



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

Rhode Island Atomic Energy Commission
NUCLEAR SCIENCE CENTER
16 Reactor Road
Narragansett, R.I. 02882-1165

August 16, 1999

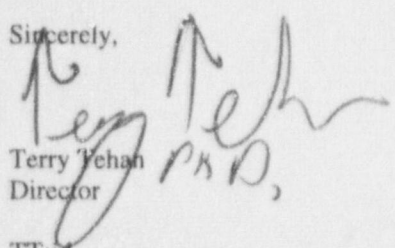
Docket No. 50-193

Mr. Marvin Mendonca, Senior Project Manager
Non-Power Reactors, Decommissioning and
Environmental Project Directorate
Division of Reactor Projects - III/IV/V
U.S. Nuclear Regulatory Commission (NRC)
Washington, D.C. 20555

Dear Mr. Mendonca,

This letter and enclosures constitute the annual report required by the RINSC Technical Specifications (Section 6.8.4). Enclosure 1 provides reactor operating statistics. Enclosure 2 provides information pertaining to inadvertent reactor shutdowns or scrams. Enclosure 3 discusses maintenance operations performed during the reporting period. Enclosure 4 describes changes to the facility carried out under the conditions of Section 50.59 of Chapter 10 of the Code of Federal Regulations. Lastly, Enclosure 5 summarizes the radiological controls information. If there are any questions regarding this information, please call me at 401-789-9391.

Sincerely,


Terry Tehan
Director

TT:jd

Enclosures (5)

Copy to :

Craig Bassett, Region I
Harry Knickle, Chairman NRSC
Vincent Rose, Chairman RIAEC

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ENCLOSURE 1

Technical Specifications
Section 6.8.4.a (98-99)

Month	Reactor Critical (hours)	Energy Generated (MWh)	Energy Generated (MWd)
July-98	1.80	0.20	0.01
August-98	12.50	21.90	0.91
September-98	29.40	51.80	2.16
October-98	69.90	121.10	5.05
November-98	63.80	109.60	4.57
December-98	19.50	32.80	1.37
January-99	6.20	10.60	0.44
February-99	12.70	22.60	0.94
March-99	29.00	51.00	2.13
April-99	28.40	48.80	2.03
May-99	7.80	14.10	0.59
June-99	14.10	24.90	1.04
1998-99 Totals:	295.10	509.40	21.23
Total Energy Output since Initial Criticality:		56,890.24	2,370.43

ENCLOSURE 2

EMERGENCY SHUTDOWNS AND SCRAMS

The following is a listing of the emergency shutdowns and inadvertent scrams, including the reasons, which occurred during the 1998-99 reporting period. This information is required by Technical Specification 6.8.4.b.

DATE	RUN #	LOGBOOK / PAGE	CAUSE
7/1/98	7167	47 / 88	Reactor scram caused by Log N High Period due to noise produced as a result of high humidity.
10/15/98	7183	47 / 113	Reactor scram caused by Log N High Period due to noise produced as a result of high humidity.
10/20/98	7187	47 / 121	Reactor shutdown due to loss of period signal and start-up count rate.
11/13/98	7196	47 / 138	Reactor shutdown due to loss of period signal determined to be caused by a bad connection between the Log N module and the back plane.
1/13/99	7204	47 / 149	Reactor shutdown due to loss of period signal.
1/26/99	7205	47 / 151	Reactor scram due to bad Pico connection.
2/2/99	7206	48 / 4	Reactor scram due to noise on the Log N channel.
3/2/99	7208	48 / 6	Reactor scram due to noise on the Log N channel.
3/24/99	7213	48 / 12	Reactor scram due to noise on the Log N channel.

Almost all of these problems involved the Log N channel. As a result, RINSC is replacing this channel with the help of the DOE Instrumentation Grant.

ENCLOSURE 3

MAJOR MAINTENANCE OPERATIONS

The following is a listing of the major maintenance operations performed in the 1998-99 reporting period which includes impact upon the safe operation of the reactor and the reasons for corrective maintenance. This information is required by Technical Specification 6.8.4.c.

1. Campus Wide Evacuation System Installation

RINSC is anticipating that at some point in the future, the facility will upgrade its power level to a 5 MW operation. This will result in the expansion of the emergency planning zone to include several buildings including University of Rhode Island laboratories, offices, and classrooms. Consequently, ADT was hired to install an evacuation button that energizes horns in the Campus Police and Maintenance Buildings.

2. Air Compressor Pump Replacement

The pump for the air compressor that controls the confinement building air intake and exhaust dampers failed. It was determined that it was not cost effective to repair the pump, so a new one was purchased and installed.

