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AN ELECTRIC SYSTEM SERVING THE HEART OF CALIFORNIA

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RJR 85-289

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WASHINGTON DC 20555

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SUBJECT: STAFF RECOMMENDED ACTIONS STEMMING FROM NRC INTEGRATED PROGRAM FOR THE RESOLUTION OF UNRESOLVED SAFETY ISSUES REGARDING STEAM GENERATOR TUBE INTEGRITY (GENERIC LETTER 85-02)

Enclosed is the Sacramento Municipal Utility District response to Generic Letter 85-02. The District is aware that Steam Generator tube integrity is a vital issue to every Pressurized Water Reactor operating Utility. For that reason Steam Generator tube integrity will remain one of the District's main concerns at Rancho Seco.

If there are any questions regarding the enclosed information please contact Mr. R. W. Colombo at the Rancho Seco Nuclear Generating Station.

R. J. Rodriguez
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Enclosure

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RESPONSE TO GENERIC LETTER 85-02

STAFF RECOMMENDED ACTIONS STEMMING FROM NRC INTEGRATED PROGRAM FOR THE RESOLUTION OF UNRESOLVED SAFETY ISSUES REGARDING STEAM GENERATOR TUBE INTEGRITY

1a. Prevention and Detection of Loose Parts (Inspections)

Secondary side visual inspections of the lower tube sheet have been performed in the past. These inspections, while not specifically planned to find loose parts, would have enabled loose parts to be found. A secondary side inspection utilizing fiberoptics was performed following the stabilization of the Internal Auxiliary Feedwater (AFW) Headers in 1982. This inspection was designed to find any loose parts introduced by the stabilization of the Internal AFW Header. Additionally, all peripheral tubes were examined by eddy current testing and those where portions of the Auxiliary Feedwater Header were within 1/4" of a tube surface were preventively plugged. A repeat of this eddy current examination was performed during the 1985 refueling outage, and another will be done in 1986 in accordance with the recently approved Technical Specification Amendment No. 66.

To minimize the potential for corrosion when the steam generator secondary side is opened for inspection, a nitrogen overpressure is used and openings are sealed with temporary covers. If at all possible, no more than one opening on the secondary side is opened at a time. Since the stabilization of the Internal AFW Header, no modifications or repairs have been done on the secondary side of the steam generators which would tend to introduce loose parts.

1a. (Continued)

If eddy current testing ever indicated that secondary side mechanical tube damage had occurred, inspections would be made. This has never occurred since the Internal AFW header was stabilized.

1b. Prevention and Detection of Loose Parts (Quality Assurance)

Procedures exist which require that all objects introduced into the Secondary side be accounted for. Appropriate controls exist to ensure that foreign objects are not left inside the steam generators. Cleanliness controls exist for work on the secondary side. No work has been done which would remove parts or internals from the steam generators with the exception of the removal of tube samples. Tube sampling was done in such a way that procedural controls ensured no loose parts were created or left inside the steam generators.

Rancho Seco has installed a Loose Parts Monitoring System on the Reactor Coolant System. The Loose Parts Monitoring System is operational for all modes from heatup, through operation, to cooldown. It is more sensitive to detection of loose parts on the primary side than on the secondary side.

2a. Inservice Inspection Program (Full Length Tube Inspection)

This section is not applicable to Rancho Seco's Once Through Steam Generators.

2b. Inservice Inspection Program

Rancho Seco Technical Specifications limit the maximum allowable time between eddy current inspections of an individual steam generator to 40 months.

3a. Secondary Water Chemistry Program

Rancho Seco plant personnel are sensitive to the fact that secondary water chemistry must be carefully controlled to minimize corrosion of steam generator tubes.

Rancho Seco monitors and controls secondary water chemistry to limits consistent with SGOG Special Report EPRI-NP-2704, "PWR Secondary Water Chemistry Guidelines."

3b. Condenser Inservice Inspection Program

Condenser tubes have been examined using eddy current techniques at Rancho Seco. These examinations, though not required by the Technical Specifications, have been deemed necessary by the plant staff to ensure the continued overall integrity of the condenser tubes.

The leakage of water into the condensers prompts quick action to plug leaking tubes. Air inleakage is monitored and corrective action is initiated if air inleakage exceeds 10 CFM. Rancho Seco site personnel locate both water leaks and air leaks using Helium detection techniques. This sensitive method can be used to locate small leaks and also to test the adequacy of repairs.

The actions described above are not mandated by the Technical Specifications, but are done to ensure that the secondary water chemistry limits are adhered to and contaminants on the secondary side are minimized.

4. Primary to Secondary Leakage Limit

The Rancho Seco Technical Specification limit for primary to secondary leakage is 1.0 gpm total for both steam generators. This matches the Standard Technical Specification limit for total leakage.

5. Coolant Iodine Activity Limit

Rancho Seco has been equipped with High Pressure Injection Pumps with a suitable discharge pressure of over 2,300 psi at 300 gpm.

Rancho Seco has implemented an administrative limit "Primary concentration of Iodine 131" of 0.8 μCi/cc which is not mandated by the Technical Specifications, but which has been adhered to in the past.

Rancho Seco does have a secondary Iodine 131 limit of 0.2 μCi/cc which is mandated by the Technical Specifications.

6. Safety Injection Signal Reset

The Safety Features Actuation System at Rancho Seco initiates High Pressure Injection using the Borated Water Storage Tank as the water source. There is no automatic switchover of water source. Manual switchover would be required following the draining of the Borated Water Storage Tank. The Borated Water Storage Tank must hold at least 390,000 gallons to be in compliance with the Technical Specifications.

INFORMATION CONCERNING CATEGORY C-2

STEAM GENERATOR TUBE INSPECTIONS

1. The following factors would be considered when determining the scope of eddy current exams:

a) Known problem areas.

Three areas of the steam generators have been shown to be prone to defects. The area immediately adjacent to the untubed inspection lane, called the "Lane Region" is one area shown by experience to be prone to both degradation and in-service failures. The delta shaped area which fans out from the Lane Region, called the "Wedge Region" has been shown to be prone to degradation. The periphery of the steam generator tube bundle, particularly the outermost tubes, have also been more prone to degradation than the balance of the steam generator.

b) The location of defects in relation to known problem areas.

If defective tubes were located in known problem areas, and all the tubes in those problem areas had been inspected, then additional exams would not be prudent.

1. c) The nature of the defects.

If the eddy current indications were of an unusual or widespread nature and the potential for widespread degradation of the steam generators was suspected, additional random inspections would be warranted.

d) The defect history of the steam generators.

By keeping good records of eddy current examinations, it is possible to track the history of the steam generators and make additional examinations if unusual indications are found.

e) The tube leak history of the steam generators.

If the steam generator has a history of developing tube leaks in service, it is prudent to be certain that all potential problem tubes are inspected. This is done by inspecting the known problem areas as well as additional inspections, if warranted.

2. The degradation mechanism, if known, would be considered. It should be noted that calculations have shown that a plugging limit of 40% is very conservative with respect to rupture during operation or transients. The location of defects would also be considered, if appropriate. Some defect locations have been shown to be more prone to fail in service than others.