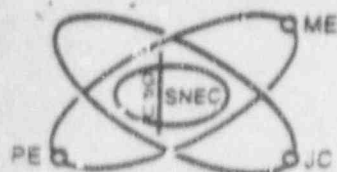


SAXTON NUCLEAR EXPERIMENTAL CORPORATION  
GENERAL PUBLIC UTILITIES SYSTEM



Jersey Central Power & Light Company  
Pennsylvania Electric Company  
Metropolitan Edison Company

MAILING ADDRESS:  
1 Upper Pond Road  
Parsippany, NJ 07054

October 15, 1991  
C301-91-0009  
SNEC-91-0047

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

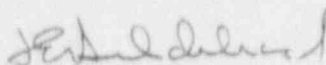
Dear Sir:

Saxton Nuclear Facility  
Operating License No. DPR-4  
Docket No. 50-146  
1990 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 above TS section, is the SNEC Annual Report covering the period January 1, 1990 through December 31, 1990.

Sincerely,

  
J. E. Hildebrand  
President

JEH/EP/plp  
Enclosures

cc: A. Adams - NRC (w/encl)  
R. Bores - NRC (w/encl)  
J. Roth - NRC (w/encl)  
S. Weiss - NRC (w/encl)

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SAXTON NUCLEAR EXPERIMENTAL CORPORATION

1990

Annual Report

January 1, 1990 - December 31, 1990

## EXECUTIVE SUMMARY

During the report period January 1, 1990 to December 31, 1990, 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.

The Final Release Survey of the Reactor Support Buildings was issued April, 1990 to the NRC. Revision 1 was issued September, 1990.

A total of 13 entries were made into the Containment Vessel (CV). These entries were made for Technical Specification quarterly surveys, routine housekeeping and related work, and management tours.

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 1990. 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, 1990 - DECEMBER 31, 1990

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, 1990 to December 31, 1990. 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))

The following changes occurred in staff positions responsible for the deactivated facility during 1990.

<u>Name</u>	<u>Nature of Change</u>	<u>Effective Date</u>
R. W. Heward	Resigned as President, SNEC	July 31, 1990
J. E. Hildebrand	Elected President, SNEC	July 31, 1990
B. A. Good	Elected V.P., SNEC	July 31, 1990

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, 1990 to December 31, 1990, there were 336 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.	01/24/90	NRC Tour of Site
2.	03/22/90	First Quarterly Surveillance
3.	05/24/90	GPU Inspection Tour
4.	06/28/90	Second Quarterly Surveillance
5.	07/11/90	NRC Inspection Tour
6.	09/27/90	Third Quarterly Surveillance & Radiological Assessment
7.	10/12/90	ORAU Survey Support
8.	10/22/90	ORAU Survey Team Tour
9.	10/22/90	Public Service of Colorado Tour
10.	10/30/90	ORAU Survey Support
11.	10/31/90	Fourth Quarterly Surveillance
12.	11/07/90	ORAU Survey Support
13.	11/27/90	Nuclear Safety Compliance Committee Tour

C. Summary of Maintenance and Design Changes Made to the Deactivated Facility. - (Section B.5.b(3))

During 1990, there were no major maintenance or design changes made at SNEC. Some minor changes related to final radiological surveys in the RWDF and C&A Buildings were made (i.e., surface decontamination).

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. It is noted that the CV sump activity has had an apparent decrease since the first quarter of 1990. This is due to a new sampling technique which restricts bottom sampling and should provide more consistent results. 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 140 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 0.3 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 8000 dpm/100cm<sup>2</sup> (Table VII). All survey points except 1 and 2 are located in a posted contaminated area. Only points located along the walkway to the lower levels of the CV have displayed any movement of loose contamination. This movement is due to survey crews traversing the area from the lower levels of the CV to the radiological control point. Smear results from the fourth quarter were counted using a portable pancake detector and ratemeter rather than laboratory counting equipment; consequently the results appear slightly higher. 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 inleakage from the RWDF and pipe tunnel.

