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Re Pacific Gas and Electric Company
Decision 85-08-046
Application 83-09-49

California Public Utilities Commission
August 21, 1985

ORDER allowing an electric utility to recover remaining net plant investment in the prematurely retired Humboldt Bay 3 nuclear power plant.

P.U.R. Headnote and Classification

1.
VALUATION

s202 - Abandoned property - Prematurely retired nuclear plant - Net investment recovery.
Ca.P.U.C. 1985

A prematurely retired nuclear generating unit was excluded from rate base as it was no longer used and useful in service, but remaining net plant investment in the unit was deemed recoverable from ratepayers as long as there was no concomitant recovery of an allowance for funds used during construction accrued while the owner utility unsuccessfully attempted to modify and reopen the unit.

Re Pacific Gas and Electric Company

P.U.R. Headnote and Classification

2.
EXPENSES

s120 - Electric utilities - Nuclear plant modifications - Seismic retrofits.
Ca.P.U.C. 1985

The costs of seismic modifications for a nuclear power plant that were incurred after the Nuclear Regulatory Commission (NRC) had imposed other significant conditions on the unit's license and operations were disallowed as being imprudent, where the commission found that the owner utility's management should have known that continuing with the existing seismic modification work would not have been useful in meeting the NRC's additional requirements.

Re Pacific Gas and Electric Company

P.U.R. Headnote and Classification

3.
EXPENSES

s120 - Electric utilities - Nuclear plant modifications - Geologic and seismic studies.

Ca.P.U.C. 1985

Although finding that an electric utility was imprudent in proceeding with nuclear plant modifications before meeting other operational requirements imposed by the Nuclear Regulatory Commission, the state commission said that proceeding with further geological and seismic studies related to the plant modifications was reasonable, as the utility could have been expected to pursue all ways by which the plant could have been brought on-line again.

Re Pacific Gas and Electric Company

P.U.R. Headnote and Classification

4.
VALUATION

s224 - Construction work in progress - Allowance for funds used during construction - Nuclear plant modifications.

Ca.P.U.C. 1985

Although the disallowance of an allowance for funds used during construction (AFUDC) is most often related to the preconstruction expense of abandoned plant, there is no meaningful distinction between preconstruction work and modification work on prematurely retired plant; where modifications to an operating plant are never placed into service, they cannot be considered used and useful, and therefore, associated AFUDC should not be recovered.

Re Pacific Gas and Electric Company

APPEARANCES: *Peter W. Hanschen* and Steven F. Greenwald, Louis E. Vincent, Attorneys at Law, for Pacific Gas and Electric Company, applicant. *Scott L. Fielder*, Mark Evanoff, and Patrick V. Agnello, for Redwood Alliance, intervenors. *Robert Cagen*, Attorney at Law, and *Douglas Long*, for the Commission staff.

*2 By the COMMISSION:

PHASE I OPINION:

I. Summary

We allow Pacific Gas & Electric Co. (PG&E) to recover the prudently incurred direct cost of retiring Humboldt Bay power plant, Unit 3. The prudently incurred direct cost amounts to approximately \$54 million of the \$88 million requested.

We do not allow PG&E to recover accrued Allowance for Funds Used During Construction (AFUDC). This AFUDC amounts to \$27.3 million.

We also do not allow PG&E to recover the cost of plant modifications made after the Nuclear Regulatory Commission (NRC) modified the plant's operating license. The NRC required resolution of specified questions on site geology before the plant could be reopened. PG&E's expenditures on plant modifications after the NRC's order was issued were imprudent. A prudent utility manager would not have spent any funds on plant modifications until the NRC's specified questions on site geology had been favorably resolved. The disallowed cost of the modifications amounts to \$6.7 million.

While one also could question PG&E's decisions to spend large amounts of money on geologic and seismic studies after the NRC's order, we find that PG&E's efforts to reopen the plant after the NRC's closure order were supported by its several cost-benefit analyses. The direct cost of these studies should be paid by the ratepayers. The shareholders are responsible for any accrued AFUDC.

Last, we allow PG&E to recover the cost of placing the plant in a safe storage condition (SAFSTOR) until a nuclear waste repository is opened and the plant can be decommissioned. The cost of decommissioning will be addressed in Phase II of this proceeding.

II. Background

On December 15, 1959, the Commission issued Decision (D.) 59407, granting to PG&E a certificate of public convenience and necessity for Humboldt Bay power plant Unit No. 3 (Unit 3). Unit 3 is located near Eureka, California and is a natural circulation boiling water nuclear reactor.

Unit 3 began commercial operation in August, 1963, and operated for 13 years until 1976 when it was shut down for a planned refueling outage.

On May 21, 1976, the NRC issued an order modifying Unit 3's operating license. The NRC's order required that before Unit 3 could resume operation (1) PG&E must complete a seismic design upgrading program and (2) PG&E must resolve specified geologic and seismic questions. PG&E never was able to meet the second requirement. Consequently, Unit 3 has not operated since 1976.

