



SAXTON NUCLEAR EXPERIMENTAL CORPORATION
GENERAL PUBLIC UTILITIES SYSTEM

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June 30, 1992
SNEC-92-0021
C-301-92-0010

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555

Dear Sir:

Saxton Nuclear Facility
Operating License No. DPR-4
Docket No. 50-146
1991 Annual Report

The Saxton Nuclear Experimental Corporation (SNEC) Technical Specification (TS), Section B.5.b, requires submittal, on an annual basis, of a written report covering the status of the SNEC facility.

Enclosed, in compliance with the TS section, is the SNEC Annual Report covering the period January 1, 1991 through December 31, 1991.

Sincerely,

B. A. Good
B. A. Good
Vice President

BAG/ch
Enclosures

cc: A. Adams - NRC (w/encl)
R. Bores - NRC (w/encl)
J. Roth - NRC (w/encl)
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T. Martin - Administrator Region I

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SAXTON NUCLEAR EXPERIMENTAL CORPORATION

1991

Annual Report

January 1, 1991 - December 31, 1991

EXECUTIVE SUMMARY

During the report period January 1, 1991 to December 31, 1991, various activities were conducted at the SNEC facility to further the decontamination and decommissioning efforts at the site while assuring continued protection of the health and safety of the public and SNEC staff.

A total of 47 entries were made into the Containment Vessel (CV). These entries were made for Technical Specification quarterly surveys, routine housekeeping and related work, radiological assessment tour, QA audit tour and radiological characterization surveys.

All of the required Technical Specification quarterly radiation surveys were successfully conducted at the facility. In addition, the supplemental environmental monitoring program maintained by GPU Nuclear at the site continued during 1991. Results of these monitoring programs and surveys indicate that there has been no appreciable change in the radiological or environmental conditions at the facility when compared to previous years. The facility currently poses no threat to the health and safety of the public.

ANNUAL REPORT IN COMPLIANCE WITH PARAGRAPH B.5.b
OF THE SNEC TECHNICAL SPECIFICATIONS
JANUARY 1, 1991 - DECEMBER 31, 1991

Introduction

This report is prepared in compliance with Section B.5.b of the Saxton Nuclear Experimental Corporation (SNEC) Technical Specifications. The reporting period covers January 1, 1991 to December 31, 1991. Each section presented corresponds to the appropriate reporting requirement of the Technical Specifications.

A. Information Relating to Changes in those Staff Positions that are Designated as being Responsible for the Deactivated Facility. - (Section B.5.b(1))

There were no changes in staff positions responsible for the deactivated facility during 1991.

B. Summary of Entries into the Containment Vessel (CV) or Radioactive Waste Disposal Facility (R.W.D.F.) and Reason for Each Entry. - (Section B.5.b(2))

During the time frame of January 1, 1991 to December 31, 1991, there were 274 entries into the RWDF. Daily sign-in and sign-out logs are on file and available for inspection.

A list of entries into the SNEC Containment Vessel and reason for each is presented below.

1.	03/21/91	First Quarterly Inspection & Radiological Assessment
2.	06/20/91	Second Quarterly Inspection
3.	07/16/91	Radiological Characterization
4.	07/17/91	Radiological Characterization
5.	07/18/91	Radiological Characterization
6.	07/19/91	Radiological Characterization
7.	07/22/91	Radiological Characterization/GPUN QA Audit Tour
8.	07/23/91	Radiological Characterization/GPUN QA Audit Tour
9.	08/08/91	Radiological Characterization
10.	08/12/91	Radiological Characterization & Inspection
11.	08/13/91	Radiological Characterization
12.	08/14/91	Radiological Characterization
13.	08/15/91	Radiological Characterization
14.	08/16/91	Radiological Characterization
15.	08/20/91	Radiological Characterization
16.	08/21/91	Radiological Characterization
17.	08/22/91	Radiological Characterization
18.	08/23/91	Radiological Characterization
19.	08/26/91	Radiological Characterization

20.	08/27/91	Radiological Characterization
21.	08/28/91	Radiological Characterization
22.	08/29/91	Radiological Characterization
23.	09/03/91	Radiological Characterization
24.	09/05/91	Radiological Characterization
25.	09/06/91	Radiological Characterization
26.	09/09/91	Radiological Characterization
27.	09/10/91	Radiological Characterization
28.	09/11/91	Third Quarterly Inspection & Radiological Assessment
29.	09/12/91	Radiological Characterization
30.	09/16/91	Radiological Characterization
31.	11/25/91	Radiological Characterization
32.	11/26/91	Radiological Characterization
33.	11/27/91	Radiological Characterization
34.	12/04/91	Radiological Characterization
35.	12/05/91	Fourth Quarterly Inspection & Radiological Characterization
36.	12/06/91	Radiological Characterization
37.	12/07/91	Radiological Characterization
38.	12/08/91	Radiological Characterization
39.	12/09/91	Radiological Characterization
40.	12/10/91	Radiological Characterization
41.	12/11/91	Radiological Characterization
42.	12/12/91	Radiological Characterization
43.	12/13/91	Radiological Characterization
44.	12/17/91	Radiological Characterization
45.	12/18/91	Radiological Characterization
46.	12/19/91	Radiological Characterization
47.	12/20/91	Radiological Characterization

