U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

Region I

Report No. 50-146/79-01

Docket No. 50-146

License No. DPR-4 Priority -- Category D

Licensee: Saxton Nuclear Experimental Corporation/General Public Utilities Corporation
260 Cherry Hill Road

Parsippany, New Jersey 07054

Facility Name: Saxton Reactor (in decommission status)

Inspection at: Saxton, Pennsylvania 16678

Inspection conducted: September 20-22, October 19, 1979, and March 25, 1980

Inspectors: K. E. Plumlee — Sept. 5, 1980
K. E. Plumlee, Radiation Specialist — date signed

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date signed

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date signed

Approved by: P. N. Knapp — Sept 5, 1980
P. N. Knapp, Chief, Radiation Support Section, FF&MS Branch — date signed

Inspection Summary:
Inspection on September 20-22, October 19, 1979, and March 25, 1980
(Report No. 50-146/79-01)
Areas Inspected: Routine, announced inspection and nonroutine followup visits, by a regional based inspector, of the decommissioned facility. Routine inspection included access controls, surveillance activities, upkeep of the facility, and environmental radioactivity remaining on and about the site. Followup visits were made to assess the cleanup of detectible environmental contamination discovered on September 20, 1979. The inspection involved 8 routine and 36 non-routine inspector-hours on and about the SNEC site by one NRC regional based inspector.
Results: Of the five areas inspected, no items of noncompliance were identified in four areas. One item of noncompliance was identified in one area (Infraction - failure to conduct adequate surveys - Paragraph 9).

Region I Form 12
(Rev. April 77)

DETAILS

1. Persons Contacted

a. Saxton Nuclear Experimental Corporation (SNEC)

*C. R. Montgomery, President and General Manager

b. Pennsylvania Electric Company (PENELEC)**

L. Cooper, Assistant Director of Security
D. Goodman, Director of Training, and Radiation Safety Officer
J. Harrington, Administrator of Public Information
B. Ritchey, Group Supervisor, Operating Department
J. Warkowsky, Photographer

c. Metropolitan Edison Company (Met-Ed TMI)

E. Egenreider, Radiation Protection and Chemistry Senior Technician
W. Potts, TMI Unit I Superintendent, Technical Support
G. Reed, Chemistry Foreman
P. Velez, Radiation Protection Foreman

d. Other Personnel, Present on One or More Days With SNEC or PENELEC Consent

Barbara Allen, TV News Reporter, Channel 10, Allentown, PA
Jon Baughman, Editor and Publisher, The Broad Top Bulletin, Saxton, PA
Ron Morgan, Editor, The Dailey News, Saxton Bureau
Jon Mills, Pre-Med Student (representing a local newspaper)
Lee Woods, Tribune Democrat, Johnstown, PA

*Present at informal management interviews, September 22, 1979 and March 25, 1980.

**An additional six PENELEC employees (not listed) were interviewed, (Paragraph 5).

2. Licensee Action on Previous Inspection Findings

(Closed) Noncompliance (146/77-01-01): Inadequate measurement to detect radioactive contamination that might collect on the HEPA filter on the ventilation breather pipe. Review of records of the licensee measurements since September, 1979, and an interview of the individual who performed the quarterly measurements verified the corrective action on this item. The inspector observed the measurement made on September 20, 1979, and made a confirmatory measurement. No remaining problems were identified.

3. Review of Licensee Surveillance and Maintenance

The inspector reviewed the licensee's records, interviewed personnel, observed the status of the facility and the surrounding area, and accompanied personnel to verify that the following requirements were carried out.

a. Site Requirements

The Technical Specifications require, in Section A, "Site":

(1) "Location

The facility shall be located within the Saxton Steam Generating Station* (SSGS) property of the Pennsylvania Electric Company** near the Borough of Saxton, Pennsylvania, in Liberty Township, Bedford County, Pennsylvania. The Pennsylvania Electric Company property shall consist of approximately 150 acres along the Raystown Branch of the Juniata River.

