

AUG 02 1985

MEMORANDUM FOR: Linda Underwood, RM/BMI

FROM: Al Chaffee, Branch Chief
Division of Reactor Projects

SUBJECT: Background Information on Rancho Seco for Commissioner
Zech

Attached is the background information on Rancho Seco requested per your memo of 7/30/85 in support of your final report to the Commission on August 6, 1985.

Please let me know if I can be of any further assistance.

Once signed

Al Chaffee, Branch Chief
Division of Reactor Projects

cc:
D. Kirsch
L. Miller
C. Myers
J. Eckhardt
R. Fish
M. Cillis

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BACKGROUND INFORMATION ON RANCHO SECO NUCLEAR POWER PLANT

Utility: Sacramento Municipal Utility District (SMUD)
Location: 25 miles SE of Sacramento, California
Sacramento County, California

Docket No.: 50-312
CP Issued: 10/11/68
Operating License: 08/16/74
Initial Criticality: 09/16/74
Elec. Ener. 1st Gener: 10/13/74
Commercial Operation: 04/17/75
Reactor Type: PWR
Power Level: 918 MWe (DER): 2772 MWt (LTP)
Architect/Engineer: Bechtel
NSSS Vendor: Babcock & Wilcox
Constructor: Bechtel
Turbine Supplier: Westinghouse
Condenser Cooling Method: Cooling Towers [Hyperbolic, natural draft]
Condenser Cooling Water: Folsom Canal

Licensing Project Manager: Sydney Miner (Tel: 492-8352)

NRC Responsible Region: Region V, Walnut Creek, California
John B. Martin, Regional Administrator

Div. of Reactor Projects: Dennis F. Kirsch, Acting Division Director
(Region V) (Tel: 8-643-3723)
(Vacant), Deputy Director (Tel: N/A)
Alfred E. Chaffee, Branch Chief
(Tel: 8-463-3723)
Lew F. Miller, Section Chief (Tel: 8-463-3869)
Christopher J. Myers, Project Inspector
(Tel: 8-643-3752)

Senior Resident Inspector: James H. Eckhardt (Tel: 8-209-748-2791)
Resident Inspector: Glen Perez (Tel: same)

Report Coordinated By: Linda N. Underwood, RM/BMI (Tel: 492-4977)

Site Management Personnel (SMUD)

(Offsite)

Ron Rodriguez, Assistant General Manager, Nuclear
Lee Keilman, Nuclear Engineering Manager
Andy Schwieger, Quality Assurance Manager
Bob Dieterich, Licensing Superintendent

(Onsite)

Pierre Oubre', Nuclear Operations Manager
George Coward, Plant Superintendent

Jim Field, Technical Support Superintendent
John Dewett, Site Quality Assurance Supervisor

Workforce

Staffing level at the plant:

Approximately 600 personnel total during operations and 1200 total during refueling.

Rancho Seco Nuclear Power Plant

Reactor Operators

Total Licensed Operators: 37

Total Number of SROs: 24 (9 operations, 7 shift technical advisors, 8 shift supervisors)

Total Number of ROs: 13 (9 on shift, 4 in SRO training)

[In addition, there are currently 4 RO candidates in training].

Workshifts

Number of Shifts: The 3 operating shifts are supported by 5 crews.

Each crew consists of a shift supervisor (SRO), at least one SRO and at least two ROs. A shift technical advisor (SRO) is also on-site during each shift. This results in a minimum of 5 licensed operators for each shift. The addition of auxiliary operators, equipment attendants and power plant helpers brings the total number of personnel on shift to 12 or 13.

Reactor Operator Exams Administered by the Region

<u>Date of Exam</u>	<u>Number of Applicants</u>	<u>Passed</u>	<u>Failed</u>
5/21-6/2/84	4 SROs 10 ROs 2 ICs	4 SROs 10 ROs 2 ICs	0 SROs 0 ROs 0 ICs
1/14/85	8 SROs 0 ROs 5 ICs	8 SROs 0 ROs 3 ICs	0 SROs 0 ROs 2 ICs

Date of next scheduled exam: 11-28-85

Number of Applicants: 9 SROs/11 ROs

Plant Simulator: None. Licensee is purchasing a simulator and plans to construct a Training and Engineering Building onsite for the simulator. The licensee expects the simulator to be operational by 1989.

