

SACRAMENTO MUNICIPAL UTILITY DISTRICT 🔲 6201 S Street, Box 15830, Sacramento, California 95813; (916) 452-3211

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۱ July 6, 1982

DIRECTOR OF NUCLEAR REACTOR REGULATION ATTENTION JOHN F STOLZ CHIEF OPERATING REACTORS BRANCH 4 US NUCLEAR REGULATORY COMMISSION WASHINGTON DC 20555

DOCKET 50-312 RANCHO SECO NUCLEAR GENERATING STATION UNIT NO 1 SEISMIC QUALIFICATION OF THE AUXILIARY FEEDWATER SYSTEM - GENERIC LETTER 81-14

Your letter of May 7, 1982 requested additional information concerning seismic qualifications of the Auxiliary Feedwater System at Rancho Seco Unit No. 1. The attached report describes these seismic qualifiactions for the items questioned. We trust that the information provided will be sufficient to allow you to complete your review.

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John J. Mattimoe Assistant General Manager MML and Chief Engineer

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Attachment

bc: J. J. Mattimoe D. G. Raasch (2) R. A. Dieterich R. J. Rodriguez R. W. Colombo L. G. Schwieger (2) 4th. Floor Files 3rd. Floor Files Gordon Deppe (Bechtel - RS, MS-208) Paul Goodman (Bechtel - Norwalk) J. V. McColligan Tom Baxter D. Kolt (B&W Lynchburg) Kris Valvekar (Bechtel - Norwalk) J. J. Field 1. J. Marino (Bechtel - RS, MS-208) JJM: JF: LJM/mw Jin 8301280257 830125 PDR ADOCK 05000312

DESCRIPTION

The attached system diagram shows the Auxiliary Feedwater System (AFWS) and its seismic boundaries of Rancho Seco Nuclear Power Project. The AFW pumps take suction from the condensate storage tank which is a Seismic Category I component. One pump is driven by a Class LE electric motor, while the other is equipped with a dual drive, operable by an independent Class LE electric motor or a steam turbine. Each pump motor is powered by independent circuit trains and Class LE power supplies. The steam '_pply to the turbine is provided by connections from the main steam lines originating from both Once Through Steam Generators (OTSG's). Motor operated and manual valves are arranged such that steam from either OTSG can drive the AFW pump turbine. Motor and air operated valves are arranged such that each pump can provide auxiliary feedwater flow to either of the two OTSG's. The valves and their motor operators are all qualified to Seismic Category I.

IE BULLETINS

AFWS piping was originally designed to Seismic Category I criteria described in the project FSAR. NRC IE Bulletins 79-02 and 79-14 required that the District walkdown, verify and re-evaluate all Seismic Category I piping and supports.

Bulletin 79-02 was concerned with concrete expansion anchors and the District tested some of the pipe supports constructed with base plates and anchor bolts. The results of this anchor bolt verification program were presented to NRC in a letter to R. H. Engelken, dated June 26, 1980.

NRC IE Bulletin 79-14 was concerned with seismic qualification of as built piping configuration. The District inspected and evaluated all Seismic Category I 'piping, including the AFWS piping. The results of the field verification program were transmitted to NRC in a letter to R. H. Engelken dated August 1, 1980.

IE Bulletin 79-07 required that the District submit a review of the computer codes for inter and intra-modal summation used for piping seismic stress analysis. This response to the IE Bulletin was transmitted to the NRC in a letter to Engelken dated April 24, 1979. The District's reponse to IE Bulletin 79-04 showed that re-evaluation of analytical weights for Velan swing check valves was required for only two valves. These two valves were not in the AFWS. This response was transmitted to the NRC in a letter to Engelken dated April 26, 1979.

IE Bulletin 80-21 did not concern the District since no valve parts cast by Malcom Foundry are in use or planned for use at Rancho Seco. This fact was documented in a letter to Engelken dated November 21, 1980. The District response to IE Bulletin 80-11 is currently pending additional information and calculations from the District's architect/engineer. However, as noted in a previous reply (ref: letter to Engelken, dated January 19, 1981) Rancho Seco does not have any masonry walls supporting Class I equipment. Furthermore, there are not any masonry walls supporting AFWS components.

PIPING

AFWS piping, including steam supply to the turbine, and Seismic Category I branch piping were analyzed as such up to seismic boundaries indicated on the diagram. Branch lines were included in the seismic analysis beyond the point of seismic/nonseismic interface to three orthogonal restraints, structural anchor or underground embedment. All seismic analyses are performed with the response spectrum method which utilizes the natural period, mode shapes and appropriate damping factors for the AFW piping system. For a more detailed description of techniques used in the analysis of Seismic Category I piping, please refer to the FSAR Appendices 5A and 5B. Presently, the District is modifying sections of the auxiliary feedwater line inside containment near the steam generators. This modification involves providing six inlet nozzles to the OTSG instead of one. The piping will be reanalyzed. Because of added flexibility of the inlet header, rigid supports and snubbers will be added to qualify the piping seismically.

EQUIPMENT

Seismic stress calculations for the AFW pumps were prepared by B&W, Canada. The pump motors were supplied and accepted for seismic application by Hitachi America, Ltd. The steam turbine used on the dual drive pump was supplied by Terry Turbine, Co. and the seismic certification was furnished via vendor calculations.