(2) "Exclusion Areas (Figure 1)

The exclusion areas shall consist of:

An area within the Saxton Steam Generating Station property which is enclosed within a fence and contains the Containment Vessel, the Control and Auxiliary Building, and the Radioactive Waste Disposal Facility.***

(3) "Principal Activities

The principal activities carried on within the SSGS property shall be the headquarters for personnel associated with maintaining electric power distribution equipment and the transmission of electric power by the Pennsylvania Electric Company. The only activity carried on within the Exclusion Areas shall be routine and emergency inspections and maintenance associated with the possession of the decommissioned Saxton Reactor Facility."

*Saxton Steam Generating Station main buildings were dismantled and the foundation areas were leveled during 1974.

**Pennsylvania Electric Company is referred to as PENELEC (present official name), in this report.

***The exclusion area is also referred to as the Saxton Nuclear Facility, the SNEC controlled area, or the area within the SNEC fence, in this report and in Figures 1 and 2.

Observations during the inspection did not identify any items of noncompliance with the required site boundaries, exclusion areas, and principal activities. Specifically, the doors, fences and gates appeared to be maintained in good condition and were locked and posted to deter tresspassers.

The inspector had no further questions on this item.

b. Administrative and Procedural Safeguards

The Technical Specifications require, in part, in Section B, "Administrative and Procedural Safeguards", adherence to the specified administrative organization, and controls over the exclusion area entrance, containment vessel access door, a grating cover in the containment vessel, the rod room door, all access doors to the radioactive waste disposal facility, and the control and auxiliary buildings. An additional requirement is that employees of the Pennsylvania Electric Company's Line Department headquartered on the SSGS property shall report to the SNEC General Manager or his designated representative any observed indication of change in the facility status as shown by smoke, fire, tornado, flood or attempted break-in and take any immediate action authorized.

The inspector observed that the above controls were maintained, and that the PENELEC Operating Department maintains an operating headquarters on the property. No change other than weathering and seasonal changes to the property were identified by a tour and visual inspection (Paragraph 8), interviews with personnel, and reviews of records. Specifically, no indications were found of any attempted break-in, fire, storm, or flood.

The PENELEC Group Supervisor stated that he had the daily PENELEC responsibilities on site. He appeared to be fully cognizant of the above requirements.

c. Records

The Technical Specifications require in sub-section B.3., "Records":

"In addition to the records required by applicable NRC regulations, including Section 20.401 of 10 CFR Part 20, SNEC shall keep the following:

"Records of inspection of the decommissioned facility including the results of surveys of radioactivity levels and as-found and as-left conditions of the facility.

"Records of entries into the decommissioned facility and reason for entry.

"Dates of quarterly inspections and evaluation of the results.

"Records showing radioactivity released or discharged into the air or water beyond the effective control of SNEC as measured at or prior to the point of such release or discharge.

"Records of design changes and maintenance necessary to maintain the decommissioned facility as described in the Saxton Decommissioning Plan and Safety Analysis Report as revised by SNEC letter dated May 31, 1974."

The inspector reviewed the licensee records, maintained so as to comply with the above, including:

Quarterly inspections (1977-June, 1979)
Radiation surveys
Log of entries into the decommissioned facility
Evaluations
Effluent sampling and analyses

No design changes were identified. Maintenance is reviewed in Paragraph 8.

Some of these records were brought to the site by Mr. C. R. Montgomery who stated that he maintained them at his Parsippany, New Jersey office. The log books appeared to remain at the SNEC site.

Results of analysis of licensee samples taken between August, 1979, and March 25, 1980, were obtained informally from the TMI Sample Coordinator through whom these samples were analyzed for SNEC.

Typical licensee sample analyses and also independent analyses obtained by NRC are listed in Tables I-III. No sampling errors or discrepancies were identified. See Paragraphs 7 and 9 for further information on sampling.

The inspector noted that one scheduled quarterly sample of tunnel liquid was omitted on December 29, 1978. The licensee representative stated that a one-time procedural variation was made, omitting this sample, because the tunnel access cover was frozen tight and damage could have occurred in forcing it open. The licensee has clearly indicated this in the records. No formal procedure change was documented.

