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August 21, 1979

Mr. R.H. Engelken
Director, Region V
Office of Inspections and Enforcement
U.S. Nuclear Regulatory Commission
1990 N. California Boulevard
Walnut Creek Plaza, Suite 202
Walnut Creek, California 94596

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REGION V
INSPECTION & ENFORCEMENT

Docket No. 50-312
Rancho Seco Nuclear Generating
Station, Unit No. 1

Dear Mr. Engelken:

Information requested by Item 1 of I.E. Bulletin 79-17 is enclosed.

A review of safety related systems which may contain stagnant oxygenated borated water has been made at Rancho Seco. Piping which has been evaluated as being of concern has been highlighted on the enclosed Process and Instrumentation Diagrams (P&ID's).

Preservice inspections were performed only on Nuclear Class 1 piping (i.e., that piping connected directly to the Reactor Coolant System out to the second isolation valve.) The inspections consisted of manual ultrasonic testing conducted in accordance with the 1971 edition of Section XI of the ASME Boiler and Pressure Vessel Code with addenda through and including Summer 1971. No indications were noted.

A total of 16 welds have been volumetrically examined per Section XI requirements or as a result of augmented inspections instituted following our receipt of IE Circular 76-06. Of these welds, four (4) were in the Decay Heat System, eight (8) were in the High Pressure Injection System, two (2) were in the Core Flood System and two (2) were in the Reactor Building Spray System. Inspection was made with ultrasonic procedures developed and qualified in accordance with the 1974 edition of Section XI with addenda through and including Summer 1975. No indications have been noted.

In response to IE Circular 76-06, all affected piping in the Decay Heat and Containment Building Spray Systems was hydrostatically tested in accordance with Section XI ('74 through '75) requirements during the First Refueling. During the Second Refueling, additional hydrostatic tests were performed on the Decay Heat, Containment Building Spray and High Pressure Injection Systems.

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In addition, Reactor Coolant System and all piping connected directly to it are leak checked prior to restart following refueling per Section XI requirements. No leakage at welds has been evident during any of these tests or inspections.

As a result of the problems apparent at Three Mile Island 1, all affected accessible piping in the High Pressure Injection, Decay Heat, Containment Building Spray and Spent Fuel System was visually inspected for signs of leakage. No evidence of leakage was found.

The chemistry controls for all hot systems containing reactor coolant fluids are well defined by the B&W Water Chemistry Manual (BAW 1385). They include:

Boric Acid	-	Range 17-1800 ppm B (Soluble poison)
Li as Li-7	-	0.2 to 2.0 ppm
pH	-	A function of Boric Acid and Li content
Conductance	-	A function of Boric Acid and Li content
Dissolved O_2	-	0.1 ppm max.
Chloride Ion	-	0.1 ppm max.
Fluoride Ion	-	0.1 ppm max.
Hydrogen Gas	-	15-40 cc/kg
Total Gas	-	100 cc/kg max.

For cold shutdown conditions the restriction on dissolved oxygen is removed, provided there is no concurrent exceeding of the Cl^- or F^- specification. If Cl^- exceeds 0.1 ppm, N_2H_4 is added to the cold system. During heatup, if O_2 does not drop below 0.1 ppm prior to 250° F, N_2H_4 is added to provide for oxygen scavanging.

During system depressurization for opening (refueling), the O_2, H_2 and total gas specifications are voided. Systems cannot undergo heatup with Cl^- or F^- levels exceeding 1 ppm.

Similar specifications hold for systems which interface with reactor coolant fluid, i.e., Decay Heat, Spent Fuel Pool, Borated Water Storage Tank, Demineralized Reactor Coolant Storage Tank, Letdown Purification System and Reactor Coolant Radwaste System. Here O_2 content is controlled only in those systems which routinely provide fluid to the circulating reactor coolant (i.e., DH, BWST, DRCST, LDP and RCR). Halide impurities are controlled in all systems.

Those systems having only LOCA safety functions, i.e., Core Flood Tanks, and Containment Spray, do not have specifications beyond the required B content or NaOH content.

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Since startup operations in 1974 the described chemical specifications have been maintained with the following comments:

1) During hydrotesting of primary systems it was found that all of the radwaste ion exchangers (including letdown purification demineralizers) had been loaded with improperly specified resin which was contributing Cl^- at levels of approximately 1 ppm. The problem was defined prior to hot hydrotesting and all dead legs were flushed with specification water prior to continuation of the startup program.

2) A long term special test program was initiated in 1978 to attempt to determine if Li (pH control) programming, in conjunction with maintenance of O_2 at very low level at end of cycle, could aid in reduction of crud overall production or inhibition of transport out of the fuel zone. Minor deviations from the specified Li levels were experienced.

No cleanup circulation programs have been necessary nor significant design changes made to accomodate chemistry controls. The initial design provided for letdown purification of up to 140 gpm and included a backflushing filter of 1 micron effective filtration.

Respectfully Submitted,

R. W. Cahill, FOR

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Assistant General Manager
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