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

During 1990 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 I

SNEC Containment Vessel (CV) Sump Water Analysis Results 1990\*

	(uCi/ml)			
Radio-nuclides	1st Qtr. <u>03/22/90</u>	2nd Qtr. <u>06/28/90</u>	3rd Qtr. <u>09/27/90</u>	4th Qtr. <u>10/31/90</u>
Gr-Alpha	4.7E-6 ± 0.3E-6	8.7E-8 ± 4.7E-8	<3.0E-8	<3.0E-8
Gr-Beta	5.7E-3 ± 0.1E-3	2.2E-3 ± 0.1E-3	1.7E-4 ± 0.1E-4	2.2E-3 ± 0.1E-3
H-3	5.6E-4 ± 0.1E-4	5.7E-4 ± 0.1E-4	5.7E-4 ± 0.2E-4	6.7E-4 ± 0.1E-4
Sr-90	8.6E-6 ± 0.2E-6	9.4E-6 ± 0.2E-6	5.8E-6 ± 0.1E-6	7.1E-6 ± 0.1E-6
Co-60	1.09E-4 ± 0.11E-4	3.05E-6 ± 1.22E-6	<9.0E-7	<9.0E-7
Cs-134	7.34E-6 ± 1.49E-6	4.57E-6 ± 0.92E-6	3.58E-6 ± 0.88E-6	2.64E-6 ± 1.02E-6
Cs-137	6.09E-3 ± 0.61E-3	2.95E-3 ± 0.29E-3	2.27E-3 ± 0.23E-3	2.24E-3 ± 0.22E-3

\* Analysis results from Teledyne Isotopes



TABLE II

RWDF Sump Analysis Results 1990

<u>Radio-</u> <u>nuclides</u>	(uCi/ml)			
	1st Qtr. <u>03/22/90</u>	2nd Qtr. <u>06/28/90</u>	3rd Qtr. <u>09/27/90</u>	4th Qtr. <u>10/31/90</u>
Gr-Alpha	<7.0E-9	<5.0E-9	<9.0E-9	<8.0E-9
Gr-Beta	6.5E-9 ± 2.5E-9	1.5E-8 ± 0.3E-8	8.7E-9 ± 3.1E-9	7.9E-9 ± 4.3E-9
H-3	<1.6E-7	<1.7E-7	<1.6E-7	<1.2E-7
Sr-90*	<1.0E-9	---	---	---
Co-60	<5.0E-9	<3.0E-9	<2.0E-9	<4.0E-9
Cs-134	<9.0E-9	<1.0E-8	<8.0E-9	<4.0E-9
Cs-137	<4.0E-9	<4.0E-9	<3.0E-9	<4.0E-9

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



TABLE III

CV Pipe Tunnel Analysis Results 1990

	(uCi/ml)			
<u>Radio-nuclides</u>	<u>1st Qtr.</u> <u>03/22/90</u>	<u>2nd Qtr.</u> <u>06/28/90</u>	<u>3rd Qtr.</u> <u>09/27/90</u>	<u>4th Qtr.</u> <u>10/31/90</u>
Gr-Alpha	<4.0E-9	<3.0E-9	<4.0E-9	<3.0E-9
Gr-Beta	3.0E-8 ± 0.3E-8	2.5E-8 ± 0.3E-8	3.7E-8 ± 0.4E-8	2.5E-8 ± 0.3E-8
H-3	<1.6E-7	<1.7E-7	<1.6E-7	<1.2E-7
Sr-90*	<1.0E-9	---	---	---
Co-60	<4.0E-9	<4.0E-9	<8.0E-9	<5.0E-9
Cs-134	<4.0E-9	<4.0E-9	<6.0E-9	<4.0E-9
Cs-137	1.9E-8 ± 0.3E-8	1.5E-8 ± 0.2E-8	2.8E-8 ± 0.5E-8	1.6E-8 ± 0.3E-8

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

TABLE IV

General Area Dose Rate Survey CV Operating Deck 1990

1.	03/22/90	0.2 mR/hr
2.	06/28/90	0.2 mR/hr
3.	09/27/90	0.2 mR/hr
4.	10/31/90	0.2 mR/hr

CV Perimeter Fence Dose Rate Survey 1990

1.	03/22/90	32 uR/hr
2.	06/28/90	25 uR/hr
3.	09/27/90	36 uR/hr
4.	10/31/90	60 uR/hr

Penelec Perimeter Fence Dose Rate Survey 1990

1.	03/22/90	14 uR/hr
2.	06/28/90	14 uR/hr
3.	09/27/90	18 uR/hr
4.	10/31/90	17 uR/hr

