



STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS

RHODE ISLAND ATOMIC ENERGY COMMISSION

Rhode Island Nuclear Science Center

16 Reactor Road

Narragansett, RI 02882-1165

August 5, 2003

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,

Michael J. Davis
Reactor Supervisor

Enclosures (5)

Copy to :

Mr. Craig Bassett, USNRC Region I
Dr. Harry Knickle, Chairman NRSC
Dr. Vincent Rose, Chairman RIAEC
Dr. Bruno Giletti, RIAEC
Dr. Stanley J. Pickart, RIAEC
Dr. Stephen Mecca, RIAEC
Dr. Alfred L. Allen, RIAEC

A020

ENCLOSURE 1

Technical Specifications
Section 6.8.4.a (01-02)

Month	Reactor Critical (hours)	Energy Generated (MWh)	Energy Generated (MWd)
July-02	12.90	25.70	1.07
August-02	26.50	52.90	2.20
September-02	16.90	30.80	1.28
October-02	27.00	53.90	2.25
November-02	17.20	31.40	1.31
December-02	19.70	38.80	1.62
January-03	11.90	21.90	0.91
February-03	17.60	34.60	1.44
March-03	24.50	46.00	1.92
April-03	18.00	33.30	1.39
May-03	32.40	61.80	2.58
June-03	20.10	36.10	1.50
2002-03 Totals:	244.70	467.20	19.47
Total Energy Output Since Initial Criticality:		58,533.01	2,438.88

(Continued)

NSC-78

LEU

Stack Calibration Factor = 4.375E-9

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	147.0	12.9	MWH's:	294.0	25.7
Percentage		9%			9%
Stack Releases	22.8 curies				

ENCLOSURE 1

(Continued)

NSC-78

Monthly Information Sheet

NSC-78

Month: Aug-02	Revised 5/8/02
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Cumulative MWH's

TOTAL

LEU

Start: 58,091.40	End: 58,144.33	8,436.91
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*added HEU=49698.01

Stack Calibration Factor = 4.375E-9

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 Releases	
								Limit = 1.0E-03 uCi/cc	
								uCi/cc	% of Limit
7513	1	2.00	0926	1026	1.00	2.00	6,000	2.63E-05	2.63
7514	6	2.00	0935	1235	3.00	6.00	6,000	2.63E-05	2.63
7515	8	2.00	1105	1410	3.08	6.17	6,000	2.63E-05	2.63
7516	13	2.00	1039	1228	1.82	3.63	6,000	2.63E-05	2.63
7517	15	2.00	0900	1530	6.50	13.00	7,000	3.06E-05	3.06
7518	20	2.00	0912	1216	3.07	6.13	6,000	2.63E-05	2.63
7519	22	2.00	1052	1351	2.98	5.97	6,000	2.63E-05	2.63
7520	27	2.00	0915	1152	2.62	5.23	7,000	3.06E-05	3.06
7521	29	2.00	1050	1314	2.40	4.80	7,000	3.06E-05	3.06
Totals:					26.47	52.93		2.49E-04	

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	154.0	26.5	MWH's:	308.0	52.9
Percentage		17%			17%
Stack Releases					

(Continued)

NSC-78

LEU

Stack Calibration Factor = 4.375E-9

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	133.0	16.9	MWH's:	266.0	30.8
Percentage		13%			12%

ENCLOSURE 1

(Continued)

NSC-78

Monthly Information Sheet

NSC-78

Month: Oct-02	Revised 5/8/02
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Cumulative MWH's		TOTAL		LEU
Start: 58,175.09	End: 58,229.02	58,229.02	8,521.60	