No items of noncompliance with record requirements were identified.

d. Observation of the Licensee Quarterly Inspection of the SNEC Facility on September 20, 1979

(1) Adherence to Procedure

The Technical Specifications in sub-section B.4 "Periodic inspections", require no less than a quarterly inspection schedule, performed by personnel knowledgeable in radiation monitoring and the radiological hazards associated with the facility. Radiation monitoring, a contamination survey, a radiation survey, water sampling, and if controlled areas of containment are entered for maintenance purposes, air sampling, is required in the licensee's schedule. In addition, controls and written instructions or procedures are specified to minimize any potential radiation exposures during maintenance work, tests, and surveys.

A copy of the licensee's current procedure, "SNEC-63, Saxton Reactor Facility Site Inspection Procedure", implementing the above requirements was transmitted on May 13, 1977. One temporary procedural variation was made in the performance of a licensee inspection during 1978, see Paragraph 3.c.

Direct observation of the performance of the above procedure did not identify any items of noncompliance.

(2) Equipment Availability and Use

The inspector observed the availability and use of the following:

*Air sampler
*Calibrated survey instruments and check sources
*(Thermoluminescent) personnel dosimeters
*Self-reader dosimeters
Charger for self-reader dosimeters
Anti-contamination (protective) clothing
Shielding
Warning signs necessary to comply with 10 CFR 20.203
*Miscellaneous supplies (rope, bags, step off pads, etc.)

*Specified by SNEC-63, referenced above, for the performance of quarterly inspections.

During the cleanup of the radioactive soil that was identified in this inspection, the licensee provided adequate 55-gallon drums and equipment to collect, package and store the radioactive soil.

No items of noncompliance were identified. The inspector had no further questions on this item.

4. Review of Personnel Exposures to Radiation

Review of the SNEC records, and observation of work on site on each day of this inspection, indicated that no individual had received or was likely to receive a dose greater than 50 mrem to the whole body during any calendar quarter of the years 1977, 1978, and 1979.

During the observation of the removal of the contaminated soil discovered on September 20, 1979, the inspector conducted confirmatory surveys as well as reviewed licensee surveys. In his assesment of the potential hazards to the workers the inspector estimated the quantity of radioactive materials collected during soil removal at a few millicuries.

Each individual involved in cleanup work was subsequently given a whole body count at TMI.

Review of the TMI records on these individuals indicated there was no detectible uptake of any radioactive material by any individual on this job.

No items of noncompliance were identified involving personnel exposures.

5. General Work Practices

The inspector interviewed the SNEC, the PENELEC, and two (ex-SNEC) Met-Ed personnel, and also observed their conduct on site to verify that such procedures and practices that were in effect would not spread radioactive contamination.

Specifically these individuals said they had no knowledge of any unauthorized entries into the SNEC facility, any unauthorized removal of items from the facility, and any other circumstances that might contribute to the spread of radioactive contamination.

Observation of the conduct of personnel, and also a visual inspection of the SNEC and the PENELEC premises did not identify any indication that their work activities were responsible in any way for the presence of radioactive contamination of the PENELEC property. The inspector had no further questions on this item.

6. Licensee-Reports Technical Specifications Requirements

The Technical Specifications in sub-section B.5, "Reports", require a prompt report to NRC of any occurrence of a possible unsafe condition relating to the facility or to the public, and also an annual facility status report. No due date was stated for this annual report.

The licensee representative stated on September 20, 1979, that no occurrences of the above description were known to the licensee between April 28, 1977, and September 19, 1979, and none were identified on subsequent contacts in person and by telephone between the inspector and the licensee representative.

The inspector reviewed the annual facility status report submitted February 28, 1978, and February 28, 1979, for the calendar years 1977 and 1978.

Subsequently on March 25, 1980, the inspector was informed that the annual facility status report for the calendar year 1979 was still in preparation. During a telephone contact, Mr. C. R. Montgomery stated on August 25, 1980, that this report was not yet ready, and that he would transmit the report as soon as feasible.

