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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

March 25, 1981

Docket Nos. 50-369
and 50-370

RECEIVED
MAR 27 1981
U.S. NUCLEAR REGULATORY COMMISSION

Duke Power Company
ATTN: Mr. William O. Parker, Jr.
Vice President - Steam Production
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Dear Mr. Parker:

As you are aware, the U.S. Congress requires that the Nuclear Regulatory Commission provide the Subcommittee on Energy and Water Development a monthly report on the major actions taken on operating reactors and on licensing reviews of new facilities. In a letter dated February 17, 1981, the Subcommittee on Energy and Water Development requested that the monthly report be amended to include various information for each impacted plant. One category of additional information requested is the utility's best estimate of the monthly cost to maintain each impacted unit in an inactive status while awaiting a full power operating license.

It is requested that you provide such an estimate including separate costs of replacement energy and the capital expense during the delay period. The NRC will provide the information received to Congress. For your information, enclosed is NRR's estimate of the cost of delay which we plan to include in the March 1981 report to Congress.

Your estimate should be provided orally to the Project Manager by noon Friday, March 27, 1981 and confirmed in writing by April 3, 1981. Please follow format enclosed in providing this information.

Sincerely,

Robert L. Tedesco, Assistant Director
for Licensing
Division of Licensing

Enclosure:
NRR's Estimate of Cost
of Delay

cc: See next page

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COST OF DELAY

Table 1* identifies ten nuclear units where the estimated construction completion date precedes the completion of the licensing effort. The NRR staff was asked to develop estimates of the costs that will be incurred as a result of these licensing delays. These estimates appear in the attached Table 2. One should be cognizant that the estimates are highly sensitive to underlying assumptions which are subject to much uncertainty (fuel price escalation, sources of replacement energy available, expected performance of the nuclear unit in its initial commercial start-up, etc.). Thus, the values reported in Table 2 should only be viewed as benchmark estimates.

Cost of Replacement Energy

The selection of an alternative energy source is not something one can readily predict. Logically, the utility will rely upon the least expensive alternative available. However, what is available will depend on the system capacity mix and the demands existing on the system during the delay period. Depending on these factors, replacement energy may be supplied by some combination of base, intermediate, and peaking units utilizing varying fuel sources, or thru outside purchases.

For the purpose of this assessment, the staff has assumed that all replacement energy will be made-up by capacity already on the applicant's system. Where a system is heavily committed to a particular energy source, replacement energy is viewed as coming totally from that source. If a system's capacity is heavily distributed among two or more fuel sources, the replacement energy is assumed to be equally distributed among those energy sources.

It is assumed that the nuclear unit would have operated at an average capacity factor of 60% during the delay period. The fuel costs in mills per kWh are based on the following assumptions. The fuel cost for coal, oil, and natural gas is based on actual values (¢ per MM BTU) paid by each utility as of June 1980. These values were converted to mills per kWh based on average plant heat rates of 11,000 BTU per kWh for oil and gas-fired plants and 10,000 BTU per kWh for coal fired plants. These costs were then escalated at a nominal 10% per year to reflect estimated costs in the 1981-83 timeframe. The nuclear fuel cost is based on a 1977 estimate of 7.83 mills per kWh (assumes no recycle), and escalated at a nominal rate of 5% per year to reflect estimated cost in the 1981-83 timeframe. These nuclear fuel cost assumptions are based on Table 11 of NUREG -0480 (Coal and Nuclear: A Comparison of the Cost of Generating Baseload Electricity by Region).

Capital Expense During the Delay Period

The capital expense represents the interest charges associated with carrying the capital investment during the delay period. For the purposes of this analysis it is assumed that interest accrues on the completed capital cost of the facility at the annual rate of 10% per year. It is our position that this does not represent a real cost to the utility or its ratepayers but rather shifts the financial burden from one group to the other (transfer payments) and shifts payments in time. Thus for example, if during the delay

* not enclosed

period the state PUC does not allow the interest payments to be passed through to the ratepayer, the stockholders and the utility will be required to absorb this cost as it is incurred. However, once the nuclear unit does become operational, these additional interest charges will be capitalized and recovered by the utility and its stockholders over the unit's useful life. However, because of current cash flow considerations the utility would prefer that the ratepayer absorb the capital expense as soon as practical. Alternatively, whereas the ratepayers will be relieved of carrying the capital cost of the unit during the delay, they will be assessed higher carrying charges in the future once the unit becomes operational. It is argued that what they will be saving in carrying charges during the delay period can be invested by them at the current opportunity cost of money to enable them to repay the additional carrying charges of the future.

This neutral position with respect to increased capital expense is subject to a number of simplifying assumptions:

a. During the period of delay, the money retained by customers which would otherwise be paid in rates if the unit were operating can be invested at financial returns equivalent to those costs paid by the utility in carrying the plant in its construction work in progress account.

b. There is adequate regional power supply in the short-term such that there is no need to make real economic resource commitments to expedite completion of other generating capacity.

c. The delayed nuclear unit does not deteriorate during the delay period such that its useful operational life is shortened.

d. The delayed start-up does not result in the unit being technologically obsolete during the end of its useful life which has now been stretched out because of the delayed start-up.

COST OF REPLACEMENT ENERGY AND CAPITAL EXPENSE INCURRED DUE TO LICENSING DELAYS

(ALL COST ESTIMATES ARE IN CURRENT DOLLARS)

		COST OF REPLACEMENT ENERGY									CAPITAL EXPENSE		
		REPLACEMENT FUEL MIX %			Average Cost of Replacement Fuel	Nuclear Fuel Cost	Incremental Fuel Cost	Estimated Length of Delay	Total Replacement Energy Cost	Replacement Energy Cost Per Month	Estimated Capital Cost of Unit at Completion	Capital Expense Delay During Delay Period	Capital Expense Per Month
UNIT	MWe	COAL	OIL	GAS	Mills/kWh	Mills /kWh	Mills/kWh	Months	$1 x 10^6	$1 x 10^6	$1 x 10^6		$1 x 10^6
Summer	900	50	50		31.1	10.0	21.1	8	66.4	8.3	800	53.3	6.7
Diablo Canyon 1	1084		100		62.2	9.5	52.7	12	300.2	25.0	1050	105.0	8.8
Diablo Canyon 2	1106		100		68.4	10.0	58.4	5	141.4	28.3	840	35.0	7.0
San Onofre 2	1100		100		60.3	9.5	50.8	6	147.0	24.5	1820	91.0	15.2
Zimmer	792	50	50		44.6	10.0	34.6	3	36.0	12.0	1030	25.8	8.6
McGuire 1	1180	100			16.9	9.5	7.4	11	41.8	3.8	770	70.6	6.4
Susquehanna 1	1050	50	50		37.2	10.0	27.2	8	100.0	12.5	1840	122.7	15.3
Waterford 3	1110		100		50.7	10.5	40.2	3	58.5	19.5	1230	30.8	10.3
Shoreham 1	820		100		41.3	10.0	31.3	1	11.2	11.2	2210	18.4	18.4
Comanche Peak 1	1150			100	26.6	10.5	16.1	2	16.2	8.1	1120	18.7	9.3

*See accompanying text for explanation and underlying assumptions