On December 19, 1979, the Commission issued D.91107 and removed Unit 3 from PG&E's rate base. ([2 CPUC 2d 596](#)) The Commission also ordered PG&E to record all Unit 3 capital costs in a memorandum account and warned PG&E that any additional expenditures would be made entirely at the company's risk. ([2 CPUC 2d at 625.](#))

On December 30, 1981, the Commission issued D.93887 in which it rejected the Commission staff's proposal to stop accrual of AFUDC on Unit 3. The Commission stated:

The resolution of the future status of Humboldt should be determined in a separate proceeding. Should such proceeding prove that it is feasible to continue the necessary modifications to reopen*3 Humboldt, then such AFUDC is a proper cost. If it is determined not feasible, the Commission has the right to make its determination as to allow or disallow such carrying costs based on the record that will be developed in such a proceeding.

On May 18, 1983, the Commission issued D.83-05-051 and stopped any further accrual of AFUDC on Unit 3. The Commission explained there no longer was a reasonable expectation that Unit 3 would resume commercial operation. The Commission further stated:

In any future ratemaking proceeding concerning this plant, all costs related to the period during which the plant was inoperative will be subject to disallowance in the absence of a clear and convincing showing by PG&E as to their reasonableness. This burden is on the utility. (mimeo., p. 2.)

On September 19, 1983, PG&E filed Application (A.) 83-09-49 requesting recovery of Unit 3 retirement and decommissioning expenses. Public hearing on the retirement expense (Phase I) was held from April 16, 1984, to November 20, 1984, in Eureka and San Francisco. PG&E and the Commission's Public Staff Division (staff) presented witnesses. The Redwood Alliance (Alliance) participated through cross-examination. Opening briefs were

filed on February 5, 1985, and closing briefs were filed on February 25, 1985. Phase II hearings on the Unit 3 decommissioning expense are scheduled for July, 1985.

Expense

In Phase I, PG&E requests recovery of the following capital expenditures for Unit 3.

III. PG&E's Request for Recovery of Unit 3 Retirement

Net original plant investment	\$17,185,000
Related AFUDC	\$ 7,185,000
Seismic, geologic, and economic studies from 1978 to 1983	\$10,586,000
Related AFUDC	\$ 4,084,000
NRC required plant modification work (e.g., modify fire protection system) from 1976* to 1983	\$ 3,460,000
Related AFUDC	\$ 2,925,000
Various capitalized expenditures for nuclear fuel, insurance, and operation and maintenance expenses	\$ 8,705,000
Related AFUDC	\$ 1,069,000
Total	\$88,410,000
CPUC Jurisdiction	\$86,086,000

* Some of these expenditures were made before 1976; however, PG&E in its brief has described the works as beginning in 1976.

In addition, PG&E asks for the cost of placing Unit 3 in

SAFSTOR until a nuclear waste repository is operating. The estimated SAFSTOR cost is:

1984	\$5,066,000
1985	\$4,651,000

In Phase II, PG&E will seek recovery of Unit 3's eventual decommissioning expense.

IV. Issues

The following ratemaking issues have been raised in Phase I of this proceeding.

1. Whether PG&E should earn a return on Unit 3's remaining net plant investment of \$17,185,000 when the plant operated for 13 years of its estimated 30-year useful life.

2. Whether PG&E acted prudently in making \$20,572,000 in seismic modifications to Unit 3 without assurance from the NRC that it would be allowed to operate the plant after making these modifications.

3. Whether PG&E acted prudently in proceeding with \$3,450,000 of other plant modification work after the NRC modified Unit 3's operating license.

4. Whether PG&E should recover \$10,586,000 in seismic, geologic, and economic studies made after the NRC closed

Unit 3 although these studies never convinced the NRC that PG&E should be permitted to reopen the plant.

5. Whether PG&E should recover AFUDC on expenditures which were never transferred to plant in service.

6. Whether PG&E should recover SAFSTOR expense of \$9,717,000 for 1984 and 1985.

V. Positions of the Parties

A. PG&E

PG&E argues that each of its decisions on Unit 3 was prudent at the time it was made; therefore, PG&E believes it should recover all Unit 3 expenditures with a return.

1. PG&E's decisions to do geologic and seismic studies and work were well-supported.

PG&E relies primarily upon two economic studies of Unit 3 made by the company in August, 1973, and June, 1975. These two studies showed breakeven costs for Unit 3 of \$15.8 million (August 1983 study) and \$61.2 million (June 1975 study). From these studies, PG&E decided that due to the projected cost of replacement fuel, the company could economically spend as much as \$15 and \$61 million in its efforts to keep Unit 3 operating. PG&E submits these two economic studies validate the company's decisions to spend money on geologic and seismic studies and work to meet the NRC's seismic safety concerns.