C. Summary of Maintenance and Design Changes Made to the Deactivated Facility.
- (Section 3.5.b(3))

During 1991, there were no major maintenance or design changes made at SNEC. Some minor changes related to radiological characterization surveys in the CV were made (i.e., flange removals for sampling).

D. Results of Radioactivity Levels and of Water Sample Analyses. - (Section B.5.b(4)).

Analysis results of water samples from the CV sump, RWDF sump and CV pipe tunnel are presented in Tables I, II, III, respectively. Sample results from the CV sump contain the highest activity. This is consistent with previous years data. The water in the CV sump is completely contained and not in contact with the environment, therefore, there is no threat to the public health and safety. CV sump water originates from small amounts of condensation that

form on the inside of the CV walls and drain downward into the sump. CV sump capacity is approximately 325 gallons. It contains approximately 170 gallons of water. Water levels are measured quarterly and have shown slight increases.

Table IV presents the highest contact dose rates on the CV Operating Deck and the highest waist level dose rates taken around the CV and Penelec perimeter fences during the quarterly surveys. Count rate information obtained from surveys of the CV High Efficiency Filter is presented in Table V.

Dose rates at the 20 permanent survey points in the CV, ranged from less than 0.2 mr/hr to 0.2 mr/hr. The data are presented in Table VI. Smear surveys from the same 20 permanently marked points ranged from less than minimum detectable activity to 6260 dpm/100cm² (Table VII). Between the second and third quarter of 1991 some housekeeping efforts resulted in a reduction of contamination on most of the marked survey point areas. The first twelve survey points are inaccessible from clean areas. The data from these surveys are generally consistent with past results and do not display any adverse trends.

Table VIII contains the results of composite water samples collected on the discharge of sump pumps that dewater groundwater leakage from the RWDF and yard pipe tunnel.

E. Review of the Performance of Security and Surveillance Measures. - Section B.5.b(5))

During 1991 there were no break-ins or no known attempted break-ins at the SNEC facility. No major changes were made to in-place security features.

TABLE 1

SNEC Containment Vessel (CV) Sump Water Analysis Results 1991* $(\mu\text{Ci/ml})$

Radio-nuclides	1st Qtr. 03/21/91	2nd Qtr. 06/20/91	3rd Qtr. 09/11/91	4th Qtr. 12/05/91
Gr-Alpha	$< 3.0\text{E-}10$	$< 4.0\text{E-}8$	$1.2\text{E-}7 \pm 0.6\text{E-}7$	$< 5.0\text{E-}7$
Gr-Beta	$2.0\text{E-}3 \pm 0.1\text{E-}3$	$2.4\text{E-}3 \pm 0.1\text{E-}3$	$2.8\text{E-}3 \pm 0.1\text{E-}3$	$3.0\text{E-}3 \pm 0.1\text{E-}3$
H-3	$5.4\text{E-}4 \pm 0.1\text{E-}4$	$6.4\text{E-}4 \pm 0.1\text{E-}4$	$5.4\text{E-}4 \pm 0.1\text{E-}4$	$4.9\text{E-}4 \pm 0.1\text{E-}4$
Sr-90	$4.9\text{E-}5 \pm 0.1\text{E-}5$	$6.5\text{E-}6 \pm 0.1\text{E-}6$	$6.5\text{E-}6 \pm 0.1\text{E-}6$	$6.8\text{E-}6 \pm 0.1\text{E-}6$
Co-60	$< 7.0\text{E-}7$	$1.48\text{E-}6 \pm 0.15\text{E-}6$	$< 6.0\text{E-}7$	$< 8.0\text{E-}7$
Cs-134	$2.47\text{E-}6 \pm 0.95\text{E-}6$	$2.57\text{E-}6 \pm 1.08\text{E-}6$	$1.71\text{E-}6 \pm 0.56\text{E-}6$	$2.60\text{E-}6 \pm 0.68\text{E-}6$
Cs-137	$2.04\text{E-}3 \pm 0.20\text{E-}3$	$2.13\text{E-}3 \pm 0.21\text{E-}3$	$2.55\text{E-}3 \pm 0.26\text{E-}3$	$3.01\text{E-}3 \pm 0.30\text{E-}3$

