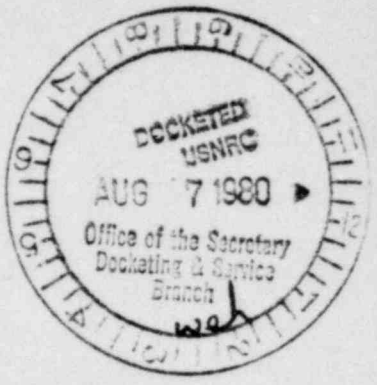

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of:	)	
	)	
SACRAMENTO MUNICIPAL UTILITY DISTRICT	)	Docket No. 50-312(SP)
	)	
(Rancho Seco Nuclear Generating Station)	)	
	)	
	)	

STATEMENT OF THE CALIFORNIA ENERGY COMMISSION IN SUPPORT OF ITS PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

The Rancho Seco Nuclear Generating Station represents an important component of the baseload generating capacity in central California. Rancho Seco serves several hundred thousand ratepayers of the Sacramento Municipal Utility District ("SMUD") and also provides power to other utilities in this region. Accordingly, it is very much in the public interest that Rancho Seco continue to be a reliable source of electric power.

The March 28, 1979, accident at the Three Mile Island ("TMI") facility has raised serious questions regarding the long-term reliability of Babcock and Wilcox designed nuclear power plants such as Rancho Seco. Over the remaining 34 years of its operation, Rancho Seco will experience approximately 100 feedwater disturbances similar to the initiating event of the TMI accident. Because of Rancho Seco's Babcock and Wilcox design, a feedwater disturbance will likely cause rapid changes in the pressure and temperature in the reactor's

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primary cooling system. These rapid temperature and pressure changes may, in turn, present severe challenges to Rancho Seco's operators and its safety systems. If on one of these occasions, the operators or the safety systems do not respond properly, the result may be a serious accident. This is what occurred at Three Mile Island.

One month after the TMI accident, the Nuclear Regulatory Commission ("NRC") Staff concluded that there was not reasonable assurance that B&W plants, including Rancho Seco, could respond safely to feedwater disturbances. The Staff noted that B&W facilities are more "sensitive" to these events than other reactor designs, thus increasing the likelihood that these events at Babcock and Wilcox designed facilities will have serious safety consequences. Accordingly, the NRC Staff recommended that all Babcock and Wilcox reactors be shut down until sufficient short-term modifications were made to ensure that these facilities could be operated safely in the short term. In addition, the Staff stated that additional long-term improvements would be required to ensure that the public health and safety are protected. The Staff stated:

> "In the long-term, we must either reduce the sensitivity of the response of B&W plants to transients by design changes, or substantially upgrade the instrumentation and controls available to the plant operator and substantially upgrade plant operator education, training, and experience."

The NRC's May 7, 1979, Order shutting down Rancho Seco, which has been the central focus of this proceeding, was based upon these Staff concerns. Much has been learned and accomplished

in the fifteen months since the Staff reached the foregoing conclusions. SMUD has completed short-term modifications, plus has accomplished a large number of studies and other modifications. That work continues at this time. This extensive effort, however, has also confirmed the uncertainties and sensitivities identified earlier. This spring, an NRC Staff Task Force, created to reexamine the response of B&W plants to feedwater disturbances, concluded that despite the post-TMI efforts, B&W plants are still "more responsive to secondary side perturbations than other pressurized-water reactors". The Task Force also concluded that:

> "Based upon the design features and faster response of B&W plants during transients and upset conditions, the operators may be required to take more rapid action and have a better understanding of instrument response than operators on plants having other designs."

Thus, the statement made fifteen months ago by the NRC Staff remains valid today: to ensure a safe response to the feedwater disturbances that inevitably will occur at Rancho Seco, SMUD must either reduce the plant's sensitivity to these events or substantially upgrade the ability of its operators to cope with them.

The Energy Commission first became concerned about the "B&W problem" shortly after the TMI accident, and our staff actively monitored the fast-moving events in April-June, 1979. We became more deeply concerned when the NRC Staff briefed the Energy Commission in June, 1979, just prior to the restart of Rancho Seco. That briefing highlighted to the Energy Commission that there still were many unanswered safety

questions relating to Rancho Seco. At the conclusion of the briefing, the Energy Commission resolved to participate in this case to help explore and resolve these questions.