PG&E asserts that the NRC, through its staff, at times expressed a positive view of the company's seismic program. PG&E believes the NRC's encouraging statements further supported PG&E's decisions to pay for geologic and seismic studies and work.

PG&E claims that its early commitments to the NRC to do seismic studies and work kept Unit 3 open from January, 1974, to July, 1976. According to PG&E, without these commitments the NRC might have closed the plant. During this period, PG&E estimates that Unit 3 generated \$11,606,000 in fuel savings.

With respect to the staff evidence, PG&E points out that Mr. Randhawa, the staff engineer, found that all of PG&E's decisions and expenditures were prudent. In addition, Mr. Hitti, the staff accountant, has recommended that only \$4,491,372 of seismic modification work should be disal-

lowed. PG&E concludes that these two staff witnesses, who reviewed PG&E's decisions have determined that nearly all of the decisions were prudent.

PG&E disagrees with Mr. Hitti's recommended disallowance of \$4,491,372 for several reasons. First, PG&E contends that Mr. Hitti did not consider the company's June, 1975 economic study. This study indicated that the company could economically spend as much as \$43,437,000 to keep the plant operating for ten years or \$61,200,000 to keep the plant operating for 25 years. PG&E argues that Mr. Hitti's review was fatally limited since he admittedly did not consider the compelling economics of Unit 3's fuel savings.

Second, PG&E disputes Mr. Hitti's assertion that PG&E proceeded with seismic modification work before receiving adequate guidelines from the NRC for restarting the plant. PG&E claims the NRC's actions in orders, memoranda, and meetings did give PG&E sufficient assurance that it was moving in the right direction. PG&E also points to its meeting *5 with the NRC staff as further evidence of the positive response to PG&E's proposed work.

Finally, PG&E submits that Mr. Hitti has not recognized the NRC's past practices. PG&E states that since 1969, the NRC has repeatedly raised seismic and geologic questions about the Humboldt site. And each time PG&E agreed to do additional studies and work, PG&E claims the NRC allowed the plant to stay in operation. PG&E emphasizes that the NRC's established practice of allowing continued operation as long as PG&E committed to resolving the NRC's concerns is an important consideration. To keep Unit 3 on line, PG&E says it committed to carry out the seismic modifications and it was then obligated to fulfill these commitments.

2. Commission policy allows rate base recovery of a prematurely retired plant's expenses.

PG&E's second major argument for the recovery of all Unit 3 expenditures is that long-standing Commission policy permits rate base recovery when a plant does not match its estimated useful life.

PG&E asserts that it currently has 36 plants which have exceeded their estimated useful lives. PG&E points out that the ratepayers receive energy and capacity savings from these plants while paying very low fixed costs since the plants are fully depreciated. Thus, PG&E submits that commission policy has given ratepayers all the benefits

when plants exceed their expected useful lives.

Similarly, PG&E contends the Commission assigns to ratepayers the costs of plants which do not meet their useful lives and are prematurely retired. PG&E's witness Smith testified that plants which are prematurely retired are removed from plant in service. However, the undepreciated plant balance remains in rate base over the remaining life of the account. PG&E maintains that any losses from premature plant retirement are borne by the ratepayers.

PG&E cites a New York Public Service Commission decision as a suitable guideline for this proceeding. In that decision, the New York Commission allowed Consolidated Edison to place the undepreciated balance of the prematurely retired nuclear unit Indian Point 1 in rate base. (Opinion No. 81-4, Case 27744, issued March 12, 1981.)

3. Unit 3 should not receive the ratemaking treatment given to abandoned projects.

PG&E argues that staff's characterization of Unit 3 as an abandoned project is wrong. PG&E points out that none of the precedents cited by staff involve a plant that was on line and served customers. PG&E emphasizes that Unit 3 is clearly distinguishable since it is a completed constructed project that served its customers for 13 years.

PG&E also disagrees with the staff recommendation that since Unit 3 is an "abandoned plant," no AFUDC should be recovered.

PG&E points out that prior Commission disallowances of AFUDC were confined to pre-construction expenditures. PG&E believes Unit 3 does not fall into this category of "abandoned plant" since it operated for many years.

PG&E states that all of the outstanding Unit 3 costs should be tested against the standard of prudence. If these costs are shown to be prudently incurred, then PG&E asserts it is entitled to recover all of the costs including accrued AFUDC.

4. PG&E should recover the requested SAFSTOR expenses.

*6 PG&E requests recovery of all SAFSTOR expenses for 1984 and 1985. PG&E points out that staff witness Coughlin agreed that the company's SAFSTOR plan is the

only feasible alternative at this time. PG&E concludes that the SAFSTOR expenses are legitimate costs which should be approved and entered into rate base.

B. Staff

Staff makes four separate recommendations.