* Analysis results from Teledyne Isotopes

TABLE II
RWDF Sump Analysis Results 1991

($\mu\text{Ci/ml}$)

Radio-nuclides	1st Qtr. 03/21/91	2nd Qtr. 06/20/91	3rd Qtr. 09/11/91	4th Qtr. 12/05/91
Gr-Alpha	<7.0E-9	<7.0E-9	<6.0E-9	<7.0E-9
Gr-Beta	5.9E-9 \pm 1.3E-9	1.2E-8 \pm 0.3E-8	2.0E-8 \pm 0.2E-8	1.0E-8 \pm 0.1E-8
H-3	<1.7E-7	<1.7E-7	<1.6E-7	<1.3E-7
Sr-90*	---	---	---	---
Co-60	<9.0E-9	<5.0E-9	<5.0E-9	<3.0E-9
Cs-134	<1.4E-8	<9.0E-9	<5.0E-9	<5.0E-9
Cs-137	<7.0E-9	<5.0E-9	<3.0E-9	<3.0E-9

* Sr-90 analysis has been changed to "as needed".

TABLE III

CV Pipe Tunnel Analysis Results 1991 $(\mu\text{Ci}/\text{ml})$

Radio-nuclides	1st Qtr. 03/21/91	2nd Qtr. 06/20/91	3rd Qtr. 09/11/91	4th Qtr. 12/05/91
Gr-Alpha	$< 6.0\text{E}-9$	$< 4.0\text{E}-9$	$< 4.0\text{E}-9$	$< 3.0\text{E}-9$
Gr-Beta	$1.8\text{E}-8 \pm 0.2\text{E}-8$	$2.2\text{E}-8 \pm 0.5\text{E}-8$	$3.7\text{E}-8 \pm 0.4\text{E}-8$	$2.1\text{E}-8 \pm 0.2\text{E}-8$
H-3	$< 1.7\text{E}-7$	$1.8\text{E}-7 \pm 1.1\text{E}-7$	$< 1.6\text{E}-7$	$< 1.3\text{E}-7$
Sr-90*	---	---	---	---
Co-60	$< 4.0\text{E}-9$	$< 5.0\text{E}-9$	$< 5.0\text{E}-9$	$< 1.7\text{E}-9$
Cs-134	$< 8.0\text{E}-9$	$< 4.0\text{E}-9$	$< 4.0\text{E}-9$	$< 2.0\text{E}-9$
Cs-137	$1.1\text{E}-8 \pm 0.4\text{E}-8$	$1.5\text{E}-8 \pm 0.3\text{E}-8$	$1.9\text{E}-8 \pm 0.3\text{E}-8$	$1.2\text{E}-8 \pm 0.2\text{E}-8$

* Sr-90 analysis has been changed to "as needed".

TABLE IV

General Area Dose Rate Survey CV Operating Deck 1991	
1. 03/21/91	<0.2 mR/hr
2. 06/20/91	<0.2 mR/hr
3. 09/11/91	<0.2 mR/hr
4. 12/05/91	<0.2 mR/hr
CV Perimeter Fence Dose Rate Survey 1991	
1. 03/21/91	22 μ R/hr
2. 06/20/91	22 μ R/hr
3. 09/11/91	23 μ R/hr
4. 12/05/91	21 μ R/hr
Penelec Perimeter Fence Dose Rate Survey 1991	
1. 03/21/91	18 μ R/hr
2. 06/20/91	14 μ R/hr
3. 09/11/91	17 μ R/hr
4. 12/05/91	19 μ R/hr

TABLE V

Count Rate Surveys CV High Efficiency Filter 1991	
1. 03/21/91	< 100 ncpm
2. 06/20/91	< 100 ncpm
3. 09/11/91	< 100 ncpm
4. 12/05/91	< 100 ncpm

TABLE VI

SNEC CV Dose Rates 1991
20 Permanent Survey Points

(Gross Beta - mr/)