The inspector verified by observations on site and by interviews with personnel on March 25, 1980, there had been no maintenance or design changes beyond the scope of routine upkeep (Paragraph 8).

7. Survey and Sample Information - Inside the SNEC Fence

The inspector toured the SNEC facility and performed confirmatory measurements using a calibrated NRC survey instrument. The following information was obtained in verification of the licensee's routine survey information.

Inspector's Measurement on September 20, 1979	Radiation Level
Smear on C&A Building Floor (Entry Route)	None Detected
Maximum Measured Level in C&A Building	2 mr/hr*
Survey of Location Where Gas Decay Tanks Had Been	0.3 mr/hr
Survey of Roofs	None Detected
Survey of the Filled-Drum Storage Bunker	0.1 mr/hr
Plastic Shoe Covers worn ½ Hr. in the Containment Vessel, Lower Level	0.2 mr/hr
Floors and Grates in Containment, Above the Locked Grate	0.1 up to 2 mr/hr
Lower Levels in Containment; Typical Areas	10 mr/hr
Lower Levels in Containment; Maximum Measured	300 mr/hr**

*Contact reading on a pipe approximately four feet above the ground floor. The licensee representative stated this pipe would be removed.

**Regenerative heat exchanger - licensee records indicated ~700 mr/hr measured before shielding was provided. This is in a locked high radiation area.

The maximum radiation level measured outside of the buildings but within the SNEC area was 0.1 mr/hr except for the location where the gas decay tanks had been which was 0.3 mr/hr. The inspector observed that wind-blown ash remaining after the removal (4½ years earlier) of the nearby fossil fueled facility was still drifting about the SNEC premises and this affected survey results, for example the maximum contact radiation at a point on the ground typically was measured after any loose ash was removed (see Paragraph 10). The growth of vetch, sown by the licensee, and other vegetation had significantly limited the drifting of ash as compared to observations made on April 28, 1977, during Inspection No. 146/77-01.

The inspector sampled the following points listed in Table I inside the SNEC controlled area. See Figure 1 for locations and see Table II for additional information.

Table I

Point	Survey (mr/hr on contact)	Sample Analysis (Cs-137 uCi/g*)	Sample Description
Tunnel	--	3.12E-7(±12%)	Standing Water
RWDF Basement	--	3.54E-7(±13%)	Standing Water
#11	0.1	1.84E-4(±2%)	Surface Soil
#12	0.05	2.30E-5(±4%)	Surface Soil
#13	--	3.42E-7(±35%)	Drain Sump** Sediment
#13	--	No Cs-137 Detected	Drain Sump** Water
#14	--	3.3E-8(±61%)	Drain Sump** Water

*Note: CS-137 activity was at least 80% of the total activity of all reactor fission and activation products detected in each sample taken by the inspector. This information was determined from Tables II and III.

**Note: This is an accessible sump in the yard drain system, through which water flows by gravity in that no pumps are being run. The yard drain system receives roof and surface runoff and possible seepage.

Based on the review of licensee sample analyses (Paragraph 3.c) and the data presented in this report, the water flowing in the drain system did not exceed 1E-7 uCi/ml Cs-137 concentration.

The inspector noted there were no obvious significant trends in any of the data that he reviewed, and none of the liquid sample analyses were greater than a few percent of the limit on effluents to unrestricted areas required by 10 CFR 20.106 and 10 CFR 20, Appendix B, Table II.

The inspector had no further questions on this item.

8. Site Upkeep

a. Containment Sump

The inspector observed, and the licensee representative concurred, that the containment sump was nearly full and that timely corrective action would avoid an eventual overflow onto the surrounding floor. Overflow would spread radioactive contamination, which would remain on the basement floor in the containment building.

The licensee representative stated that condensation of atmospheric moisture, drawn into containment through the breather pipe, was slowly filling the sump. He stated there was no evidence of in-leakage of rainwater, ground water, or surface water into containment.

