

FROM PAGE 13

In PGE's lawsuit against Bechtel, PGE commissioned an engineering study of the design deficiencies by Preece/Goudie and Associates, which came to a number of disturbing conclusions about the quality of Edmunds' work, and PGE's nuclear plant:

"This concept of selecting walls willynilly and calling them shear walls and totally ignoring other nearly identical walls clearly demonstrates the design team did not comprehend basic concepts in earthquake resistant design."

"The commitment... to use block masonry as the primary earthquake resistant material... was the grossest kind of error."

"The walls as constructed at Trojan did not comply with the Uniform Building Code for masonry."

"To describe this assemblage of masonry and concrete as some unique type of high-strength concrete... is similar to trying to pass off a sow's ear as a silk purse."

"I can conclude only that the designers were either naively ignorant or intellectually dishonest."

PGE president Robert Short noted that the Bechtel people had admitted to him that, "This is the worst mistake we have ever seen in a construction project of this size." The problem with this honest admission, however, is that it came many years too late. The secret file, however, indicated that while Bechtel had clearly gone to considerable length to cover up the design deficiencies at Trojan, PGE had been alerted to the problem a year and a half before the report of deficiency was made to the NRC in mid-1978.

It was December of 1976 when Richard Sullivan, administrative engineer for PGE, wrote to Bechtel in San Francisco and requested "the seismic calculations for piping and structures" at Trojan. The response from D. L. Damon, project engineer at Bechtel, came January 27, 1977. Damon's letter is a bureaucratic classic, providing unique insight into those areas of the nuclear industry which ought to contain heart and mind:

"We are unsure whether the transmittal of the raw seismic calculations themselves is in our mutual best interest. These calculations are not self-explanatory in the abstract and would be of very little value to operations and maintenance. On the other hand, there is substantial risk that these calculations, when not accompanied by the assumptions, judgements and trade-offs associated with them during the design process, could easily mislead one to a wrong conclusion. The long range effects of such conclusions are very difficult to assess. This does not mean, however, that we cannot respond to the need of your request. Usually in these cases we meet with the parties interested and go through the calculations binders retained on project. During this review the particular calculations of interest are thoroughly discussed and the supportive information necessary to suit them to a particular use is developed. We can then supply copies of such calculations along with a complete report explaining the assumptions and limitations involved with their use. The size, cost, and complexity of such a report varies somewhat with the nature and quantity of the calculations as well as with their intended use upon release."

The gist of Bechtel's response to the request for seismic data could be summarized as "You don't want to know and we don't want to tell you."

In the bureaucratic world the possession of documents means that one is on lawful notice of their contents. Had PGE insisted on getting the seismic data, then the company would have been legally bound to advise the NRC of the design deficiencies a full year and a half before the accidental discovery by those seeking to cut a security window in the control building wall. One would have hoped that Bechtel's letter would have prompted an immediate response reminding Bechtel that a million people live within fifty miles of the Trojan plant, that PGE takes seriously its responsibility for the safety of these people, and that all documents must be