Survey Point No.	1st Qtr. 03/21/91	2nd Qtr. 06/20/91	3rd Qtr. 09/11/91	4th Qtr. 12/05/91
1	<0.2	<0.2	<0.2	<0.2
2	<0.2	<0.2	<0.2	<0.2
3	<0.2	0.2	<0.2	<0.2
4	<0.2	<0.2	<0.2	<0.2
5	<0.2	<0.2	<0.2	<0.2
6	<0.2	0.2	<0.2	<0.2
7	<0.2	<0.2	<0.2	<0.2
8	<0.2	<0.2	<0.2	<0.2
9	<0.2	<0.2	<0.2	<0.2
10	<0.2	<0.2	<0.2	<0.2
11	<0.2	<0.2	<0.2	<0.2
12	<0.2	<0.2	<0.2	<0.2
13	<0.2	<0.2	<0.2	<0.2
14	<0.2	<0.2	<0.2	<0.2
15	<0.2	<0.2	<0.2	<0.2
16	<0.2	<0.2	<0.2	<0.2
17	<0.2	<0.2	<0.2	<0.2
18	<0.2	<0.2	<0.2	<0.2
19	<0.2	<0.2	<0.2	<0.2
20	<0.2	<0.2	<0.2	<0.2

TABLE VII

SNEC CV Smear Surveys 1991
20 Permanent Survey Points

(dpm/100cm²)

Survey Point No.	1st Qtr. 03/21/91	2nd Qtr. 06/20/91	3rd Qtr. 09/11/91	4th Qtr. 12/05/91
1	< 101	< MDC	< MDC	< MDC
2	< 101	< MDC	< MDC	< MDC
3	< 101	< MDC	< MDC	< MDC
4	1210	840	< MDC	< MDC
5	< 101	< MDC	< MDC	< MDC
6	< 101	< MDC	< MDC	< MDC
7	230	100	< MDC	< MDC
8	1490	2380	< MDC	< MDC
9	1370	1340	< MDC	< MDC
10	840	340	< MDC	< MDC
11	130	< MDC	1110	< MDC
12	5310	6260	530	1570
13	530	420	< MDC	< MDC
14	580	< MDC	< MDC	< MDC
15	310	200	< MDC	340
16	210	480	< MDC	< MDC
17	140	< MDC	< MDC	< MDC
18	280	160	< MDC	< MDC
19	170	240	< MDC	420
20	< 101	< MDC	< MDC	< MDC

TABLE VIII

**Analysis of Groundwater Dewatered from RWDF and
Other Subsurface Building Areas - 1991**

($\mu\text{Ci/ml}$)

Date	Sr-90	Cs-137	Co-60	Gr-Alpha	Gr-Beta	H-3
01/02/91 - 02/08/91	*	<3.0E-9	<4.0E-9	<7.0E-9	8.4E-9 \pm 2.1E-9	<1.8E-7
02/08/91 - 02/26/91	*	<4.0E-9	<4.0E-9	<8.0E-9	8.4E-9 \pm 1.4E-9	1.5E-7 \pm 0.8E-7
02/26/91 - 03/21/91	<3.0E-9	<5.0E-9	<6.0E-9	<7.0E-9	8.0E-9 \pm 1.4E-9	<1.7E-7
03/21/91 - 04/30/91	*	<3.0E-9	<5.0E-9	<9.0E-9	5.6E-9 \pm 1.8E-9	<1.4E-7
04/30/91 - 06/06/91	*	<5.0E-9	<5.0E-9	<6.0E-9	1.1E-8 \pm 0.4E-8	1.6E-7 \pm 1.0E-7
06/06/91 - 07/01/91	<7.0E-10	<1.3E-9	<1.4E-9	1.2E-8 \pm 0.5E-8	1.1E-8 \pm 0.3E-8	<1.7E-7
07/01/91 - 07/30/91	*	<4.0E-9	<4.0E-9	7.2E-9 \pm 4.5E-9	7.9E-9 \pm 1.3E-9	1.8E-7 \pm 1.0E-7
07/30/91 - 09/06/91	*	<1.4E-9	<1.5E-9	<6.0E-9	1.2E-8 \pm 0.2E-8	<1.6E-7
09/06/91 - 09/30/91	<3.0E-10	<3.0E-9	<4.0E-9	<7.0E-9	8.2E-9 \pm 1.5E-9	<1.5E-7
09/30/91 - 11/15/91	*	<3.0E-9	<4.0E-9	<9.0E-9	8.7E-9 \pm 1.5E-9	<1.2E-7
11/15/91 - 12/05/92	*	<1.7E-9	<1.6E-9	<9.0E-9	7.7E-9 \pm 1.4E-9	2.1E-7 \pm 0.9E-7
12/05/91 - 01/08/92 **	<6.0E-10	<3.0E-9	<3.0E-9	<8.0E-9	6.8E-9 \pm 1.5E-9	<1.7E-7

* - Composited for quarterly analysis.

** - RWDF sampler malfunctioned in December 1991. A grab sample taken 1/8/92 @ 900. New sampling unit was installed on January 10, 1992.