

UNITED STATES OF AMERICA  
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Pacific Gas & Electric Company

(Diablo Canyon Power Plant,  
Units 1 and 2)

Docket Nos. 50-2750LA  
50-3230LA

(Construction period  
recapture)

AFFIDAVIT OF SUSAN BIESEK

1. My name is Susan Biesek. I live at 2829 See Canyon, San Luis Obispo, California.

My home lies within 10 miles of the Diablo Canyon Nuclear Power Plant.


2. I live with my husband and our two children, ages 7 and 10.

We own our home.

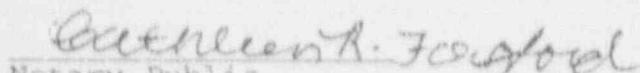
My husband operates his business from our home.

3. I am a member of San Luis Obispo Mothers for Peace.

4. I am concerned that the operation of the Diablo Canyon Nuclear Power Plant during a period of construction permit recapture may be unsafe, thus jeopardizing the health and safety of myself and my family, the value of our property and our means of livelihood. Therefore, I have authorized the San Luis Obispo Mothers for Peace to represent me in this proceeding regarding the proposed construction permit recapture for the Diablo Canyon Nuclear Power Plant.

  
Signature

Signed and sworn to before me this 6th day of October, 1992.

  
Notary Public  
CATHLEEN R. FOXFORD  
My commission expires 2-8-93.



Exhibits

# Small leaks found, but Diablo outage is on schedule

By Jennifer Peterson  
Staff Writer

**DIABLO CANYON** — The fifth outage of Unit One of the Diablo Canyon Nuclear Power Plant is going along as scheduled and has offered few surprises, plant officials said Thursday.

Plant Manager John Townsend offered members of the press an inside look at portions of the facility Wednesday at the midpoint of this 63-day outage.

Outages are regularly scheduled shutdowns which allow for repair, maintenance and refueling of the nuclear power plant.

"This particular outage is a fairly long outage for us," Townsend explained. "When we first started out we had some long outages, then as time went on we got better and worked out some of the problems."

A variety of tests requiring more dismantling of portions of Unit One

have contributed to the length of this outage.

This outage saw the first inspection of the welds which hold together two, 5-inch shafts of steel rolled into a hemi-cylindrical form.

In order to make room for the ultrasonic device, Townsend explained, portions of the vessel had to be torn down further than usual.

While this inspection found no abnormalities in the weld, not everything has gone so well, as regular wear and tear causes an occasional broken weld.

"Sometimes, when we perform inspections we find things that are not quite what you'd like to see," Townsend said.

In this case, the unhappy surprise came in the feed-water nozzle to the steam generator.

Townsend explained that facilities entered this outage with the knowledge that other nuclear power

plants had been experiencing some damage to welds on steam generator feedwater nozzle pipes.

During an ultrasonic test of these welds at Diablo, cracking was found. The welds and a small section of pipe are being repaired on all four generators.

In addition, a leak on the control rod drive seal weld was discovered during inspections of the head of the core.

The control rod serves to move fuel rods slowly through fields of neutrons which, when reacting with fuel, uranium, causes fission.

"It was such a small amount that it wasn't detected by the system," Townsend said. "The only way you could tell that there was a leak over the period of the cycle was some discoloration in the area around the leak. There is no danger because the leak was so small and because this is all inside the containment so there's no danger of contaminating the atmosphere."