Until today, we have taken no position on the issues before this Board. Instead, we have participated as an "interested state" to ensure that the Board has before it a complete record. To that end, we have sponsored testimony of a variety of witnesses with differing views on nuclear power: Dr. Harold Lewis of the Advisory Committee on Reactor Safeguards, Messrs. Gregory Minor and Dale Bridenbaugh of MHB Technical Associates, and three members of our staff. We have also taken the depositions of three Rancho Seco operators and have examined at length the witnesses of SMUD and the NRC Staff. The Board has stated, and we agree, that these efforts, as well as efforts of other participants, have helped to develop a comprehensive record.

The record, in our view, supports continued operation of Rancho Seco. Most of the immediate concerns that led to the shutdown of Rancho Seco in the spring of 1979 have been addressed. We are confident that Rancho Seco operators will not repeat the errors of their counterparts at TMI, given the same or similar sequence of events. Furthermore, several of the measures implemented at Rancho Seco since the TMI accident make this sequence substantially less likely.

Nevertheless, the record also convinces us that additional improvements should be made at Rancho Seco to ensure the long-term safety of the facility. The improvements we

seek generally address the more fundamental lessons of the TMI accident, namely, that operators of B&W plants require better controls, instruments, and training.

In addition to the lessons of TMI, however, we have also another serious concern. Analyses since the accident have revealed that, in order to ensure adequate core cooling during certain small break loss of coolant accidents (LOCA), the reactor coolant pumps must be manually tripped and operators must rely upon and verify that the core is being cooled by natural circulation. This raises basic concerns regarding the adequacy of the emergency core cooling system at Rancho Seco and all other pressurized water reactors. Under the pump trip procedures, Rancho Seco must rely on prompt operator actions and natural circulation coolant flow to remove decay heat from the core when degraded conditions appear. Ironically, two of the important lessons learned at TMI were that the reactor coolant pumps provide more effective core cooling than natural circulation in degraded conditions, and that operators do make mistakes.

The reactor coolant pump trip requirements, in our view, further support the repeated NRC Staff statements that the instrumentation, controls, and operator education at B&W plants must be substantially improved if Rancho Seco is to operate safely in the long-term. We emphasize that these improvements must not be empty promises. When Rancho Seco was shut down in late April, 1979, the Energy Commission and the public in general were led to believe that the short-term

modifications necessary for facility restart were the product of careful analyses which focused on only one overriding criterion: the public health and safety. However, this proceeding has revealed that the restart criteria of the May 7 Order were negotiated and that getting Rancho Seco quickly back on line took precedence over in-depth analyses to ensure that the public health and safety was protected.

With this background, then, we are today proposing that SMUD be required promptly to commence additional improvements which will further upgrade the safety and reliability of Rancho Seco. The most important of these improvements are the following:

1. The analyses of failure modes and effects of the integrated control system must be substantially revised to ensure that all failure modes, including those originating outside the ICS, are fully analyzed. The improved analyses then must serve as the basis for upgrading the ICS. Such improvements are necessary because of the crucial interactions of the ICS with other systems and the possibility that ICS failures can lead to other failures, particularly resulting from operator errors.

2. Like the ICS, the Rancho Seco auxiliary feedwater system plays an important role in response to feedwater disturbance. Indeed, it is clear that B&W plants require even more responsive and reliable AFW systems than other PWR's in view of the special B&W sensitivities. However, present reliability analyses are not complete. These analyses must

be completed so that prompt upgrade of the system to reduce failure potential may be implemented.

3. The increased reliance upon natural circulation cooling cannot be favored, as it significantly reduces the defense-in-depth available at the facility. This cooling mode also substantially increases operator responsibility, giving rise to increased possibility of operator errors. In addition, where degraded (voided) conditions are present in the primary system, as may be expected after some small break LOCAs, Rancho Seco must rely on new, relatively uncertain cooling modes. A high priority must be given to restoring use of the reactor coolant pumps and confirming the adequacy of these cooling methods.