NO HEARING

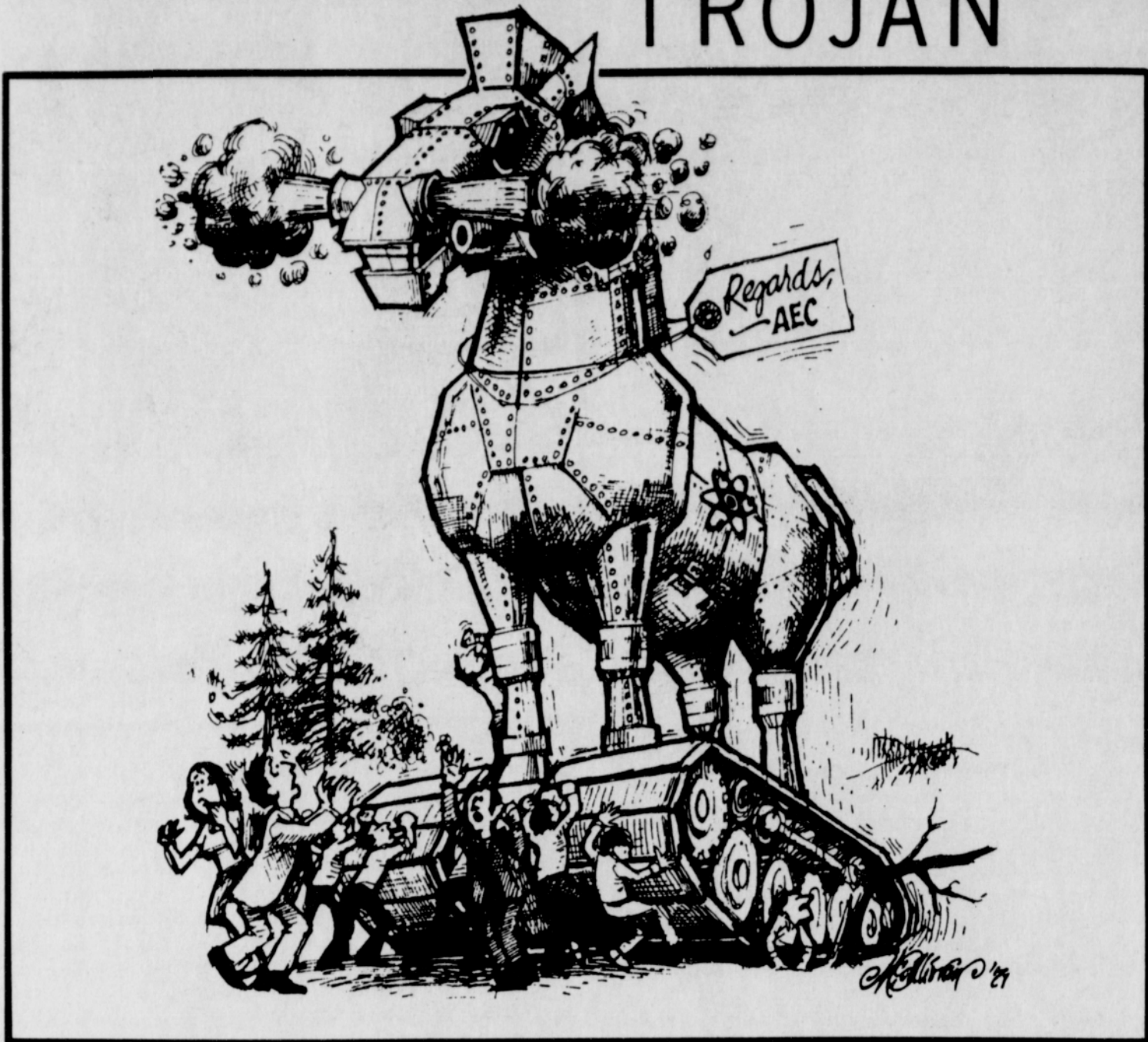
The Oregon Energy Facility Siting Council unanimously rejected a petition to hold public hearings on the possibility of inadequate earthquake protection of the Trojan nuclear power plant on Thursday, June 30.

Lloyd Marbet and Gregory Kafoury of Forelaws on Board, sponsors of the petition, were first denied the chance to address the Council and were threatened with arrest. The Council changed its mind and allowed them to present their case for a hearing, then voted it down.

"In the fifteen years I have been involved with nuclear issues I have never been treated like this," Marbet said. "I have always played by the rules and I have been allowed to have my say. This just shows the seriousness of this issue: they don't want it to see the light of day. They don't want the people to know what is going on or be aware of the magnitude of the danger we are all in."

— MPMc

TROJAN



BRUCE MCGILLIVRAY

produced immediately or Bechtel would have hell to pay. But the secret file does not show any such response. PGE decided to end the paper trail at that point, evidently agreeing with Bechtel's pointed suggestion that the transmittal of seismic data would not be in their "mutual best interest."

Today we are asked by the Nuclear Regulatory Commission and the Oregon Energy Facility Siting Council (EFSC) to ignore this sordid history because the problems at Trojan have been "fixed." Yet the NRC and EFSC have always relied extensively on the information supplied by utilities and contractors. In this case the documentary evidence indicates that neither PGE nor its contractor, Bechtel, can be trusted. Further, the PGE vs. Bechtel gag order was apparently agreed to by attorneys for the United States, representing the Bonneville Power Authority. Finally, the NRC itself has under the Reagan administration reached new lows in diligence and integrity.