1. As a matter of policy, the Commission should disallow all AFUDC related to Unit 3.

Staff witness Thompson states that the cost of retiring Unit 3 is an abandonment cost. According to Thompson, Commission ratemaking policy provides for recovery only of an abandoned plant's direct costs over a four-year period with no return during the amortization period. Under this policy, the shareholder is at risk for accrued AFUDC and carrying costs during the amortization period, and the ratepayer is at risk for the direct costs. According to Thompson, accrued AFUDC which should not be allowed amounts to \$27,333,000.

Thompson asserts that PG&E was not obligated to spend money in an attempt to restart Unit 3. The expenditures for the geologic and seismic upgrades and studies were entirely management's decisions. Therefore, Thompson asserts management should accept the risk of not recovering accrued AFUDC.

Thompson further recommends that the Commission should establish a policy of removing from rate base utility plant which goes out of service for extensive repairs. Under this proposal AFUDC would accrue at the discretion of utility management and not by Commission directive. Thompson argues that utility management is in the best position to assess the probability of successful completion of a project. Therefore, management can best determine if AFUDC accrual is appropriate. Thompson believes that automatic reporting of AFUDC on plant which is unlikely to go back into service is a misrepresentation on a utility's financial statements.

2. PG&E's decisions to make plant modifications and to conduct geologic and seismic studies were not unreasonable.

Staff witness Randhawa asserts that if one reviews PG&E's actions in the context of the energy climate of the 1970's, then PG&E's actions do not appear unreasonable. Randhawa points out that the Arab oil embargo of late

1973 had exposed the nation's dependency on foreign oil. Randhawa notes that then President Nixon identified nuclear energy as the major alternative to fossil fuel energy. Furthermore, Randhawa observes that in 1976 statewide energy demand was expected to increase 4.8% each year until 1985. During this energy climate of increasing demand and promoting nuclear power over oil generation, Randhawa believes that PG&E's efforts to restart Unit 3 were not imprudent.

3. The expense of seismic modification work undertaken after the NRC issued its May 1976 order modifying Unit 3's license should be disallowed.

Staff witness Hitti recommends that \$4,491,372 in seismic modification work and \$3,100,135 in related AFUDC should be disallowed.

Hitti points out that prior to its May 1976 order the NRC on two occasions had rejected PG&E's geologic studies of the plant site. After the NRC in its May 1976 order required resolution of these geologic concerns prior to a restart of *7 Unit 3, Hitti asserts PG&E imprudently contracted for seismic modification work with Wismer and Becker. Hitti found that PG&E proceeded with this work before the company had any assurance from the NRC that it would be allowed to restart Unit 3 after the work was completed. Since the NRC twice previously had found PG&E's geologic studies to be inadequate, Hitti believes PG&E should not have undertaken any seismic modification work until all of the NRC's concerns on the site geology had been met.

Hitti also recommends that the cost of the geologic studies should be allowed since these studies were necessary to resolve the NRC's concerns on site geology.

4. The entire \$34.6 million in Unit 3 expenditures from 1975 to 1983 should be disallowed.

Staff counsel Cagen maintains that all physical modifications to Unit 3 made in 1975 and thereafter were imprudent. He submits that all of these expenses should be disallowed.

Cagen argues that all of these expenditures were useless since they were never put in service. All of the modifications were completed after 1976, and the NRC never permitted the plant to reopen after 1976. Cagen asserts PG&E should have known that the NRC could close Unit 3. Therefore, the company should not have made expensive

modifications to the plant.

Cagen points out the NRC as early as 1968 had expressed concern over the presence of faults near the plant site. In 1971, the NRC notified PG&E that exploratory oil well drilling had shown that a fault might pass directly under the plant site. The NRC asked PG&E to provide additional geological information on the plant site. PG&E then provided the NRC with a study by geologists Dr. Hamilton and Dr. Curtis. However, the United States Geological Survey (USGS), an advisor to the NRC, flatly disagreed with the findings in the Hamilton-Curtis report. The USGS stated that the PG&E geologists had not shown that several faults near the plant site were inactive. Also, USGS believed geologists had not shown that the existence of other fault systems could be discounted.

Cagen also points out that in 1973 PG&E was aware some NRC staff members suggested that Unit 3 should be shut down because of seismic safety questions. In June 1973 PG&E engaged Earth Science Associates (ESA) to review site geology. ESA told PG&E that the USGS position on site geology was inconsistent with the positions taken by PG&E's geologic consultants.

Cagen notes that in early 1974, the geological situation was so uncertain PG&E's management stated in internal memorandums that the company "should spend as little money as possible" on Unit 3. According to Cagen, PG&E also knew the NRC would close Unit 3 if the company was unable to demonstrate that surface faulting was not a risk.