The condensate storage tank was supplied by Conseco and certified to Seismic I by vendor calculations. The vendor certified calculations associated with all of the aforementioned equipment were reviewed by the District's architect/engineer, Bechtel Power Corporation, prior to acceptance.

VALVES

(Refer to attached piping diagram) All valves and in-line equipment were properly included in the lumped mass seismic model of the piping system. The stresses in the piping and acceleration on the valves were kept within allowable limits to guarantee the . operability of valves for seismic condition. The air operated control valves, (FV20526 & FV20527) however, were not qualified to any seismic requirement except the stresses in the body of the valve were kept below the allowable stress limits of the piping code. There are bypasses provided around these air operated control valves. The bypass line valves are full size, motor operated, seismically qualified engineered safety feature system valves. (SFV 20577 & SFV 20578) Motor operated valves (HV 31826 & HV 31827) located on the crossover piping which interconnects the "A" train and "B" train were supplied by Anchor Valve Company and underwent seismic testing by an independent testing laboratory, Henry Vogt Company. The motor operated valve (FV 30801) controlling the steam inlet to the AFW pump turbine was supplied by the turbine vendor and designed to Seismic Category I. Motor operated valves (HV20569 & HV 20596) are located on the crossover steam line interconnecting the OTSG's and supply steam for the pump turbine. These valves were built by Velan Engineering and designed to Seismic Category I.

ELECTRICAL

Electrical circuits have been designed to Seismic Category I for the following auxiliary feedwater system components:

AFW Pump P-318 AFW Pump P-319 Control Valve FV 20527 Control Valve FV 20528 Motor Operated Valve HV 31826 Motor Operated Valve HV 31827 Motor Operated Valve FV 30801 Motor Operated Valve FV 30801 Motor Operated Valve HV 20569 Motor Operated Valve HV 20596 Motor Operated Valve SFV 20577 Motor Operated Valve SFV 20578

STRUCTURES

Auxiliary feedwater piping and equipment are located either outdoors or inside the reactor building. The foundations of all the outdoor equipment have been designed to withstand the design basis earthquake. For a description of the seismic qualification of the reactor building and inside structures, refer to the FSAR Appendix 5B.



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SACRAMENTO MUNICIPAL UTILITY DISTRICT D 6201 S Street, Box 15830, Sacramento, California 95813; (916) 452-3211

November 24, 1982

DIRECTOR OF NUCLEAR REACTOR REGULATION ATTENTION JOHN F STOLZ CHIEF OPERATING REACTORS BRANCH 4 U S NUCLEAR REGULATORY COMMISSION WASHINGTON D C 20555

DOCKET 50-312 RANCHO SECO NUCLEAR GENERATING STATION UNIT NO 1 EMERGENCY PROCEDURES AND TRAINING FOR STATION BLACKOUT EVENTS

OK

In our June 1, 1981 letter, we responded to your February 25, 1981 Generic letter 81-04 regarding the need for emergency procedures and training for station blackout events. Our position was that a specific procedure to handle the hypothetical case of loss of all offsite and onsite AC was unnecessary and undesirable. We further stated that we felt the District training in the areas of emergency systems, power distribution systems and heat removal by natural circulation using the steamdriven auxiliary feedwater pump was adequate to allow our operators to determine a proper course of action. Consequently, the District proposed to take no additional action relative to the issue.

Recently, Tom Cogburn of the District Licensing staff was contacted by your Mr. Sydney Miner regarding resolution of this issue. Mr. Miner explained that a commitment to prepare a written procedure was unnecessary; that a commitment to conduct operator training in the use of existing procedures and tying these together to cover operator response to the loss of all AC scenario would be adequate to resolve the issue. The District is willing to commit to perform the necessary training to cover the loss of all AC event. We feel that much or all of the necessary material is presently covered in our operator training program. The District commits to review our current training program to determine additional material is needed and to add training material where needed. Our approach will be

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Director of Nuclear Reactor Regulation Attention John F Stolz Chief

November 24-, 1982

to cover the training for this event from a symptom oriented perspective to insure that our operators can recognize the appropriate symptoms (e.g. loss of RC flow, no HPI, no pressurizer heaters, no condenser vacuum, etc.) and understand the necessary actions and procedures to safely respond.

John J. Mattimoe And General Manager

JJM/TC/vb

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SACRAMENTO MUNICIPAL UTILITY DISTRICT [] 6201 S Street, Box 15830, Sacramento, California 95813; (916) 452-3211

December 15, 1982

DIRECTOR OF NUCLEAR REACTOR REGULATION ATTENTION JOHN F STOLZ CHIEF OPERATING REACTORS BRANCH 4 U S NUCLEAR REGULATORY COMMISSION WASHINGTON D C 20555

DOCKET 50-312 RANCHO SECO NUCLEAR GENERATING STATION UNIT NO 1 STATION BLACKOUT TRAINING (GL 81-04)

In our letter of November 24, 1982, we committed to provide training of our operators on response to a loss of all AC power as necessary to complement our existing operator training program. Since this event is not presently covered as a specific topic in either the requalification or licensing training program per se, we will formally cover it in the next licensed operator requalification cycle and in subsequent operator licensing training programs. The next requalification cycle begins after the annual exams which are scheduled to be completed by January, 1983 and continues throughout 1983.

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John J. Mattimoe

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