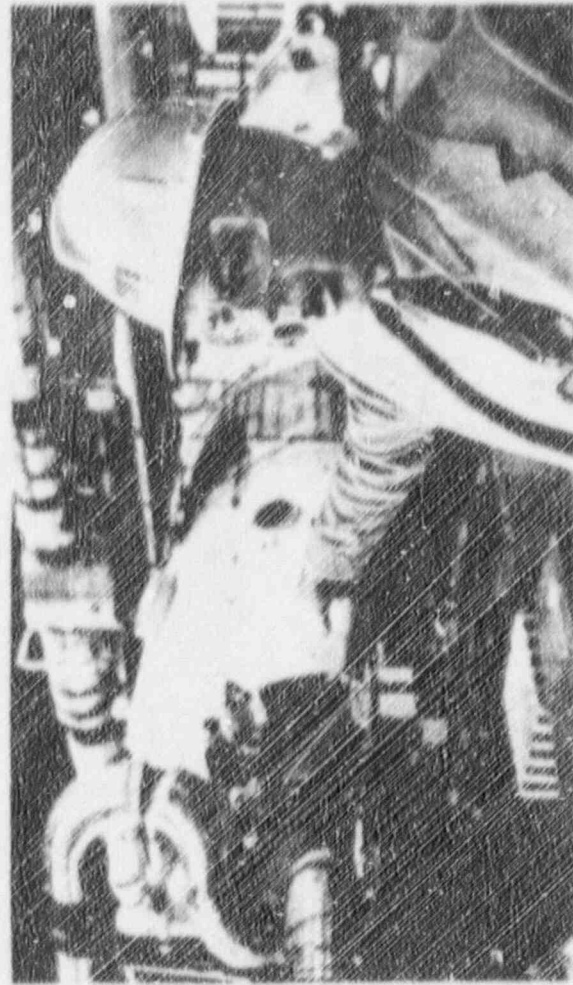
Meanwhile, in the steam generator of Unit Two, plant officials have identified a leak between the primary and secondary coolant systems. Approximately one-quarter of one cup per day is leaking between the systems which incorporate 1.1 million gallons of coolant between them.

Because there are no fuel leaks at this time, Townsend continued, the leak is not a danger, but will continue to be monitored.

Ninety three of the 193 fuel rods were replaced during this outage.

The spent fuel rods were placed in the on-site spent fuel "pool" where they will stay indefinitely. The pool, Townsend explained, may hold up to 1,350 fuel assemblies.

"A fuel rod is about as big as your



**OVER THE DIN** — Plant Manager John Townsend of Diablo Canyon Nuclear Power Plant discusses the tear-down of the Unit One generator during a regularly scheduled outage. This outage is the fifth for Unit One.  
Photo by Jennifer Peterson

little finger," Townsend explained. "It's a hollow steel tube full of uranium pellets."

Uranium, Townsend explained, is a naturally occurring substance mined from the Earth, treated, put into pellet form and packaged so fuel rods.

When contacted by certain neutrons, the uranium fissions or splits apart, creating heat. The steam derived from the water heated by that fission is used to turn turbine blades which, in turn, run a generator which puts out the electricity used in homes and businesses throughout

the state of California.

During each outage, a robot is used to inspect approximately 25 percent of the 19,000 tubes in the four steam generators for signs of wear which could eventually lead to a leak, Townsend explained. If a tube is worn to the point where it may leak during the next power cycle, that tube is plugged.

This outage, 24 tubes were plugged for a total of approximately 100 plugged tubes.

Besides the maintenance, refueling and repair of the facility, the outage offers quite an economic boost to the Central Coast.

On average, the plant employs some 2,500 employees. From throughout the Central Coast, the plant hires an additional 2,000 contract employees, some 60 percent of

which are local residents. The additional 40 percent, or some 800 employees, come from all over the world. Townsend explained.

The outage is scheduled to conclude on or about Nov. 15,



**DRESSING OUT** — A Diablo Canyon employee suits up for entry into the confinement area. Employees wear special suits to avoid contamination.  
Photo by Jennifer Peterson

# San Francisco

THE LARGEST DAILY CIRCULATION IN NORTHERN CALIFORNIA

## Chronicle

LIFORNIA

MONDAY, OCTOBER 19, 1992

### More Questions About Diablo Canyon

Experts show nuclear plant's fire barrier can burn, could crack in quake

By Glen Martin  
Chronicle Staff Writer

Recent revelations about defects in fire barrier systems and questions about earthquake resistance have raised serious questions about the safety of Pacific Gas and Electric Co.'s Diablo Canyon power plant in San Luis Obispo County, California's largest commercial nuclear facility. Concerns have focused on a barrier material called Therma-Lag, which is used to protect electrical systems in 15 separate buildings at the plant.

The Nuclear Regulatory Commission has issued a series of bulletins to nuclear power plant operators, highlighting that Therma-Lag could protect cables and components in a series of tests.



Therma-Lag is a gypsum-based

material that is packed around conduits, cables or machinery that must be protected from fire. At Diablo Canyon, the potential for fire danger is heightened further by recent studies indicating that the plant, which lies near a major fault, may not be able to withstand large earthquakes.

The Loma Prieta quake in 1989 and the Eel River Basin tremor that struck earlier this year showed that ground motion can be much more serious than previously thought, experts say.

PG&E has maintained that the fault located near Diablo — called the Hosgri — is a "strike-slip" fault, characterized by plates in Earth's crust moving opposite one another.