TABLE V

Count Rate Surveys CV High Efficiency Filter 1990

1.	03/22/90	<100 ncpm
2.	06/28/90	<100 ncpm
3.	09/27/90	<100 ncpm
4.	10/31/90	<100 ncpm

TABLE VI

SNEC CV Dose Rates 1990  
20 Permanent Survey Points(Gross Beta - mr/hr)

<u>Survey Point No.</u>	<u>1st Qtr. 03/22/90</u>	<u>2nd Qtr. 06/28/90</u>	<u>3rd Qtr. 09/27/90</u>	<u>4th Qtr. 10/31/90</u>
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	0.3	<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	0.3	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 1990  
20 Permanent Survey Points

(dpm/100cm<sup>2</sup>)

<u>Survey Point No.</u>	<u>1st Qtr. 03/22/90</u>	<u>2nd Qtr. 06/28/90</u>	<u>3rd Qtr. 09/27/90</u>	<u>4th Qtr. 10/31/90</u>
1	<135	<111	<147	<1000
2	<135	<111	<147	<1000
3	<135	<111	<147	2000
4	505	363	<147	<1000
5	<135	<111	<147	1000
6	<135	<111	<147	2000
7	<135	533	<147	1000
8	1185	113	<147	<1000
9	255	<111	<147	1000
10	255	<111	<147	1000
11	145	<111	<147	2000
12	1175	613	1050	8000
13	235	163	<147	1000
14	185	133	<147	<1000
15	<135	243	<147	1000
16	225	113	<147	<1000
17	<135	<111	<147	<1000
18	295	<111	<147	1000
19	235	<111	<147	<1000
20	885	<111	<147	3000

TABLE VIII

Analysis of Groundwater Dewatered from RWDF and  
Other Subsurface Building Areas - 1990

(uCi/ml)

Date	Sr-90	Cs-137	Co-60	Gr-Alpha	Gr-Beta	H-3
12/28/89 - 01/24/90	*	<5.0E-9	<7.0E-9	1.1E-8 ± 0.4E-8	6.2E-9 ± 2.6E-9	<1.5E-7
01/24/90 - 02/26/90**	*	<3.0E-9	<3.0E-9	<5.0E-9	6.3E-9 ± 2.0E-9	<1.0E-7
02/26/90 - 03/28/90	<1.0E-9	<5.0E-9	<6.0E-9	<9.0E-9	6.5E-9 ± 2.1E-9	<1.6E-7
03/28/90 - 04/30/90	*	<5.0E-9	<7.0E-9	<6.0E-9	6.2E-9 ± 2.0E-9	<1.4E-7
04/30/90 - 05/24/90	*	<6.0E-9	<7.0E-9	7.6E-9 ± 2.9E-9	8.9E-9 ± 1.7E-9	<1.5E-7
05/24/90 - 06/28/90	<4.0E-10	<5.0E-9	<6.0E-9	<6.0E-9	7.8E-9 ± 2.7E-9	<1.7E-7
06/28/90 - 07/30/90	*	<3.0E-9	<4.0E-9	<9.0E-9	7.6E-9 ± 3.2E-9	<1.0E-7
07/30/90 - 08/22/90	*	<3.0E-9	<3.0E-9	<9.0E-9	7.4E-9 ± 3.3E-9	<1.7E-7
08/22/90 - 09/27/90	<9.0E-10	<3.0E-9	<4.0E-9	<7.0E-9	1.1E-8 ± 0.3E-8	<1.6E-7
09/27/90 - 10/31/90	*	<3.0E-9	<4.0E-9	<7.0E-9	7.4E-9 ± 3.5E-9	1.6E-7 ± 0.8E-7
10/31/90 - 11/27/90	*	<3.0E-9	<3.0E-9	<7.0E-9	7.5E-9 ± 3.5E-9	1.3E-7 ± 0.8E-7
11/27/90 - 01/02/91***	<9.0E-10	<4.0E-9	<4.0E-9	<7.0E-9	1.1E-8 ± 0.2E-8	<1.8E-7

\* = Sr-90 Composited quarterly

\*\* = Collection start/stop date 2/17 - 2/26/90. This result represents the February, 1990 monthly composite from Station E1-18. The automatic water compositor was inoperative from 1/24 - 2/17/90.

\*\*\* = Due to an automatic water compositor malfunction, this sample consisted of equal portions of two grab samples; one on 12/30/90 and the other on 01/02/91.