In April of 1987 Thomas Heaton, chief scientist of the U.S. Geological Survey in Pasadena, California, and his co-author Stephen Hartzell, wrote an article in Science entitled "Earthquakes Hazard on the Cascadia Subduction Zone." Subduction is the movement of one tectonic plate beneath another. This article compared the area off the Oregon and Washington coasts with similar geographic zones in southern Chile, southwestern Japan and Colombia. These are the sites of the world's great subduction earthquakes. The areas were found to be similar.

In our case, the Juan de Fuca plate is being created several hundred miles off the Oregon and Washington coast at the Juan de Fuca Ridge, where geologic forces are pushing material from deep within the earth up to the ocean floor, then pushing this new plate material toward the northwest coast. As this thousand mile plate reaches the plate of the North American continent it is pushed beneath it. In an ideal world this would be a smooth process. In the other areas where such conditions occur the plates tend to "catch" and the energy builds up until it is suddenly released. In the understated language of science, Heaton and Hartzell write that "another feature of ground motions recorded during large subduction zone earthquakes is their large size and very large distances." The authors indicate that if our subduction zone is "storing elastic energy," then we would face either a sequence of several great earthquakes in the range of 8, or a single giant earthquake in the range of 9 to 9.5. (On this scale a 9 earthquake is ten times greater than an 8.) Were such an earthquake to occur, "then relatively strong shaking can be expected over a large area over the Pacific Northwest, including the Puget Sound and Willamette valley regions."

Summarizing the Science article, the New York Times on April 27, 1987, ran a lead story on the front page entitled "Earthquake Threat is Posed in Pacific Northwest," indicating that postulated earthquake was one which "no modern city has ever experienced." With the theoretical basis now strongly outlined, the major gap in the earthquake story was the physical evidence of great Northwest earthquakes in the recent past. Such evidence was soon to be forthcoming.

On May 22, 1987, geologist Brian Atwater wrote "Evidence for Great Holocene Earthquakes Along the Outer Coast of Washington State" for Science. Atwater dug his way through the soggy estuaries of western Washington, looking for "rhythmic alterations between estuarine mud and buried lowland soil" as evidence of ancient subduction earthquakes, as has been recently seen in Chile and Alaska. He reported that such evidence "abounds... near Washington's outer coast." Further, sheets of thin sand in buried lowlands conform to the pattern to be expected by the carrying of sand in a great tsunami. Weighing this and other field evidence, Atwater found that it tended "to confirm that great subduction earthquakes triggered the cycles of submergence and shoaling in Washington." More specifically, he found evidence of "at least six such earthquakes" in the last seven thousand years.

Since last spring the story of "The Great Northwest Earthquake" has become a major issue in seismological circles. A conference focusing on the subject was held a few months ago in San Francisco. The case for great periodic subduction earthquakes had in the months since the first publication become a majority view. New evidence suggesting that the Juan de Fuca plate is "stuck" was presented, along with evidence of an enormous event submerging a one hundred and fifty mile section of the Washington coast three hundred years ago. The estimate for the event was 8.5 on the Richter scale. Brian Atwater updated his findings to include nine events in the last four thousand, nine hundred years, and evidence of four great quakes in the last seventeen hundred years. In the December 17, 1987 Oregonian, one geologist was reported as saying that "a computer compilation of the available data and what is happening in the Northwest shows that the observations fit together best not only if the Northwest has periodic subduction earthquakes but also if the next one is just eighteen years from occurring."

The kinds of earthquakes now generally accepted as being in Oregon's future would create ground motion in the range of .5G, or one-half the force of gravity. The force of such an earthquake would be one hundred times beyond what the Trojan plant was designed to handle. We have seen that the design and construction of Trojan would give cause for great concern even in the absence of these grim new scientific findings. We have seen that a desire to avoid learning the truth has characterized the conduct of the Oregon State Geologist, the NRC, the BPA and our present governor, Neil Goldschmidt.

One can only conclude that we will have to protect ourselves. Those who have our fate in their hands have shown no willingness to confront the money and power of the nuclear industry. If we wish logic and common sense to prevail, we must make our presence felt through the initiative process. We ourselves must "Split the Sky and shake the Earth."

Gregory Kafoury is the attorney of Forelaws on Board, an environmentalist group that is involved in nuclear power issues.