UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
PORTLAND GENERAL ELECTRIC COMPANY, et al.	)	Docket No. 50-344 (Control Building Proceeding)
	)	
(Trojan Nuclear Plant)	)	
	)	

AFFIDAVIT OF RICHARD C. ANDERSON
COALITION FOR SAFE POWER'S CONTENTION NO. 20

1. My name is Richard C. Anderson. I am employed by Bechtel Power Corporation (Bechtel) as Engineering Manager in the San Francisco Power Division. I have been employed in this position since 1977. My professional qualifications are contained in an attachment to this affidavit.

2. I have been involved in the Trojan Plant modification design work since April 1978. I have had supervisory responsibility for the development of the proposed modification to the Complex, including its analysis, design, and general details of construction work necessary to carry out the modification. In my position I am familiar with the methods and equipment which will be used to drill holes in the Control Building to carry out the modification work.

3. The purpose of this affidavit is to address, in part, Coalition for Safe Power's Contention No. 20 which reads

> Inadequate assessment of the effects of drilling in the control building walls during modification, has been made.

4. This affidavit will explain how the drilling in the Control Building walls will be carried out to avoid damage to the reinforcing steel in the walls and to equipment attached or adjacent to the walls. The affidavit of Dr. William H. White concerning this contention discusses the effect of drilling upon the shear capacity of the walls.

5. In the performance of the modification work, it is necessary to drill into existing walls in the Control Building for two purposes:

(a) Holes must be drilled through the Control Building west (R line) wall from el. 59' to el. 98' so that the 3-inch thick steel plate can be bolted to that wall; through the west (R line) wall from el. 45' to el. 61' south of column 46 so that new concrete can be bolted to the existing wall; and through the Control Building east (N line) wall from el. 65' to el. 95', so that the new concrete wall on N line can be bolted to the existing wall.

(b) Holes must be drilled into, but not through, existing walls in the Control Building so that reinforcing steel can be placed and grouted. This is necessary to tie the new walls at Column lines N, N' and R into the existing walls.

6. The walls where drilling will take place are either composite shear walls (masonry block and concrete core) or

double block shear walls (with no concrete core). Reinforcing steel in the masonry block portions of either type of shear wall is located within some of the block cells in a uniform pattern. This steel will be avoided during drilling by a physical survey of the joints between the masonry blocks and by the use of metal detectors.

7. The location of the reinforcing steel in the concrete core portion of the composite walls cannot be similarly defined. However, since the core reinforcing steel is spaced at regular intervals, its location can be estimated for purposes of avoiding it during drilling.

8. In any event, if reinforcing steel were to be encountered by the drill, the effect would be limited to some polishing, or at most, a nick in the steel. All drilling will be done with a core drill equipped with diamond tipped bits. These drills will penetrate the wall at a very slow speed (it will take approximately one hour to penetrate a 32-inch wall). If the bit were to encounter reinforcing steel, there are a number of different indications that would make it immediately apparent to the drill operator, including markedly different sound, vibrations, and motor load. Thereupon, the drill operator will immediately discontinue drilling before the steel has been harmed, the hole will be abandoned and fully grouted before a replacement hole is drilled. The location of future holes to be drilled will be adjusted accordingly.

9. The drilling will be carried out so that the equipment attached or adjacent to either side of the Control Building

walls will not be affected. Before any drilling begins, physical surveys will be done to fix the location of all equipment attached directly to, or adjacent to, the walls in the vicinity of drilling. The holes to be drilled will be plotted so as to allow for sufficient space for fitting the washer (which has a radius of 9 inches and thickness of 2 inches) onto the bolt; thus all holes must be centered at least 9 inches from any equipment attached to the wall and must be located such that there is a gap greater than 2 inches between the wall and any piece of adjacent equipment.

10. Such distances should preclude the drilling from contacting any equipment attached to or adjacent to the wall. However, as an additional precaution, workers will be assigned to monitor the area opposite the drill penetration. These workers will be in direct communication with the drill operator and can notify him to stop drilling if equipment might be affected. The drilling machinery uses a geared mechanism to move the drill head forward. The inherent characteristics of this mechanism are such that it retains no potential energy; therefore there is no release of energy which could suddenly propel the drill head forward when the the wall is penetrated. Because of the drill's slow penetration speed, and the positive control which the drill operator has over the bit, a warning from the worker monitoring the area opposite the drill penetration will be sufficient to prevent harm to equipment adjacent to the wall from the drill bit.

11. The diamond-tipped drills to be used will cut slowly and cleanly through the concrete. Therefore, vibration and

concrete fragments from the drilling on either side of the wall will be minimal and will not affect equipment attached or adjacent to the walls. The worker monitoring the area opposite the drill penetration will hold a small enclosure against the wall to collect any debris incidental to the drilling.

12. For the reasons discussed above, the drilling necessary for the modification work will not harm the reinforcing steel in the walls and will not affect equipment attached or adjacent to those walls.

I, Richard C. Anderson, of lawful age, 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.

Richard C Anderson
RICHARD C. ANDERSON

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

SUBSCRIBED AND SWORN TO before me this 6th day of February, 1978 1980

SHEPHERD M. JENKS
NOTARY PUBLIC-CALIFORNIA
CITY AND COUNTY OF
SAN FRANCISCO
My Commission Expires Oct. 7, 1980

Shepherd M. Jenks
NOTARY PUBLIC FOR CALIFORNIA
My Commission Expires 7 Oct 80

PROFESSIONAL QUALIFICATIONS
OF
RICHARD C. ANDERSON

PRESENT POSITION	Engineering Manager, Bechtel Power Corporation
EDUCATION	BS, Mechanical Engineering, University of California, Berkeley
PROFESSIONAL DATA	Registered Professional Mechanical and Nuclear Engineer California; Member, American Nuclear Society
SUMMARY	2 years: Engineering Manager 6 years: Chief Nuclear/Environmental Engineer 1 year: Assistant Project Engineer 2 years: Project Engineer 3 years: Mechanical Supervisor 1 year: Senior Engineer 7 years: Mechanical Engineer

EXPERIENCE

Mr. Anderson is the Engineering Manager for Bechtel's nuclear and fossil fuel projects in the Northwest and all project work and consulting services for Japanese clients.

Before being assigned to his present position, Mr. Anderson was the Chief Nuclear/Environmental Engineer responsible for all nuclear and environmental engineering for the San Francisco Power Division of Bechtel Power Corporation.

Previously, he was Assistant Project Engineer in charge of all technical work for the two 1100-MWe Mendocino nuclear power plants for Pacific Gas & Electric Company. He was also the Mechanical Supervisor, and later the Project Engineer on the 545-MWe nuclear generating plant at Monticello, Minnesota, for Northern States Power. This assignment included supervision and coordination of mechanical design, specifications and procurement activities, and later the supervision of all engineering activities including the quality control and quality assurance programs.

As a Senior Engineer and Mechanical Subgroup Supervisor, he was responsible for "balance of plant" systems and equipment for the Tarapur nuclear power station in India.

Richard C. Anderson
EXPERIENCE (Concluded)

He was a Mechanical Engineer and the Systems Analysis Leader on the FARET Fast Reactor Test Facility for Argonne National Laboratories; Mechanical Engineer on the emergency cooling shield for the Peach Bottom HTGR nuclear reactor; Systems Engineer on the Hallam nuclear power facility and a Mechanical Engineer on the Dresden nuclear plant.