3. Secondary Pump Replacement

In anticipation that RINSC will upgrade to 5 MW operation at some point in the future, one of the secondary loop pumps was replaced with a pump that has a higher flow rate. This was done to enhance the cooling capacity of the system.

4. Clean-up Pump Motor Replacement

The pump motor for the primary water clean-up system failed. It was determined that it was not cost effective to repair the motor, so a new one was purchased and installed.

5. Fire Alarm System Installation

A new fire alarm system was installed by ADT. The system was inspected and approved by the local Fire Marshall. The system includes more sensors (smoke, heat), and provides coverage of additional areas in the facility.

6. Underground Storage Tank Removal

The underground tanks, originally installed for the purpose of holding pool water when the pool was being drained, were removed and placed in the north driveway for further decontamination and eventual disposal. The tanks had been retired from use for a number of years, after it was discovered that they were leaking.

7. Evacuation Horn Silence Button Installation

An evacuation alarm horn silence button was installed in the office wing outside confinement. This button silences the audio alarm without affecting the confinement air handling system. During the course of past emergency drills, it had been suggested that this be added, so that during an emergency, the staff would not be forced to listen to the alarm, while it was working in the Emergency Support Center, located in the office wing.

ENCLOSURE 3

(Continued)

8. Delay Tank Drain Line Reconfiguration

In anticipation that the old pool water demineralizer system will be removed soon, the delay tank drain line was reconfigured so that a clear floor path will be available to expedite the moving of the old demineralizer and water softener tanks.

ENCLOSURE 4

FACILITY CHANGES - 10CFR50.59 REVIEW

The following is a listing and description of 10CFR50.59 evaluations conducted during the 1998-99 reporting period. This information is required by Technical Specification 6.8.4.d.

NONE THIS REPORTING PERIOD

ENCLOSURE 5

RADIOLOGICAL CONTROLS

1. Environmental Surveys Outside the Facility - Technical Specification 6.8.4.e

Quarterly TLD badges are deployed outside the reactor building in three separate locations. These locations are not frequented by the general public and therefore occupancy factors may be used to approximate annual dose. The allowable external dose rates must be below 50 mrem per year. The quarterly doses in units of mrem are shown in the table below.

LOCATION	3 RD QTR 1998	4 TH QTR 1998	1 ST QTR 1999	2 ND QTR 1999
Northeast Wall	270	320	300	270
Demineralizer Door	30	120	60	30
Heat Exchanger Door	10	20	20	<10

These areas are in locations where access is limited. Consequently, the general public will not frequent these areas, and appropriate occupancy factors can be used to approximate annual dose. Assuming that the maximum time that a member of the general public would be present in one of these locations is 15 minutes per day, an occupancy factor of 0.01 can be used to obtain the annual dose that would be received by a member of the general public, in any of these areas.

The dose rate in the Northeast Wall area is due to storage of RAM, and is present regardless of reactor operation. Applying the occupancy factor, the annual dose to an individual in this area would be 11.60 mrem over the course of last year. The annual dose rate at the Demineralizer and Heat Exchanger Doors is dependent on the operations schedule of the reactor. Ignoring the fact that the dose rate is not present 24 hours per day and applying the occupancy factor of 0.01, the annual dose that would be received by an individual at the Demineralizer Door would be 2.40 mrem. Likewise the dose received at the Heat Exchanger Door would be 0.60 mrem.

2. Annual Exposures Exceeding 500 mrem - Technical Specification 6.8.4.f

There were no personnel exposures greater than the above limit.

3. Radioactive Effluents - Technical Specification 6.8.4.g

A. Gaseous effluent concentrations are documented on the Monthly Information Sheets (Form NSC-78) enclosed. The gaseous effluents, primarily Argon-41, are about 3-4% of the maximum permissible concentrations.

B. Liquid effluent concentrations released to the sewer are documented on the Sewer Disposal Record (Form NSC-52) and / or the Liquid Release Record (Form NSC-17). The concentrations are well below the monthly sewer release limits.

DATE	VOLUME	ACTIVITY	% OF LIMIT	ORIGIN
8/31/98	3000 gallons	3.170 mCi	3 %	Delay Tank
1/7/99	450 gallons	175 microCi	1 %	Pool Water / Lab Sinks
1/11/99	860 gallons	282 microCi	0.8 %	Underground Tank
1/12/99	900 gallons	93 microCi	0.3 %	Underground Tanks

* Note : The water contains a mixture of isotopes, the principle ones being Sc-46, Sb-122, and H-3.