Systematic Assessment of Licensee Performance (SALP)

A SALP review was conducted for the period of 10/1/82 through 11/30/83 and a report issued on 6/20/84. A copy of the report is attached. (Inspection Report No. 50-312/84-12) A SALP review for the period 12/1/83 through 5/31/85 is currently being prepared for the Regional Board review on 8/7/85.

Escalated Enforcement Actions

Level II: Inadequate radiological control associated with handling of a highly radioactive metal fragment removed from the "B" steam generator during maintenance.

Under consideration: (1) Inadequate quality assurance control resulting in missing pipe supports which caused fatigue crack and reactor coolant leak in RCS hot leg high point vent.

Allegations

None open.

Investigations

None open.

Emergency Preparedness

Rancho Seco has an acceptable Emergency Plan. The most recent amendment to the plan was received by Region V on July 10, 1985. The last inspection of the licensee's emergency preparedness program was conducted in May 1985. The inspection did not identify any violations of NRC requirements or deficiencies. The licensee has taken appropriate corrective actions on two violations, that were in the areas of emergency preparedness training and meteorology, identified during a June 1984 inspection. However, due to continuing problems with the meteorological program a meeting between the NRC and the licensee to further discuss the corrective actions has been scheduled for August 20, 1985.

During the September 12, 1984 emergency preparedness exercise FEMA identified a number of items in the response of the offsite jurisdictions that needed corrective actions; however, none of these were considered to be (Category A) deficiencies. The State of California submitted an acceptable response and time schedule for taking appropriate corrective actions. The California Nuclear Power Plant Emergency Response Plan has not been formally submitted to FEMA for review and approval per 44 CFR Part 350. The State plan has been reviewed by the FEMA Region IX Regional Assistance Committee (RAC) and the State has been provided with the RAC comments.

The NRC observation of the September 1984 emergency preparedness exercise did not identify any violations of NRC requirements or deficiencies. The next exercise is scheduled for late August 1985.

The licensee's emergency response facilities (Technical Support Center, Operational Support Center and Emergency Operations Facility) are operational.

The Emergency Operations Facility is at an NRC approved location that is about 23 miles from the reactor site. The appraisal of the emergency response facilities to confirm compliance with Supplement 1 to NUREG-0737 has not been performed because the safety parameter display system and its related emergency response functions have not been upgraded to meet the Regulatory Guide 1.97 requirements. This upgrading is to be completed by cycle 9. The observations of the exercises have confirmed that these facilities can perform their intended functions as described in NUREG-0696.

Very recently FEMA completed their preliminary technical review of the Rancho Seco prompt public notification system (offsite sirens) design. They have concluded that the submitted information does not support a finding that the system meets the FEMA-43 design criteria. NRC Region V and FEMA Region IX will be working with the licensee to resolve this matter in a satisfactory way as soon as possible.

Significant Licensee Accomplishments

1. Comprehensive organizational review by outside consultant (LRS) of Rancho Seco (Report and update attached).
2. Simulator procurement initiated.
3. Implementation of Root Cause program for in-depth evaluation of significant plant events.
4. Increase in licensed operator staffing to support five operating crews.

Plant Status

Refueling outage: 3/15/85 - 6/14/85

Outage related maintenance/modifications:

- o Steam generator eddy current testing, tube pulling and plugging
- o Auxiliary boiler tube replacement
- o Turbine inspection
- o Main generator inspection
- o HVAC modifications for the control room, technical support center and nuclear service equipment building
- o Feedwater heater inspection and tube plugging
- o Reactor coolant pumps B & D seal replacement
- o 10 CFR 50, Appendix R modifications
- o Letdown piping modification and cooler replacement
- o Diesel generator maintenance
- o Steam generator feedwater nozzle replacement
- o Main feedwater flow nozzle replacement
- o Main condenser repairs

Start up problems:

- June 1, 1985 - EDG Control Circuit Problem - Design Error

- June 5, 1985 - Reactor Trip Breaker Failure During Undervoltage Testing
- June 11, 1985 - Nuclear Service Cooling Water Pump Feeder Breaker Tripped - Also Tripped June 12 and 13, 1985 - Replaced Breaker
- June 12, 1985 - 200 Gallon Water Leak Into Reactor Building, Relief Valve On Let Down System Lifted - Repaired Relief Valve
- June 14, 1985 - Reactor Critical
- June 18, 1985 - Shut Down From 15% Power - Oil Blockage In Main Turbine Lube Oil System
- June 23, 1985 - Non Isolable Leak In High Point Vent In B Steam Generator Hot Leg

Current outaged extended for pipe support walkdowns, evaluations and rework. Startup is tentatively planned for 3rd week in August.