*added HEU=49698.01

Stack Calibration Factor = 4.375E-9

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 Releases	
								Limit = 1.0E-03 uCi/cc	
								uCi/cc	% of Limit
7529	1	2.00	0858	1117	2.32	4.63	11,000	4.81E-05	4.81
7530	3	2.00	1040	1251	2.18	4.37	10,000	4.38E-05	4.38
7531	8	2.00	1032	1334	3.03	6.07	11,000	4.81E-05	4.81
7532	10	2.00	1059	1154	0.92	1.83	10,000	4.38E-05	4.38
7533	15	2.00	0914	1140	2.43	4.87	12,000	5.25E-05	5.25
7534	17	2.00	1039	1229	1.83	3.67	12,000	5.25E-05	5.25
7535	22	2.00	0925	1122	1.95	3.90	13,000	5.69E-05	5.69
7536	24	2.00	1036	1225	1.82	3.63	12,000	5.25E-05	5.25
7537	29	2.00	0941	1620	6.65	13.30	12,000	5.25E-05	5.25
7538	31	2.00	1037	1427	3.83	7.67	12,000	5.25E-05	5.25
Totals:					26.97	53.93		5.03E-04	50.31

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	154.0	27.0	MWH's:	308.0	53.9
Percentage		18%			18%
Stack Releases	50.3 curies				

ENCLOSURE 1

(Continued)

NSC-78

Monthly Information Sheet

NSC-78

Month: Nov-02	Revised 5/8/02
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Cumulative MWH's

TOTAL

LEU

Start: 58,229.02	End: 58,260.38	8,552.96
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*added HEU=49698.01

Stack Calibration Factor = 4.375E-9

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 Releases	
								Limit = 1.0E-03 uCi/cc	% of Limit
7539	4	2.00	1054	1245	1.85	3.70	12,000	5.25E-05	5.25
7540	7	2.00	1024	1129	1.08	2.17	12,000	5.25E-05	5.25
7541	7	2.00	1506	1546	0.67	1.33	12,000	5.25E-05	5.25
7542	12	1.90	1057	1210	1.22	2.31	12,000	5.25E-05	5.25
7543	14	1.90	0953	1554	6.02	11.43	13,000	5.69E-05	5.69
7544	19	2.00	0923	1102	1.65	3.30	13,000	5.69E-05	5.69
7545	21	2.00	1038	1300	2.37	4.73	15,000	6.56E-05	6.56
7546	26	2.00	0910	1018	1.13	2.27	13,000	5.69E-05	5.69
7546	26	0.10	1028	1138	1.17	0.12	2,000	8.75E-06	0.88
Totals:					17.15	31.36		4.55E-04	45.50

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	140.0	17.2	MWH's:	280.0	31.4
Percentage		12%			11%
Stack Releases	45.5 curies				

(Continued)

NSC-78

Stack Calibration Factor = 4.375E-9

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	140.0	19.7	MWH's:	280.0	38.8
Percentage		14%			14%
Stack Releases	46.4 curies				

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Monthly Information Sheet

NSC-78

Month: Jan-03		Revised 5/15/01
Cumulative MWH's		TOTAL LEU
Start: 58,299.14		End: 58,321.09 8,623.08
*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
7555	7	1.95	0927	1120	1.88	3.67	13,000	3.95E-05	0.06
7556	9	1.90	1107	1412	3.08	5.86	15,000	4.56E-05	0.10
7557	14	1.90	0919	1016	0.95	1.81	14,000	4.26E-05	0.03
7558	21	1.90	0931	1034	1.05	2.00	15,000	4.56E-05	0.04
7559	23	1.90	1114	1245	1.52	2.88	15,000	4.56E-05	0.05
7560	28	0.01	1517	1542	0.42	0.00	1,000	3.04E-06	0.00
7561	30	1.90	0935	1236	3.02	5.73	15,000	4.56E-05	0.10
Totals:					11.92	21.95		2.68E-04	0.38

SUMMARY

Operating Hours	Max.	Actual		Max.	Actual
	147.0	11.9	MWH's:	294.0	21.9
Percentage		8%			7%
Stack Releases	0.4 curies				

ENCLOSURE 1

(Continued)

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Monthly Information Sheet

NSC-78

Month: Feb-03	Revised 5/15/01
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Cumulative MWH's**TOTAL****LEU**