4. There must be a significant effort to upgrade all aspects of operator and management competence including:

a. The record does not support a finding that Rancho Seco operators' competence has been substantially upgraded since TMI. There is an immediate need to upgrade these efforts. Further, criteria are sorely needed to ensure that operators are provided feedback on operating experience at other reactors and on significant industry developments and that operators receive careful and adequate instruction on new procedures that are implemented.

b. The record compels a finding that Rancho Seco management needs substantial improvement. Indeed, NRC Staff witnesses who recently completed a special investigation at Rancho Seco concluded that Rancho Seco's management has the

lowest competence rating. At a minimum, SMUD should be required to implement promptly the recommendations forthcoming from NRC's Performance Appraisal Branch.

5. Additional instrumentation needs to be developed and installed, particularly to provide core level indication, wide range pressurizer level indication, and natural circulation flow rate. This information will assist operators in assessing primary system conditions and prevent delay in taking necessary actions.

Even if the foregoing studies and improvements are made, there is no guarantee that operators and equipment will respond properly to sudden, unforeseen events. Of all the lessons of TMI, perhaps the most important is that a serious accident at Rancho Seco is possible.

If such an accident were to occur, a large portion of the overall public risk would arise from the possible failure of the containment building, leading to an uncontrolled release of radioactivity. The chances of such an event occurring at Rancho Seco are probably remote, but the potential consequences of such an uncontrolled release are, without doubt, enormous. The record of this proceeding shows that thousands of persons would be killed or suffer serious illnesses from such an event and the economic losses would run into the billions of dollars.

These disastrous consequences can be greatly reduced by controlling the release of fission products so that they can be directed to a filter. In this way, virtually all radioactivity can be kept from the environment. No party to

this proceeding presented evidence suggesting that these systems would not effectively mitigate the consequences of most containment failure accidents.

The NRC may consider the application of these filtered venting systems to reactors generally in an upcoming rulemaking. However, if this rulemaking indeed takes place it is unclear what the NRC will examine and when the rulemaking will conclude. Further, it is certain that such a rulemaking cannot consider the many site and facility specific issues necessary to determine the cost and feasibility of such a system at Rancho Seco or any other existing reactor. The NRC is giving special consideration to implementing such systems at the Indian Point and Zion reactors near New York and Chicago, respectively. Because these facilities are located near large populations, the NRC is examining the site specific feasibility of controlled, filtered venting there without awaiting a generic proceeding.

We believe that Rancho Seco also merits special consideration. Though not as populated as New York or Chicago, the area that could be affected by an accident at Rancho Seco includes heavily populated cities and some of the nation's most productive farm land. Moreover, the Indian Point and Zion reactors do not share Rancho Seco's sensitivity to feedwater transients. We believe that this sensitivity and the operating history of B&W plants* justify immediate study to examine the feasibility and costs of installing this additional protection at Rancho Seco.

SMUD, its ratepayers, and all Californians have made a substantial investment in Rancho Seco. Even apart from the potential health and safety impacts, we cannot afford an accident like TMI at Rancho Seco. Earlier in this statement, we expressed our belief that the TMI accident will not be repeated at Rancho Seco. We are equally certain, however, that if one of the 100 feedwater transients at Rancho Seco does develop into a serious challenge to its operators and safety systems, it will not mirror TMI. The short-term measures at Rancho Seco have addressed the particular events of the accident. But they have not sufficiently addressed the more fundamental issue of whether Rancho Seco will be prepared to respond to a new, as yet unforeseen, combination of events. We urge this Board to order further Rancho Seco improvements to ensure, to the extent reasonable and practical, that Rancho Seco will be able to respond safely.

Dated: August 4, 1980.

Respectfully submitted,
CALIFORNIA ENERGY COMMISSION
Original signed by

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* Only nine of the more than 60 operating reactors in the United States employ the B&W nuclear steam supply system. Yet several of the serious incidents experienced by U.S. reactors have occurred at those few plants in just the last two or three years. TMI is, of course, the most serious and well-known. But there have also been threatening occurrences at Oconee 3, Davis Besse 1, and most recently at Crystal River 3. Next to TMI itself, perhaps the most serious event at a B&W facility was the so-called "light-bulb incident" which occurred at Rancho Seco in 1978. The NRC has recently suggested that this event might have had consequences as serious as those of TMI but for a fortunate "drift" of unpowered instrumentation.