Additional Items:

1. The licensee has installed two new emergency diesel generators to increase its emergency power capacity. The new diesel generators will be operational following completion of an extensive ongoing inspection and test program.
2. Prior to startup from the refueling outage, the licensee performed a thorough evaluation of their auxiliary feedwater system in light of current events reported at Davis Besse.
3. In late 1984, the plant experienced three separate shutdowns for steam generator tube leak repairs.
4. During the current extended outage a larger impeller is being installed in one of the auxiliary feedwater pumps to increase the system flow capacity.
5. Environmental Releases From Rancho Seco

a.) Controlling Documents and Dose Guidelines

Environmental Protection Agency (EPA) regulation 40 CFR 190 specifies that nuclear power operations shall, "be conducted in such a manner as to provide reasonable assurance that the annual dose equivalent does not exceed 25 mrem to the whole body, 75 mrem to the thyroid, and 25 mrem to any other organ of any member of the public as a result of planned discharges of radioactive materials." This requirement is enforced by the NRC pursuant to 10 CFR 20.105(c).

b.) Plant Design

The plant was designed to treat liquid wastes in a manner which would preclude the need to discharge radioactivity in liquid effluents under normal operating conditions. However, beginning in 1980 and continuing through 1984, leaks in the steam generator system began generating large volumes of radioactive liquid wastes. These wastes were released to the environment from the plants outfall which discharges into Clay Creek. The water from Clay Creek is used for agriculture purposes and for fishing by the local residents. At no time during this period did the concentrations of the liquid wastes released exceed the NRC limits prescribed in 10 CFR 20, Appendix B or the limits prescribed in the licensee's Technical Specifications.

c.) The Problem

In May 1984, SMUD reported that the calculated maximum exposed individual doses resulting from radioactive liquid releases from the plant exceeded the limits prescribed in 40 CFR 190 for the periods between 1980 and the first quarter of 1984. The apparent violation went undetected until an examination of the environmental model used to make the calculations revealed errors in the input parameters used in the model. The highest maximum-exposed individual whole body and organ doses (liver) were 110 and 148 mrem, respectively.

d.) Mitigating Actions

SMUD contracted with Lawrence Livermore Laboratory (LLL) to perform an assessment of the problem including analyses of samples taken from the environment. Likewise, because of the potential exposure to members of the general public NRR contracted with Oak Ridge National Laboratory (ORNL) to conduct an evaluation of the type and extent of the contamination. To perform these evaluations both LLL and ORNL scientists conducted independent environmental sampling programs around Rancho Seco. These studies showed the accumulation of radionuclides in sediment and silt along and in the creek. Additionally, analyses indicate that Cesium-134 and Cesium-137 were the principal nuclides found in all species of fish sampled, with lesser amounts of Cobalt-60. Based on the studies conducted by LLL and whole body counts of selected individuals, SMUD has concluded that the maximum exposed individual would have received exposures no greater than 4.6 mrem to the adult whole body and 17 mrem to the child's liver. These results indicate that the dose standards of 40 CFR 190 had not been exceeded. NRR's evaluation of ORNL's and SMUD's studies are currently in progress.

Since the fall of 1984, SMUD has solidified and disposed of contaminated condensate demineralizer resins as radioactive solid wastes rather than through regeneration and batch discharge of regenerate liquids as radioactive liquid waste effluents.

SMUD's proposed permanent solution to the problem is the development of evaporation ponds. This proposal is presently under review by NRR. Bechtel has been selected by SMUD as the contractor.

e.) Public Concern

The local fishermen and the major land owner are in the process of filing claims against SMUD of one billion dollars and more than 9.6 million dollars, respectively.

Public Issues: (as noted in 5c above)