On May 21, 1976, the NRC issued its order modifying the Unit 3 license. The order specifically required geological studies. Thus, Cagen submits, PG&E knew that Unit 3 could not reopen until these studies were completed and accepted by the NRC. Cagen asserts that PG&E went ahead with expensive seismic modifications despite these significant hurdles. Cagen argues that PG&E's decision to proceed with the modifications was imprudent since PG&E had no reasonable assurance that the NRC would permit the plant to reopen.

By July 1, 1977, ESA had completed additional studies which attempted to show that surface faulting was not a risk. *8 On August 5, 1977, the NRC staff informed PG&E that it would recommend closure of Unit 3. The NRC staff relied upon the USGS interpretation of site geology and concluded that Unit 3 must be designed to withstand surface faulting.

According to Cagen, the game now was over, but PG&E refused to quit. Cagen points out that PG&E spent another \$9,811,000 with AFUDC of \$3,218,000 for additional geologic studies. These studies did not change the NRC's position on site geology and actually validated some of the USGS' positions on the potential for active faults.

Cagen argues that PG&E consistently did not pay enough attention to the opinion of the NRC, USGS, and other agencies. If PG&E had paid attention, Cagen submits the company would not have squandered substantial sums on Unit 3. Cagen concludes that PG&E's shareholders should pay for these imprudent expenditures.

C. Redwood Alliance

The Alliance believes that virtually all Unit 3 expenditures after May 1976 were imprudent and should be disallowed. The Alliance asserts that the key issue is whether PG&E reasonably thought it could convince the NRC that the plant site was seismically suitable. The Alliance asserts that by May 1976, the questions about geology and seismic safety had become so serious that no further physical work on Unit 3 should have been done. And once the NRC staff took an adverse position in August, 1977, the Alliance contends that no further expenditure should have been made.

The Alliance recommends that all expenditures after May 1976, apart from the 1976-77 ESA study, should be disallowed. The Alliance figures that \$40,469,000 in Unit 3 costs should be disallowed.

The Alliance also argues that PG&E should not recover any AFUDC because PG&E knew when it built Unit 3 that the site had geologic and seismic questions. Because these questions eventually led to the plant's closure, the Alliance believes that PG&E's shareholders should not recover any AFUDC.

The Alliance supports most of the staff's disallowance recommendations. In addition, the Alliance believes that \$8.5 million of SAFSTOR expense should be allowed.

VI. Discussion

1. PG&E should recover the remaining net plant investment of Unit 3 amounting to \$17,185,000 over a four-year period with no return allowed.

[1] The parties agree that PG&E should recover Unit 3's remaining net plant investment. The parties, however, differ as to whether PG&E is entitled to a return on this investment and the accrued AFUDC.

PG&E believes that rate base treatment is warranted since ratepayers are receiving benefits from other plants which have exceeded their estimated useful lives and still are operating. PG&E presently has 36 plants which have exceeded their estimated useful lives and are providing "extra service" to customers at minimal cost. Conversely, PG&E believes customers should pay a full return on plants such as Unit 3 which are prematurely retired and no longer are providing any service to customers. To PG&E, ratepayers should pay for the full cost of plants which are prematurely retired since they receive all the benefits of plants that operate beyond their projected useful lives.

Staff and the alliance reject PG&E's equity argument.

Staff believes that nuclear power plants *9 should be looked at separately from PG&E's other resources. To staff, other resources such as hydroelectric power plants represent smaller investments which generally are not as closely scrutinized as nuclear plants in ratemaking proceedings. To the extent such hydroelectric power plants are prematurely retired, the rate impact is insignificant. However, staff submits that the cost of prematurely retired nuclear plants is significant.

Staff acknowledges that some hydroelectric power plants have exceeded their estimated useful lives and offset the rate impact of any prematurely retired hydroelectric plants. However, staff points out that so far no nuclear power plant has exceeded its estimated useful life. Therefore, there is no rate balancing through an averaging of nuclear plants' service lives.

Staff also argues that the quantity of service received from a plant is important. Otherwise, staff points out that a plant which operates for just two weeks of its estimated 30-year service life would receive the same ratemaking treatment as a plant which actually operates for 30 years. Accordingly, staff believes the commission should recognize for ratemaking purposes that Unit 3 operated for less than half of its estimated service life.

Staff further contends that a plant which is shut down forever is no longer "used and useful" and must be removed from rate base.

The Alliance argues that Unit 3 is an unmitigated failure for which no return should be paid. To the Alliance, Unit 3's total costs will far exceed the benefits from its fuel savings by as much as \$100 million. Under these circumstances, the Alliance submits that the shareholders are not entitled to any return on their investment.

We agree with staff that Unit 3 is no longer "used and useful" and should be excluded from rate base. While Unit 3 did operate for 13 years, it will never operate again and can no longer be considered "useful" utility plant. Unit 3 was entered into rate base under the assumption that it would serve customers for 30 years. Shareholders were entitled to a return and ratepayers were liable for the full ownership cost as long as Unit 3 operated as expected. Once the plant was closed in 1976, Unit 3 no longer qualified for inclusion in rate base and was eventually and properly removed from rate base in 1979. We will not deviate from the Commission's well-established principle that only "used and useful" utility plant shall be concluded in rate base.