The licensee representative stated that various means of correcting the problem were being evaluated and timely corrective action was planned.

b. Radioactive Waste Disposal Facility (RWDF) Roof Hatch Cover

The inspector observed, and the licensee representative concurred, that the RWDF roof hatch cover was sagged and weathered and was a likely source of in-leakage of rainwater.

The licensee representative stated that this cover would be replaced.

c. Control and Auxiliary (C&A) Building Roof and Roof Drains

During the survey of the roofs the inspector observed that the C&A Building roof was soft under foot at several places, indicating incipient deterioration, and that several of the roof drain holes had been sealed up.

The licensee representative stated that the roof drain pipes descended through the unheated C&A Building and had frozen and burst during cold weather. He stated that the roof drain holes had been sealed up as burst pipes were noticed to prevent leakage through the burst drain pipes into the building.

On examination of the drain pipes the inspector observed that all appeared to have burst.

The licensee representative stated that the disposition of the C&A Building would be reviewed to determine what maintenance is necessary pursuant to the Saxton Decommissioning Plan and Safety Analysis Report as revised by the SNEC letter dated May 31, 1974.

9. Survey Near the SNEC Boundary Fence

During a survey outside and near the SNEC fence on September 20, 1979, the inspector identified two localized areas where radioactivity could be detected. The areas are designed A and B in Figure 1. Analysis of samples taken from these areas are documented in Table II. The property surrounding the SNEC boundary fence is owned by PENELEC and the PENELEC representative consented to this survey.

Part of the inspection effort was to determine the licensee's compliance with 10 CFR 20.201 "Surveys" which requires:

"(a) As used in the regulations in this part, "survey" means an evaluation of the radiation hazards incident to the production, use, release, disposal, or presence of radioactive materials or other sources of radiation under a specific set of conditions. When appropriate, such evaluation includes a physical survey of the location of materials and equipment, and measurements of levels of radiation or concentrations of radioactive material present.

"(b) Each licensee shall make or cause to be made such surveys as may be necessary for him to comply with the regulations in this part."

A requirement of 10 CFR 20.207 "Storage and control of licensed materials in unrestricted areas" is that:

(b) Licensed materials in an unrestriced area and not in storage shall be tended under the constant surveillance and immediate control of the licensee.

The inspector noticed that the licensee had no record indicating that surveys were conducted outside the SNEC boundary fence, indicated on Figure 1. The licensee representative stated the above localized areas of measurable radioactivity were not discovered prior to the inspection of September 1979.

The inspector noted that sample A was a representative sample taken from the first shovel-full of dirt removed from location A. Subsequent analysis of sample A showed that two kilograms (i.e., a single shovel-full) would contain ~130 uCi of Cs-137, ~5 uCi of Cs-134, and ~1 uCi of Co-60. Several hundred pounds of soil were removed from this area, subsequent to September 20, 1979.

The inspector stated that such surveys as had been conducted prior to September 20, 1979, apparently were inadequate to permit compliance with the above requirement of 10 CFR 20.207(b) and this constituted noncompliance with the requirement of 10 CFR 20.201. (146/79-01-01)

The licensee representative cleared up the areas where radioactivity was measurable above background, on September 20-22, 1979.

Because of rainfall, further surveys in the area were not possible and a return visit to Saxton was made on October 19, 1979, after the licensee reported that the cleanup was finished.

During the October visit the inspector took additional samples and performed instrument surveys in the area. With the exception of samples A and B, the soil samples listed in table II were taken at this time.

Comparison of samples A and B with samples taken on October 19, 1979 and 25, 1980 showed that there were three different relative concentrations of Cs-137, Cs-134, and Co-60. The relative (137/134/60) ratios were:

Sample A:	(1):(0.035):(0.0076)
Sample B:	(1):(0.035):(0.0067)
Wire (#17):	(1):(0.011):(0.0132)
Encrusted Mtl:	(1):(0.0076):(0.0218)
Sample #5, 3/25/80:	(1):(0.000):(0.1466)

Based on the above, it appeared that samples A and B were from the same source of contamination. In addition, the linear positioning of localized areas of detectable radioactivity and the fairly even spacing at ~12 feet between them, including A and B, lends credence to the licensee representative's speculation that these spots were deposited by parking a spent fuel transport over points A and B overnight while awaiting clearance to load spent fuel in 1972. The wheels might have rolled through this and redeposited portions of any adherent contamination at evently spaced points as the transport subsequently was moved backwards or forward. The relative ratios displayed by these samples appeared to be consistent with this idea.

