



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

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

July 27, 2001

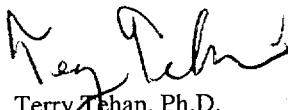
Docket No. 50-193

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, Ph.D.  
Director

TT:jd

Enclosures (5)

Copy to :

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

AC20

ENCLOSURE 1

Technical Specifications  
Section 6.8.4.a (00-01)

<b>Month</b>	<b>Reactor Critical (hours)</b>	<b>Energy Generated (MWh)</b>	<b>Energy Generated (MWd)</b>
July-00	11.20	19.90	0.83
August-00	19.22	35.34	1.47
September-00	37.10	63.97	2.67
October-00	23.22	40.90	1.70
November-00	21.50	39.87	1.66
December-00	23.10	42.74	1.78
January-01	26.22	49.04	2.04
February-01	20.03	36.90	1.54
March-01	28.77	53.12	2.21
April-01	29.80	51.73	2.16
May-01	11.87	21.85	0.91
June-01	8.75	16.22	0.68
<b>2000-01 Totals:</b>	<b>260.78</b>	<b>471.58</b>	<b>19.65</b>
<b>Total Energy Output since Initial Criticality:</b>		<b>57,665.36</b>	<b>2,402.72</b>

























ENCLOSURE 1

(Continued)

NSC-78

**Monthly Information Sheet**

NSC-78

<b>Month:</b> Jun-01	<b>Revised</b> 5/15/01
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<b>Cumulative MWH's</b>				TOTAL	LEU
<b>Start:</b> 57,649.14	<b>End:</b> 57,665.36	7,967.35			

\*added HEU=49698.01

Run No.	Day (1-31)	Ave Pwr Level (MW)	Start Time (hhmm)	S/D Time (hhmm)	Operating Time (hrs)	Todays total MWH	Stack Monitor max CPM	Ar-41 Released	
								Limit = 4E-4 uCi/cc	
								uCi/cc	Ci/day
7389	5	1.85	0904	0954	0.83	1.54	8,000	2.43E-05	0.02
7390	7	1.85	0918	1138	2.33	4.32	8,500	2.58E-05	0.04
7391	12	1.85	0930	1034	1.07	1.97	8,500	2.58E-05	0.02
7392	14	1.90	0916	1059	1.72	3.26	8,500	2.58E-05	0.03
7393	21	1.85	0902	1000	0.97	1.79	8,000	2.43E-05	0.02
7394	26	1.85	0901	1018	1.28	2.37	8,000	2.43E-05	0.02
7395	28	1.75	0839	0912	0.55	0.96	7,000	2.13E-05	0.01
<b>Totals:</b>					8.75	16.22		1.72E-04	0.16

**SUMMARY**

Operating	Max.	Actual		Max.	Actual
Hours	140.0	8.8	MWH's:	280.0	16.2
Percentage		6%			6%
Stack Releases	0.2 curies				

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 2000-2001 reporting period. This information is required by Technical Specification 6.8.4.b.

<b>DATE</b>	<b>RUN #</b>	<b>LOGBOOK / PAGE</b>	<b>CAUSE</b>
8/31/00	7301	48 / 138	Reactor scram caused by trip of seismic scram channel due to mis-adjustment of sensor.
9/7/00	7304	48 / 140	Reactor scram caused by short period on the Log N channel due to noise.
9/26/00	7312	49 / 8	Reactor scram caused by short period on the Log N channel due to noise.
11/12/00	7327	49 / 31	Reactor scram caused by short period on the Log N channel due to noise.
11/16/00	7328	49 / 33	Reactor scram caused by short period on the Log N channel due to noise.
11/23/00	7329	49 / 34	Reactor scram caused by short period on the Log N channel due to noise.
11/28/00	7331	49 / 37	Reactor scram caused by short period on the Log N channel due to noise.
12/14/00	7336	49 / 47	Reactor scram caused by short period on the Log N channel due to noise.
12/19/00	7337	49 / 49	Reactor scram caused by short period on the Log N channel due to noise.
12/27/00	7339	49 / 53	Reactor scram caused by short period on the Log N channel due to noise.
12/29/00	7340	49 / 56	Reactor scram caused by short period on the Log N channel due to noise.
1/2/01	7341	49 / 58	Reactor scram caused by short period on the Log N channel due to noise.
1/4/01	7342	49 / 60	Reactor scram caused by short period on the Log N channel due to noise.
1/16/01	7345	49 / 65	Reactor scram caused by short period on the Log N channel due to noise.
1/18/01	7347	49 / 68	Reactor scram caused by short period on the Log N channel due to noise.
1/23/01	7349	49 / 71	Reactor scram caused by short period on the Log N channel due to noise.
1/25/01	7350	49 / 73	Reactor scram caused by short period on the Log N channel due to noise.
2/13/01	7354	49 / 80	Reactor scram caused by short period on the Log N channel due to noise.
2/15/01	7355	49 / 83	Reactor scram caused by short period on the Log N channel due to noise.
2/20/01	7357	49 / 86	Reactor scram caused by short period on the Log N channel due to noise.
2/27/01	7360	49 / 90	Reactor scram caused by short period on the Log N channel due to noise.
3/8/01	7362	49 / 93	Reactor scram caused by short period on the Log N channel due to noise.
3/13/01	7363	49 / 95	Reactor scram caused by short period on the Log N channel due to noise.
3/22/01	7367	49 / 104	Reactor scram caused by short period on the Log N channel due to noise.