Now, however, some geologists from the U.S. Geological Survey say Hosgri is a "thrust" fault, which involves one plate jammed, or "subducted," under another.

DIABLO: Page 2 Col. 1



producing far more violent quakes. The Hosgri fault is strongly suspected of having caused the 1927 Loma Prieta quake which registered 7.1 on the Richter scale. "Most of my colleagues feel that Hosgri has very strong thrust components," said Stephen Lewis, a geophysicist with the U.S. Geological Survey.

#### Design Evaluation

In the late 1970s, PG&E was required by the Nuclear Regulatory Commission to re-evaluate the Diablo Canyon plant's design by 1983. But the final report, which was approved by the NRC last year, did not take into account the new data from the Loma Prieta and El Centro Basin quakes.

"I think the NRC made an error when they came down on the side of the PG&E interpretation. There's a high level of uncertainty among the experts," said Lewis.

Officials at PG&E deny that the company's seismic studies are inadequate and say the plant is safe.

"Hosgri may have some thrust components to it, but it's primarily strike-slip," said Lloyd Cliff, the manager of PG&E's geosciences department and program manager for seismic studies at the Diablo Canyon plant.

"But that isn't really the point," he added. "We conducted our studies, assuming a maximum thrust quake from the fault. The resistance margin may be somewhat less for a thrust quake than a strike-slip quake, but it's still more than adequate."

Nevertheless, other experts see reason for concern.

"When you construct a curve from all the data, the average ground motion tends to be of fairly modest value," said Jerry Eaton, a

geophysicist at the U.S. Geological Survey. "The problem comes when you try to construct something on one of those scatterpoints."

Such a scatterpoint was responsible for the collapse of the Cypress structure during the Loma Prieta quake.

"Diablo was designed and planned with seismic data that (are) now outdated," said Richard Hubbard, a consultant for MHB Technical Associates, a San Jose firm that assesses power plant safety. "In an earthquake, you're depending on literally thousands of devices working in the right way at the right time to achieve a safe shutdown. Many, many things can go wrong."

#### Fire Barrier

The issue of seismic safety at Diablo Canyon is further complicated by the presence of Thermo-Lag, the most widely used fire barrier system in the nuclear power industry. The material is used in 11 cable conduits and four custom-made barriers designed to protect important machinery at the plant.

A study published by the Nuclear Information and Resource Service, an organization that monitors nuclear plant safety, indicated that Thermo-Lag's rigid properties could cause it to crack violently and crumble in an earthquake, shearing cables.

The fact that Thermo-Lag could crack off the cables and trays it's supposed to protect also means that you could have a major fire after an earthquake," said Paul Gunter of the Service.

"It's not just a matter of Thermo-Lag being inadequate," he said. "The NRC tests indicated that the material itself is combustible, that it can initiate fires by allowing cables to overheat."

Inspector at Diablo, acknowledged that Thermo-Lag can burn.

"But it needs an ignition source that exceeds 1,400 degrees," she said. "Even though it is now considered deficient as a fire barrier material, it probably still provides some protection in most circumstances."

Yet the NRC's concern over Thermo-Lag remains profound. An August memorandum from the commission's inspector general criticized NRC staff members for failure to investigate adequately reports of Thermo-Lag's deficiencies.

Another memo that came out shortly after the inspector general's criticism expanded the scope of a previous directive that required additional fire safeguards for certain types of Thermo-Lag products.

Thermo-Lag failure "could lead to both trains of safe shutdown systems being damaged by fire. This may significantly affect the plant's ability to achieve and maintain hot standby/shutdown conditions," stated one NRC bulletin.

That means an electrical shut-

down could result in loss of control over the nuclear core, leading to a partial or complete meltdown. Although all nuclear plants in the United States are equipped with containment barriers designed for such contingencies, substantial radiation releases are possible in any core mishap.

As a result of those concerns, the NRC has ordered that plants take "compensatory" measures for all Thermo-Lag materials, regardless of configuration. At Diablo Canyon, said Miller, roving human observers monitor the custom-made barriers and nine of the conduits on an hourly basis. Two of the cables traverse the plant's containment structures, certain areas of which are radioactive.

"It's not practical to maintain human watches in that kind of situation," said Miller. "So the plant is employing smoke and fire sensors and sprinkler systems."

Some critics say more needs to be done. "What happens if a fire starts after an inspector walks by?" asked Gunter. "Human observers aren't necessarily completely reliable. They can make mistakes."