Start: 58,321.09	End: 58,355.74	8,657.73
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*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
7562	4	1.90	1045	1216	1.52	2.88	14,000	4.26E-05	0.05
7563	6	1.90	0938	1238	3.00	5.70	15,000	4.56E-05	0.10
7564	11	2.00	1108	1219	1.18	2.37	17,000	5.17E-05	0.05
7565	13	2.00	1114	1414	3.00	6.00	18,000	5.47E-05	0.12
7566	20	2.00	1038	1329	2.85	5.70	17,000	5.17E-05	0.11
7567	25	2.00	0943	1243	3.00	6.00	16,000	4.86E-05	0.11
7568	27	2.00	1047	1347	3.00	6.00	17,000	5.17E-05	0.12
Totals:					17.55	34.65		3.47E-04	0.65

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	140.0	17.6	MWH's:	280.0	34.6
Percentage		13%			12%
Stack Releases	0.7 curies				

(Continued)

Monthly Information Sheet

Month: Mar-03		Revised 5/15/01
Cumulative MWH's		TOTAL LEU
Start: 58,355.74	End: 58,401.77	8,694.35
*added HEU=49698.01		Calibration Factor = 0.00049

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	147.0	24.5	MWH's:	294.0	46.0
Percentage		17%			16%
Stack Releases	0.8 curies				

(Continued)

NSC-78

*added HEU=49698.01

Totals:					18.00	33.27		2.85E-04	0.39
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Operating	Max.	Actual		Max.	Actual
Hours	154.0	18.0	MWH's:	308.0	33.3
Percentage		12%			11%
Stack Releases	0.4 curies				

ENCLOSURE 1

(Continued)

NSC-78

Monthly Information Sheet

NSC-78

Month: May-03	Revised 5/8/02
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Cumulative MWH's

TOTAL

LEU

Start: 58,435.03	End: 58,496.87	8,789.45
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*added HEU=49698.01

Stack Calibration Factor = 4.375E-9

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 = 1.0E-03 uCi/cc	% of Limit
7588	1	1.90	0944	1618	6.57	12.48	10,000	4.38E-05	4.38
7589	2	2.00	1100	1730	6.50	13.00	10,000	4.38E-05	4.38
7590	5	0.10	1031	1106	0.58	0.06	1,100	4.81E-06	0.48
7591	6								
7592	6	2.00	0938	1243	3.08	6.17	10,000	4.38E-05	4.38
7593	8	2.00	0942	1130	1.80	3.60	9,000	3.94E-05	3.94
7594	13	2.00	0933	1233	3.00	6.00	10,000	4.38E-05	4.38
7595	15	2.00	1016	1352	3.60	7.20	10,000	4.38E-05	4.38
7596	20	2.00	0912	1012	1.00	2.00	10,000	4.38E-05	4.38
7597	22	2.00	1033	1203	1.50	3.00	10,000	4.38E-05	4.38
7598	27	2.00	0915	1025	1.17	2.33	9,000	3.94E-05	3.94
7599	27	2.00	1114	1256	1.70	3.40	9,000	3.94E-05	3.94
7600	28	0.10	1000	1040	0.67	0.07	1,000	4.38E-06	0.44
7601	29	2.00	1022	1138	1.27	2.53	9,000	3.94E-05	3.94
Totals:					32.43	61.84		4.73E-04	

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	147.0	32.4	MWH's:	294.0	61.8
Percentage		22%			21%
Stack Releases		curies			

ENCLOSURE 1

(Continued)

NSC-78

Monthly Information Sheet

NSC-78

Month: Jun-03	Revised 5/8/02
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Cumulative MWH's

TOTAL

LEU

Start: 58,496.87	End: 58,533.01	8,825.59
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*added HEU=49698.01