ENCLOSURE 2

**EMERGENCY SHUTDOWNS AND SCRAMS**

3/29/01	7369	49 / 107	Reactor scram caused by spike on pool temperature display.
4/3/01	7370	49 / 108	Reactor scram caused by spike on pool temperature display.
4/4/01	7371	49 / 110	Reactor scram caused by spike on pool temperature display.
4/5/01	7372	49 / 112	Reactor scram caused by spike on pool temperature display.
5/10/01	7383	49 / 127	Reactor scram caused by short period on the Log N channel due to noise.
5/15/01	7384	49 / 128	Reactor scram caused by short period on the Log N channel due to noise.
5/22/01	7386	49 / 132	Reactor scram caused by short period on the Log N channel due to noise.
5/29/01	7388	49 / 134	Reactor scram caused by short period on the Log N channel due to noise.
6/12/01	7391	49 / 138	Reactor scram caused by short period on the Log N channel due to noise.

A reactor scram was caused by the trip of the seismic sensor. This was due to a mis-adjustment of the sensor. Almost all of the emergency scrams involved the Log N channel. New instrumentation for this channel has been received. We are in the process of replacing the old instrumentation with the new equipment. Several scrams were caused by a spike on the pool temperature display. The logic associated with the display was faulty. A new display was installed and the problem was resolved.



### ENCLOSURE 3

The following is a listing of the major maintenance operations performed in the 2000-2001 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. Disposal of Underground Storage Tanks**

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 last year. This year, the tanks were decontaminated and have been disposed as scrap metal.

#### **2. Replacement of North Bunker Area Roof**

The false roof structure that was on top of the cement slab roof of the north bunker was falling apart. It has been removed, and a new concrete slab has been poured on top of the bunker.

#### **3. Secondary System Cooling Tower Relocation**

As part of the roofing project mentioned above, the cooling tower for secondary loop # 2 had to be removed. The new location for this tower is near the loop # 1 tower. We are in the process of finishing the plumbing phase of this project.

#### **4. Installation of sampling lines on the secondary sides of the heat exchangers**

Technical Specification 4.3.B.2 requires that secondary coolant be analyzed weekly for Na-24, as an indication of the presence of a leak between the primary and secondary sides of the heat exchangers. In order to make sampling easier, new sampling lines have been installed.

#### **5. Installation of Central Air Conditioning**

A new central air conditioning system was installed for the reception area and the office wing of the facility.

#### **6. Characterization of End Boxes**

RINSC has been storing end boxes from fuel assemblies that have been shipped out in the past. The Health Physicist has measured the dose rate and determined the irradiation history of each end box, in order to characterize them for shipping.

ENCLOSURE 4

**FACILITY CHANGES - 10CFR50.59 REVIEW**

The following is a listing and description of 10CFR50.59 evaluations conducted during the 2000-01 reporting period. This information is required by Technical Specification 6.8.4.d.

**1. Proposed Core Configuration Change**

Pursuant to 10CFR50.59, a committee was formed to evaluate a change in core configuration. The committee found that this change did not involve a change in the Technical Specifications, nor did it create an unreviewed safety question.

## ENCLOSURE 5

### RADIOLOGICAL CONTROLS

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

Quarterly OSL<sup>1</sup> badges are deployed outside the reactor building in three separate locations. The general public does not frequent these locations 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 <sup>RD</sup> QTR 2000	4 <sup>TH</sup> QTR 2000	1 <sup>ST</sup> QTR 2001	2 <sup>ND</sup> QTR 2001 <sup>2</sup>
Northeast Wall	185	168	44	33
Demineralizer Door	50	50	67	39
Heat Exchanger Door	3	13	9	8

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 4.3 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 2.06 mrem. Likewise the dose received at the Heat Exchanger Door would be 0.33 mrem.

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

There were no personnel exposures greater than 500 mrem.

#### 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, were less than 5% of the 10 CFR 20, Appendix B, Table 2, Column 1 effluent limits.

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). On December 6, 2000, the RINSC made a batch release of 490 gallons of aqueous waste containing a total of 1.10 E-4  $\mu$ Ci to the sewer. The release contained two radionuclides: Cs-137 (2.34E-11  $\mu$ Ci/ml) and Na-22 (3.62E-11  $\mu$ Ci/ml). Those concentrations were well less than the monthly sewer limit of 6E-5  $\mu$ Ci/ml. No other liquids were discharged during the reporting period.

<sup>1</sup> Optically Stimulated Luminescence

<sup>2</sup> Landauer reads the OSL dosimeters to 1 mrem.