the attachment of piping. In summary, Licensee's IE Bulletin 79-02 investigations confirmed the adequacy of design and installation of expansion anchor bolts for attachment of piping in the Plant. Those results provide Licensee with confidence in the capability of anchor bolts such as those utilized to secure safety-related electrical equipment at the Plant.

9. Based upon the foregoing, Licensee is confident that significant deficiencies of the nature described in IE Information Notice 80-21 do not exist at the Plant and has determined that no action program is needed at the Plant based on the Notice. Nevertheless, to provide additional confirmation

that all safety-related electrical equipment is properly supported and anchored, Licensee will conduct a systematic inspection program for safety-related electrical equipment supports and anchorages. Licensee intends to complete these inspections within twelve months. Any deficiencies identified will be reported in accordance with the Plant Operating License and Technical Specifications.

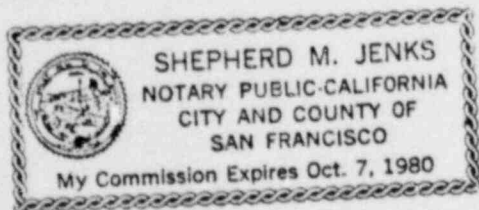
10. Should the NRC determine, in the course of its review of the subjects addressed in IE Information Notice 80-21, that licensees should conduct additional evaluations or analyses of electrical equipment anchorages, PGE will perform such work in accordance with criteria and schedules which shall be established by the NRC.

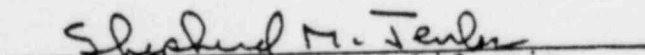
I, Donald J. Broehl, being first duly sworn, state that I have reviewed the foregoing affidavit, and that the statements contained therein are true and correct to the best of my knowledge and belief.


Donald J. Broehl

STATE OF CALIFORNIA)
) ss.
County of San Francisco)

SUBSCRIBED AND SWORN TO before me this 27 day of June 1980.




Notary Public of California