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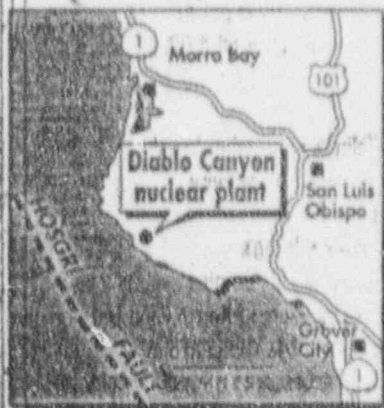
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Because Therma-Lag systems are employed at 33 of the nation's 104 power plants, the reports of generator "concerns" have caused consternation among both advocates and opponents of nuclear energy.



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From Page 1

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## TURN Fact Sheet

### The Diablo Settlement: Assumptions vs. Reality

#### Assumption

Approved in 1988 by the California Public Utilities Commission, the Diablo Settlement allowed Pacific Gas & Electric to recover costs for its Diablo Canyon nuclear power plant over a 28-year period, using a method called "performance-based pricing." This method was supposed to ensure that PG&E would not make excessive profits and ratepayers would not be charged for excessive costs.

#### Reality

Four years after the approval of the settlement, ratepayers are paying excessively high rates for power generated from the Diablo Canyon nuclear power plant, while PG&E rakes in record profits. Why? Because the assumptions on which the Diablo settlement was based have proven false. This ratepayer rip-off will continue into the 21st century, unless the CPUC acts now to modify the settlement.

#### Assumption

The Diablo Settlement was based on an assumption that, over 28 years, Diablo Canyon would operate at a 58 percent "capacity factor," including the down-time needed for periodic refueling and inspections. Excluding refueling outages, it was estimated that the plant would perform at 75 percent of capacity.

#### Reality

Diablo Canyon's performance since the settlement has far exceeded these assumptions. Between 1989 and 1991, the plant has operated at an 83 percent capacity factor, including down-time for refueling. Excluding refueling outages, Diablo Canyon actually operates at 93.8 percent of capacity.

#### Assumption

The Diablo Settlement was based on an assumption that the physical limits of the plant's capacity to produce electricity would prevent PG&E from collecting excessive profits.

#### Reality

PG&E has greatly expanded the physical capacity limits of Diablo Canyon — and thus expanded its profits. For example, PG&E cut the average refueling time virtually in half, significantly boosting revenues. In 1991, Diablo Canyon generated about one-fourth of PG&E's total profits.

#### Assumption

The Diablo Settlement was intended to keep the price of power generated from Diablo Canyon reasonable.

#### Reality

At 11.4 cents/kwh, the cost of the power generated from Diablo Canyon is unreasonable and excessive. Of the major sources of electricity generating sources in California, Diablo Canyon is by far the most expensive.

San Francisco  
Chronicle

2/29/92

## ■ CALIFORNIA

State Construction  
Fell 21.8% Last Year

Construction dropped 21.8 percent in California last year, with home construction taking the biggest fall. The decline brought construction volume in the state to the lowest level since 1982, said the Construction Industry Research Board. The board tabulated building permits issued in 1991 and found that residential construction dropped 35.6 percent. The board said 314,500 new living units were built in 1991, but only 105,800 last year. Nonresidential construction, which includes commercial buildings, fell 25.8 percent from 1990.

3/5/92

PG&E Reports  
Big Energy Savings

Pacific Gas and Electric Co. said that its energy conservation program far exceeded its goals for 1991, resulting in an \$80 million savings to customers. PG&E customers saved 807 million kilowatt-hours of electricity, 82 percent more than expected, and 37 million therms of natural gas, 151 percent more than expected. In a separate development, the California Public Utilities Commission replied to criticism that the profit incentive awarded the company to stimulate energy conservation was too generous. It stated that in general it won't authorize a greater-than-normal return on assets.

4/27/92

State Energy Plan  
Urges Conservation

The California Energy Commission has released its 1992-1993 strategy, which features calls for increased energy efficiency and a shift to cost-effective alternative fuels. The plan projects the need for 11,000 additional megawatts of electricity by 2001 — three-fourths of which should be met with increased energy efficiency. Half of the remaining 1,700 megawatts of electricity should be generated with nonfossil fuel technology, the plan states. The commission recommends that by 1993 all local public agencies should have a plan for converting their fleets to alternative-fuel vehicles.