The inspector observed that the area between samples points 3 and 25, Figure 1, contained debris including fragments of asphalt roofing material, wood, glass, plastic sheet or bag, and metal. The licensee representative stated that this area had not been used for trash or rubbish collection, however, the leveling of the fossil-fueled station coal handling facility, which was nearby, might have deposited debris of the above description, none of which would be contaminated with Cs-137 prior to such an event.

With respect to Figure 1 and Table II, samples A, B, 3 to 16 and 23 to 25 were taken from soil prior to disturbing it, and 17 to 22 and 26 and 27 were taken after removal of the soil typically wherever the survey meter (Eberline E-120, HP-190 probe, open window) indicated greater than 0.1 mr/hr deflection.

The topsoil of the area near the filled drum storage area (including the above sample points) appeared to have been removed at some time, possibly in preparing a nearby driveway, and then the area had been filled with gravel. The gravel was covered over with fly ash and vegetation.

Other areas, where the original topsoil remained, typically had 1 to 5 inches of fly ash, 6 to 8 inches of original undisturbed topsoil beneath the fly ash, and a subsoil layer of "hard pan" or clay which was not penetrated. The "hard pan" appeared not to be permeable to the radioactive material. Typically this layer is almost impervious to water.

A search through the soil identified some discrete objects that contained practically all of the radioactive materials in their immediate vicinity. Sample No. 17, listed as encrusted wire, weighed about 16.6g in a 2 inch segment. Partial removal of the encrusted material left behind a 2.84g weight of wire segment. The material that was removed was at least three times the Cs-137 concentration per gram, as was the wire. The retrieval of the above material reduced the contact survey indication at that point in the soil to background for the area. There was no indication that this wire was of recent deposition.

Alpha activity analyses of samples A and B indicated less than 2 E-6 uCi/g in each sample. The gamma spectral analyses indicated this was the generally occurring natural radioactivity in cinders on site.

10. Surveys Within the PENELEC Fence

On October 19, 1979 the inspector conducted a survey using a Ludlum Model 16 survey instrument equipped with a 1 inch diameter by 1 inch long NaI scintillator detector, walking a series of paths north and south, 20 feet apart, throughout the part of the PENELEC fenced area outside the SNEC boundary fence (Figure 2). The licensee subsequently made surveys in this area.

No areas of detectable radioactivity above background levels other than those shown on the Figure 1 sample points were found.

11. Surveys Outside the PENELEC Fence (on PENELEC Property)

Figure 2 is a rough sketch showing the relative positions of the fence surrounding the Saxton Nuclear facility, (also referred to as the SNEC controlled area), and the longer fence surrounding the Saxton Steam Generating Station, (also referred to as the PENELEC fence). The PENELEC fence is, in turn, located approximately in the center of a 150 acre PENELEC tract of land with a minimum distance of a thousand feet between the fence and any boundary with the PENELEC tract.

On March 25 the inspector conducted a survey along the outside of the PENELEC fence. The inspector used a Ludlum scintillation survey meter because of its high sensitivity to search for areas with radiation readings above background levels in the vicinty. Soil samples were also taken at this time.

Sample locations are shown in Figure 2. The results of the analysis of these samples are presented in Table III.

With the exception of points #10 on Figure 1 (which corresponds to a point near #6 on Figure 2) and #5 on Figure 2, no indication of radioactivity was noted as a result of the Ludlum survey. At points #10 and #5 an increase above background levels was noted. These points were then measured with an Eberline E '20 with an HP 190 probe because this instrument, although less sensitive than the Ludlum, is accurately calibrated to read in mr/hr (dose rate). At both points a dose rate of about 0.25 mr/hr was observed on contact with the undisturbed surface of the soil.

