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December 1, 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

The purpose of this letter is to inform you of the results of the recent steam generator inspections performed at Rancho Seco, to give you our interpretation of these inspections and to provide our safety evaluation regarding future operation of Rancho Seco.

On November 20, 1982, an estimated four to five gpm primary to secondary leak in the A steam generator was identified. The plant was subsequently shutdown and the leaking tube has been identified as Tube Number 77-2. This tube is situated directly adjacent to the untubed inspection lane. Tube 77-2 is the second tube in from the outside of the bundle. The location of the leak appears to be at or very near to the bottom of the upper tube sheet. An eddy current inspection of this tube has been performed and this data indicates that the break is not longitudinal.

Since the leaking tube is not on the periphery and the leak is well above the top of the Internal Auxiliary Feedwater (AFW) Header, we feel confident that this failure did not result from damage due to the failure of the Internal AFW Header. Further, since the new external AFW header does not inject water into the area of the untubed inspection lane, we are equally confident that the tube failure is not related to the addition of the external AFW header.

We have completed an eddy current inspection of the upper portions of all lane region tubes and of all peripheral tubes in the A steam generator. This examination of some 850 tubes has identified one additional tube which contains a defect. This tube, 74-15, is also in the lane region, one row away from the untubed lane, 15 tubes in from the periphery of the tube bundle and on the opposite side of the untubed lane from 77-2. Tube 74-15 has a 46% through wall O.D. indication which is located in the middle of the fifteenth tube support plate. In addition to the eddy current inspections of the upper portions of the lane and periphery tubes, approximately two tubes were picked

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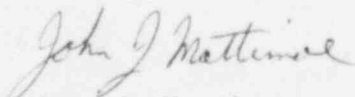
at random for a full length eddy current examination. These inspections have identified no additional reportable indications.

A fibroscope examination of tube 77-2 is planned in an attempt to better characterize the defect. Plugging and stabilization of both 77-2 and 74-15 will then be performed following the fibroscope examination.

The nature of these two defects appears to be very similar to defects identified at Rancho Seco in May, 1981. It should be noted that the area of concern extends from the bottom of the fifteenth tube support plate through the upper tube sheet. At that time, tube 77-17, a lane tube in the B steam generator was found to have a through wall defect located in the middle of the fifteenth tube support plate. Another tube, 75-18 was found to have a 60% through wall defect at the same location. The failure in May, 1981 and this one in November, 1982 are the only two tube leaks which have occurred at Rancho Seco since startup in 1974. Only 34 tubes have been plugged in both steam generators at Rancho Seco since startup and, of these, most of the 32 were removed from service as a preventive measure due to eddy current indications or due to close proximity to the stabilized internal AFW header.

The mechanism, which we believe to be responsible for the two tube failures which have occurred at Rancho Seco, is the same as that identified at several other B&W units. The mechanism is believed to be related to moisture and impurities carrying up through the untubed inspection lane because of lower temperatures and poorer steam quality in that area. This condition leads to impurity deposits in the upper portion of the inspection lane region. These deposits are believed to enhance corrosion attack of the tubes and subsequently weaken the tube material, eventually making tubes susceptible to damage by normal flow velocity stresses. The failures have been relatively infrequent (only two have occurred at Rancho Seco in eight years) and the magnitude of the leaks has been very small. A B&W owners-sponsored research program to investigate a steam generator modification which will solve or improve the situation has been underway for several years. A "lane flow blocker" has been designed which should improve the steam quality in the lane region and flatten the flow velocity profile. This design has been tested recently in a steam generator mockup at the B&W Alliance Research Center with favorable results. The test results are currently being documented and report publication is anticipated before April, 1983. It is expected that upon availability of a field installation procedure and the necessary materials, the District will investigate the possible implementation of the new design at Rancho Seco.

The District does not consider the frequency of events or magnitude of leaks which have occurred to warrant concern relative to public health and safety. Consequently, upon repair of the two tube defects identified above, the District intends to restart Rancho Seco and run until completion of the current fuel cycle. We are, of course, interested in improving plant availability and will pursue long-term solutions to improve steam generator performance as diligently as practical.



John J. Mattimoe
General Manager