With respect to PG&E's equity argument, we observe that plants which have exceeded their estimated useful lives have been fully depreciated. Thus, the shareholder already has recovered his entire investment and a fair return on that investment from the ratepayer. The ratepayer who has paid for the entire plant is entitled to receive any additional benefit from the plant's continued operation. In the case of a premature retirement, the ratepayer typically still pays for all of the plant's direct cost even though the plant did not operate as long as was expected. The shareholder recovers his investment but should not receive any return on the undepreciated plant. This is a fair division of risks and benefits.

PG&E should therefore recover the remaining net plant cost of \$17,185,000 over a four-year amortization period as recommended by staff. No return on the unamortized balance should be allowed.

Unit 3 has \$7,185,000 in AFUDC accumulated from December 19, 1979, the day it was removed from rate base, up to May 18, 1983, the day the Commission *10 stopped any further AFUDC accrual. Even though Unit 3 was closed in 1976, the inoperative plant remained in rate base through 1979. PG&E could have requested amortization of the remaining net plant investment after the Commission removed Unit 3 from rate base. Instead, PG&E chose to accrue AFUDC while it attempted to reopen the plant.

Since PG&E failed in its efforts to reopen the plant, the \$7,185,000 in AFUDC cannot be recovered in rate base. We see no reason to reward PG&E for its decision by allowing recovery of the AFUDC at this time. PG&E's management and the company's shareholders are responsible for the accrued AFUDC.

We should point out that our disallowance of this portion of AFUDC affects only for the time after our decision to remove Unit 3 from rate base. The AFUDC which accrued on the original construction costs was placed into rate base along with the prudently incurred construction costs and is a portion of the \$17,185,000 which we are allowing PG&E to recover. Thus, PG&E will have recovered *all* of its original construction costs and associated AFUDC within four years. In addition, PG&E has already recovered a return on the undepreciated plant, which includes the original AFUDC, from the start of commercial operation through December 19, 1979, when we removed the plant from rate base. PG&E thus continued to earn a return on its original investment and associated AFUDC for over three years after the plant ceased operating. We find no compelling reason to allow a further return on PG&E's investment.

2. PG&E imprudently made seismic modifications to Unit 3 after the NRC's May, 1976, order without sufficient assurance from the NRC that it would be allowed to reopen the plant upon making these modifications.

[2] On May 21, 1976, the NRC modified Unit 3's operating license and imposed two requirements for continued power operation. The NRC first required PG&E to upgrade Unit 3's seismic qualification to 0.25 g Operating Basis Earthquake (OBE). The NRC's second requirement was more open ended. The NRC stated that:

. . . recently developed information indicates that the geological character of the Humboldt area may be substantially different than what was believed at the time of the license assurance. Additional and timely investigations are needed to resolve the following concerns:

1. Determination of the location and the capability of the Bay Entrance and Little Salmon faults according to Section III g of Appendix A to 10 CFR Part 100;
2. The tectonic significance of the offsets in the ravine at Humboldt Hill and the quarry at Fields Landing;

3. The tectonic significance of the Freshwater and Table Bluff fault; and

4. The distribution of earthquakes in the region and their relationship to faulting.

Each of the above concerns was to be resolved before Unit 3 would be allowed to reopen.

The NRC's second requirement for resolution of specified seismic questions presented the possibility that a new interpretation of site geology would emerge and a new seismic design standard could be imposed on Unit 3. If this occurred, PG&E clearly would not be allowed to reopen Unit 3 even if the modifications for a 0.25 g OBE seismic qualification had been made.

The seismic questions raised in the NRC's May, 1976, order first appeared *11 in a July, 1971, disclosure of new geological data from exploratory oil drilling. Thus, it should have been apparent to PG&E well before the NRC's 1976 order that seismic questions had arisen which could bring about the plant's closure.

Under these circumstances, it was imprudent for PG&E to proceed with the seismic modifications after the NRC had imposed other significant conditions on Unit 3's operation. PG&E should not have proceeded with plant modifications unless it was reasonably sure it could meet all other requirements for keeping the plant in operation. This certainly was never reasonably assumed since the NRC had consistently rejected PG&E's prior geologic interpretations. While the NRC at times indicated that PG&E's seismic programs would be enough to resolve the seismic questions, the NRC never stated that PG&E's position on geology had any merit and would eventually be accepted. A prudent utility manager would have known that the seismic modifications would be useless if the very serious seismic questions were not resolved in PG&E's favor.