Stack Calibration Factor = 4.375E-9

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 = 1.0E-03 uCi/cc	
								uCi/cc	% of Limit
7602	3	1.95	0930	1233	3.05	5.95	10,000	4.38E-05	4.38
7603	4	0.05	0930	1010	0.67	0.03	900	3.94E-06	0.39
7604	5	2.00	1031	1432	4.02	8.03	10,000	4.38E-05	4.38
7605	10	2.00	0914	1014	1.00	2.00	10,000	4.38E-05	4.38
7606	11	0.10	1000	1106	1.10	0.11	1,000	4.38E-06	0.44
7607	17	2.00	0930	1230	3.00	6.00	10,000	4.38E-05	4.38
7608	19	2.00	1023	1323	3.00	6.00	9,000	3.94E-05	3.94
7609	24	1.85	0938	1129	1.85	3.42	9,000	3.94E-05	3.94
7610	25	1.85	1422	1518	0.93	1.73	9,000	3.94E-05	3.94
7611	26	2.00	1030	1156	1.43	2.87	9,000	3.94E-05	3.94
Totals:					20.05	36.14		3.41E-04	34.08

SUMMARY

Operating	Max.	Actual		Max.	Actual
Hours	147.0	20.1	MWH's:	294.0	36.1
Percentage		14%			12%
Stack Releases	34.1 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 2002-2003 reporting period. This information is required by Technical Specification 6.8.4.b.

DATE	RUN #	LOGBOOK / PAGE	CAUSE
7/11/02	7506	50 / 144	Dropped Blade #1 due to magnet misalignment.
8/22/02	7519	51 / 11	Reactor scram caused by short period on the Log N channel due to noise.
9/10/02	7523	51 / 16	Reactor scram caused by operator error - power level switch not set to 2 MW.
9/12/02	7524	51 / 18	Reactor scram caused by short period on the Log N channel due to noise.
9/24/02	7526	51 / 21	Reactor scram caused by short period on the Log N channel due to noise.
9/26/02	7528	51 / 23	Reactor scram caused by short period on the Log N channel due to noise.
10/8/02	7531	51 / 26	Reactor scram caused by operator error - power level switch not set to 2 MW.
10/10/02	7532	51 / 28	Reactor scram caused by short period on the Log N channel due to noise.
1/23/03	7559	51 / 56	Reactor scram when switching from cooling loop #1 to cooling loop #2.
3/13/03	7572	51 / 69	Dropped Blade #1 due to magnet misalignment.
4/22/03	7584	51 / 79	Reactor scram caused by short period on the Log N channel due to noise.
5/1/03	7588	51 / 82	Reactor scram caused by operator error - power level switch not set to 2 MW.
5/6/03	7591	51 / 85	Reactor scram when adjusting the detector for Power Level Channel #1.
5/27/03	7598	51 / 89	Reactor scram caused by seismic channel over sensitivity due to re-calibration.

The most frequent cause of emergency shutdowns and scrams is a short period scram caused by noise on the Log N Period channel. However, the number of these scrams has been reduced from thirty two for FY01/02 to six for FY02/03, despite the fact that the operating schedule has not changed significantly. We replaced the connector between the detector and the instrumentation, and assume that this has contributed toward solving this problem.

ENCLOSURE 3

The following is a listing of the major maintenance operations performed in the 2002-2003 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.

During the 2002-2003 reporting period, there were no major maintenance operations performed.

ENCLOSURE 4

FACILITY CHANGES - 10CFR50.59 REVIEW

The following is a listing and description of 10CFR50.59 evaluations conducted during the 2002-2003 reporting period. This information is required by Technical Specification 6.8.4.d.

There were no 10CFR50.59 evaluations conducted during this reporting period.

ENCLOSURE 5

RADIOLOGICAL CONTROLS

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

Quarterly OSL¹ 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	3RD QTR 2002	4TH QTR 2002	1ST QTR 2003	2ND QTR 2003²
Northeast Wall	35	30	24	32
Demineralizer Door	77	68	62	89
Heat Exchanger Door	17	7	7	34

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 1.21 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 2.96 mrem. Likewise the dose received at the Heat Exchanger Door would be 0.07 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). . No liquids were discharged during the reporting period.

¹ Optically Stimulated Luminescence

² Landauer reads the OSL dosimeters to 1 mrem.