At location #10 a hole 8 inches in diameter was carefully dug. By placing the probe in the hole it was possible to note that the radiation measurement increased to a depth of 3 to 6 inches below which the measurement dropped below the surface measurement. The soil sample analyses (Table II) confirmed this observation.

Point 5, Figure 2, was outside of, but within a foot of, the closed vehicle gate indicated in Figures 1 and 2 at the northeast corner of the SNEC boundary fence. There is no PENELEC fence that encloses this section of the SNEC fence. Before the Saxton reactor was decommissioned this gate was used by a gas service truck, and possibly other vehicles. During the dismantling of the Saxton facility this entrance might have been used by equipment involved.

Point 10, Figure 1, and a similar point subsequently discovered by the licensee, about 50 ft. from point 10, lie across an existing vehicle path that follows the fence to a bend and continues on to the stream, which is off the Figure.

The proximity of these points to a vehicle path indicates a possibility that vehicle usage somehow was involved in the deposition of the contamination.

The licensee has cleaned up all of the identified radioactive contamination that was outside the fenced areas. The licensee's report on surveys and cleanup has not yet been received.

In order to assess the significance of the analyses of soil samples presented in Table III, the inspector referred to environmental analysis reports which have been provided by other nuclear power plant licensees in Pennsylvania. These reports dealt with areas that are about 100 miles distant from Saxton. As part of these environmental analyses each facility selects areas which are distant from its plant and are known to be free of any plant produced material. This is done in order to obtain background information to permit a meaningful comparison with environmental samples collected near the plant.

These reports showed that the Cs-137 concentration background in soil is about 1E-6 uCi/g and the maximum is about 2.5E-6 uCi/g. This Cs-137 concentration is attributed to fallout of fission products from nuclear weapons tests.

The soil sample analyses presented in Table III, taken outside the PENELEC fence, averaged 1E-6 uCi/g and the maximum was 2.6 E-6 uCi/g Cs-137 concentration, excluding sample no. 5 which is described above. These 20 samples, nos. 3 to 23, excluding no. 5, are typical of the background measurements in other areas of Pennsylvania.

No health hazards to the public or to SNEC and PENELEC personnel were identified by surveys of the area outside the PENELEC fence.

12. Management Interview

Informal management interviews were conducted on September 22, 1979, and on March 25, 1979, with the licensee representative denoted in Paragraph 1.

The inspection findings were reviewed.

Table II, Samples (Except #10 & #28) taken inside the Saxton Steam Generating Station Fence (the PENELEC Fence). Samples #11, #12. #13, & #14 are also inside the Saxton Nuclear Facility Fence. For Sample Locations see Figure 1. Samples #10 and #28 were located near the sample designated #6 on Figure 2.