We note PG&E's claim that its early commitments to the NRC to make the seismic modifications kept Unit 3 operating an extra year or two. PG&E asserts that from 1973-75 more than \$2 million was spent on seismic design review to keep the NRC from closing Unit 3. To the extent these expenditures were necessary to keep Unit 3 operating, PG&E should have obtained concurrent rate relief in its general rate proceedings. Expenditures made to keep a plant in operation are simply an operation and maintenance expense. However, we will permit PG&E to recover the seismic study and design expenses incurred before the May

1976 order since PG&E apparently believed that its commitments to do this work kept Unit 3 open and would extend its operating life. Since the NRC did not actually modify Unit 3's operating license until May 1976, it is unclear whether the NRC would have closed the plant if PG&E had not started this work. The disallowed cost of seismic modifications made after the May 1976 order is \$4,491,372.

3. PG&E should recover the cost of other plant modifications that were incurred before the NRC's May 1976 order.

PG&E made four nonseismic plant modifications; \$3,204,000 off-gas system modification (GM No. 182721), \$136,000 standby gas treatment modification system (GM No. 186547), \$118,000 fire protection system upgrade (GM No. 186341), and \$2,000 new emergency condenser actuation valve (GM No. 185828). Of these amounts, \$1,785,000 was expended before the NRC issued its order modifying Unit 3's license.

As discussed earlier, we find that after the May 1976 order, a reasonable utility manager would not have spent any money on plant modifications until the NRC's stated concerns had been successfully resolved. Accordingly, PG&E's discretionary expenditures after this order were imprudent and should not be allowed in rates. We will disallow all of these expenses amounting to \$1,675,000.

4. PG&E should recover the cost of geologic and seismic studies.

[3] PG&E in its brief asks \$10,586,000 in geologic and seismic studies from 1978 to 1983. These studies were made to determine if the NRC's specified concerns on site geology in its May 1976 order could be resolved.

Staff and the Alliance contend that the study costs should be disallowed. Staff counsel recommends that all such costs *12 incurred from 1978-83 should be disallowed because the NRC already had ruled that Unit 3 must be designed to accommodate surface faulting. Staff counsel argues that PG&E's prior failures before 1978 to persuade the NRC made any subsequent expenditures a poor risk. The Alliance joins staff in this argument stating:

...after approximately ten years of intensive study and the expenditures of millions of research dollars, PG&E's attempt to rehabilitate the plant site had ended in total rout. After the August 1977 order PG&E surely should have

halted all non-NRC ordered expenditures at the plant. But again, PG&E pushed on ahead with questionable expenditures.

The August 1977 order referred to by staff and the Alliance was a letter to PG&E from Edson G. Case, acting director of the office of Nuclear Reactor Regulation. In his letter dated August 5, 1977, Mr. Case informed PG&E that:

Based on our evaluation of currently available information and consistent with the recommendations of the U.S. Geological Survey, the NRC staff cannot conclude with reasonable certainty that shear failure displacement caused by earthquakes will not occur at the plant site during the remaining lifetime of this facility. Based on this conclusion, we have determined that Humboldt Bay Unit No. 3 must be suitably designed to withstand the effects of surface faulting. In addition, the design against vibratory ground motion may need to be substantially upgraded.

To staff and the Alliance this NRC letter spelled the end for Unit 3. They believe that after receipt of this letter PG&E should have decommissioned Unit 3.

In view of our prior finding that PG&E was imprudent in proceeding with plant modifications before site geology was defined to the NRC's satisfaction, we are reluctant to say PG&E's decision to proceed with further geologic and seismic studies was wrong even after the August 1977 NRC letter. Resolution of the seismic questions should have been PG&E's first priority ever since the possibility of faults near the plant site was discovered in July 1971. Despite the NRC's pronouncement in August 1977, we cannot say that PG&E should have abandoned all attempts to bring Unit 3 on-line. If allowed to operate, Unit 3 had the potential of generating considerable fuel savings when compared to the cost of replacement power. Thus, PG&E had reason to pursue even the seemingly remote chance of overturning the NRC's determinations on site geology. We will permit PG&E to recover the cost of geologic and seismic studies.

5. PG&E should recover various capitalized expenditures.

After the Humboldt plant was removed from rate base in 1979, we ordered that expenditures for nuclear fuel costs, nuclear insurance costs, and operation and maintenance should be recorded in the memorandum account that had been established for capital costs. (D.91107, D.93887, and D.83-05-051.) PG&E has requested recovery of \$8,705,000 in direct costs and \$1,069,000 in related

AFUDC. The other parties did not dispute the amount of direct costs recorded in the account, and we will authorize recovery of the direct costs.

6. No AFUDC should be recovered on plant which was never entered in service.

[4] We believe no AFUDC should be recovered on plant which is never entered into service. Modifications to an operating plant which are never entered *13 in service are not "used and useful." The ratepayer must pay the direct cost to the extent the expenditure was prudent, and the shareholder is at risk for the associated carrying cost or AFUDC.

We will not alter this long-standing risk allocation between ratepayers and shareholders. While ratepayers should pay for prudently incurred direct costs of modifications even if the plant never provides any additional service, the shareholder will receive a return and recover accrued AFUDC only if the plant is entered into rate base as "used and useful" plant. This principle fairly allocates risk and provides the proper incentives to utility management.

We recognize that prior Commission decisions disallowing AFUDC dealt primarily with the preconstruction expense of abandoned plants. However, we see no meaningful distinction between preconstruction, construction, and modification work on plant which is never entered in service. The overwhelmingly important criterion is whether plant is "used and useful" and has a demonstrated capability of providing service to customers. The plant modification work on Unit 3 never was entered in service as "used and useful" plant. Accordingly, no AFUDC should be allowed.

7. PG&E should recover the estimated SAFSTOR expense.

No party objected to PG&E's recovery of SAFSTOR expense. Accordingly, we will permit PG&E to recover this amount subject to a later reasonableness review. We will adopt PG&E's SAFSTOR estimate of \$9,717,000.

Findings of Fact

1. Unit 3 operated for 13 years of its estimated 30-year life.
2. On May 21, 1976, the NRC issued an order modifying Unit 3's operating license. The NRC order required reso-

lution of specified seismic and geologic issues before Unit 3 could resume operation.

3. The seismic and geologic issues stated in the NRC order had been raised first in July, 1971, after new geologic data from exploratory oil drilling was disclosed.

4. From 1971 to 1976, all of PG&E's efforts to meet the NRC's various concerns about site geology and seismic safety had been rejected by the NRC.

5. During this time period, an important adviser to the NRC, the USGS, consistently disagreed with the findings of PG&E's geologic consultants.

6. The NRC never indicated to PG&E after issuance of its

GM 185157 seismic modification	\$4,491,372
GM 182721 off-gas system modification	1,419,000
GM 186341 fire protection system modification	118,000
GM 186547 standby gas treatment system modification	136,000
GM 185828 new emergency condenser actuation valve	2,000
Total	<hr/> \$6,166,372

10. PG&E's expenditures on plant modifications prior to the NRC order may have kept Unit 3 open. It is unclear whether the NRC actually would have closed Unit 3 if PG&E had not made these expenditures.

11. PG&E's decisions to spend money on geologic and seismic studies after the NRC order are supported by several economic analyses although the likelihood that the NRC position on site geology could be changed was small.

12. No party has objected to PG&E's recovery of Unit 3's remaining net plant investment or various capitalized expenditures.

13. All parties agree that PG&E's SAFSTOR plan is reasonable.

14. Ratepayers are responsible for all prudently incurred direct costs; shareholders must bear all imprudently incurred direct costs.

May 1976 order that PG&E would be allowed to restart Unit 3.

7. PG&E should have known after receipt of the NRC order that it would not be permitted to restart Unit 3 until the NRC's specified concerns on site geology had been favorably resolved.

8. PG&E's expenditures on plant modifications after May, 1976, were imprudent since the company was not reasonably assured that these modifications could ever be placed in service.

9. The following expenditures were made after the NRC's order and should be disallowed:

15. Ratepayers pay for all accrued AFUDC and a return on plant entered in service; shareholders are liable for accrued AFUDC on plant which is never entered in service and are not entitled to any return.

16. A utility may earn a return only on "used and useful" plant which is part of a utility's rate base.

17. Unit 3 was not "used and useful" utility plant after the NRC issued its May 1976 order and was properly removed from the rate base.

18. PG&E should recover the allowed retirement expense over a four-year amortization period as recommended by staff.

Conclusions of Law

1. The Commission is obligated to exclude from rate base

plant which ceases to be "used and useful."

2. Investors are not entitled to a return or AFUDC on utility plant which ceases to be "used and useful."

3. A plant's prior service does not qualify the plant as "used and useful"; the plant's current capability of providing service to customers is the important criterion.

ORDER

IT IS ORDERED that:

1. Pacific Gas and Electric Company (PG&E) shall recover from its ratepayers the remaining net plant investment, the cost of plant modifications incurred before May 1976, the cost of geologic and seismic studies, and other capital expenditures over a four-year amortization period. PG&E shall file tariffs for the CPUC jurisdictional amount as shown in Appendix A.

2. PG&E's shareholders shall absorb the cost of plant modifications incurred in May 1976 and thereafter as imprudent expenditures. The disallowed cost is shown in Appendix A.

3. PG&E's shareholders shall not recover any accrued AFUDC since the plant was never returned to service.

4. PG&E shall recover its estimated SAFSTOR expense subject to reasonableness review in a manner to be determined in the Phase II hearings.

This order is effective 30 days from today.

Dated August 21, 1985, at San Francisco, California.

DONALD VIAL

President

VICTOR CALVO

PRISCILLA C. GREW

WILLIAM T. BAGLEY

FREDERICK R. DUDA

Commissioners

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