(September and October 1979) Reactor Fission and Activation Products										Naturally Occurring Isotopes																							
Sample Description	Cesium 137		6(%)	Cesium 134		6(%)	Cobalt 60		6(%)	Potassium 40		6(%)	Lead 212		6(%)	Lead 214		6(%)	Actinium 228		6(%)	Thallium 208		6(%)	Bismuth 212		6(%)							
Soil A (Surface)	6.52	E-2	2	2.28	E-3	2	4.93	E-4	6	*			*			*			*			*			*								
Soil B (Surface)	8.89	E-3	2	3.07	E-4	3	5.92	E-5	5	*			*			*			*			*			*								
Cinder 1 (Surface)	2.80	E-7	46	*			*			1.05	E-5	21	2.75	E-6	[illegible]	2.26	E-6	[illegible]	3.00	E-6	18	1.53	E-6	28	*								
Cinder 2 (Surface)	9.6	E-7	19	*			*			6.02	E-6	45	3.70	E-6	8	2.37	E-6	17	2.72	E-6	27	2.50	E-6	20	5.19	E-6	37						
Soil 3 (Surface)	2.59	E-4	2	8.67	E-6	7	2.68	E-6	14	6.85	E-6	35	*			4.08	E-6	27	*			*			*								
Thornbush 3	1.31	E-7	15	*			*			2.10	E-6	15	*			5.47	E-8	86	*			*			*								
Soil 4 (Surface)	2.31	E-3	2	7.93	E-6	2	1.65	E-5	25	4.71	E-6	16	*			2.75	E-6	20	*			*			*								
Soil 4 (-6 in.)	1.89	E-4	2	5.79	E-6	8	2.33	E-6	14	4.84	E-6	39	1.23	E-6	31	*			*			*			*								
Soil 5 (Surface)	2.04	E-4	2	6.93	E-6	8	3.01	E-6	15	*			*			*			*			2.73	E-6	44	*								
Soil 6 (Surface)	1.73	E-3	2	6.19	E-5	3	1.00	E-5	7	3.07	E-6	65	*			*			*			*			*								
Soil 7 (Surface)	3.82	E-3	2	1.32	E-4	2	2.46	E-5	2	4.09	E-6	18	*			*			*			3.88	E-6	31	*								
Soil 8 (Surface)	8.72	E-4	2	7.25	E-6	4	2.06	E-5	2	4.53	E-6	16	*			*			9.24	E-7	37	*			*								
Soil 9 (Surface)	1.47	E-3	2	1.25	E-5	3	3.49	E-5	2	1.07	E-5	7	1.25	E-6	28	*			*			2.46	E-6	24	*								
Vegetation 10	4.07	E-6	11	*			*			8.86	E-6	30	8.68	E-7	37	*			*			*			*								
Soil 10 (Surface)	2.03	E-4	2	3.19	E-6	12	6.13	E-7	33	1.35	E-5	19	1.49	E-6	38	*			*			*			5.10	E-6	39						
Soil 10 (-3 to -6 in.)	9.71	E-4	2	1.59	E-5	5	1.76	E-6	14	1.28	E-5	18	3.01	E-6	37	*			*			6.15	E-6	29	*								
Soil 10 (-8 in.)	1.36	E-5	5	*			1.20	E-6	24	5.80	E-6	52	7.38	E-7	41	7.88	E-7	52	*			1.91	E-6	30	*								
Soil 11 (Surface)	1.84	E-4	2	3.27	E-6	4	3.24	E-7	14	8.41	E-6	8	1.88	E-6	8	1.25	E-6	19	1.16	E-6	13	1.72	E-6	15	2.95	E-6	19						
Soil 12 (Surface)	2.30	E-5	4	*			1.28	E-6	22	4.01	E-6	52	2.35	E-6	15	*			*			2.91	E-6	22	*								
Vegetation 12	3.88	E-6	11	*			*			4.01	E-6	77	*			5.18	E-7	74	*			*			*								
Sediment 13	3.42	E-7	35	*			*			1.07	E-5	18	9.91	E-7	21	8.78	E-7	50	*			*			*								
** Liquid 13	*			*			*			*			1.29	E-7	40	5.97	E-7	8	*			*			*								
** Liquid 14	3.29	E-8	61	*			*			5.62	E-7	53	*			*			*			*			*								
GlassChips(from3,4,5,6,7)	2.03	E-6	8	*			*			*			*			*			*			*			*								
** Liquid 16 (Outfall)	*			*			*			*			*			*			*			*			*								
Wire 17 (Less Crust)	5.84	E-3	2	6.65	E-5	17	7.72	E-5	17	*			*			*			*			*			*								
Crust from Wire 17	1.99	E-2	2	1.52	E-4	5	4.33	E-4	3	*			*			*			*			*			*								
Soil 18 (Surface)	4.66	E-4	2	7.69	E-6	7	9.54	E-7	24	7.83	E-6	27	*			*			*			*			7.66	E-6	31						
Soil 19 (Surface)	5.74	E-5	2	1.36	E-6	6	3.28	E-6	3	5.70	E-6	8	1.84	E-6	5	2.11	E-6	6	1.48	E-6	9	1.36	E-6	11									
Soil 20 (Surface)	8.74	E-5	25	3.22	E-6	28				*			*			*			*			*											
Soil 22 (Surface)	5.45	E-3	25	1.79	E-4	25	1.40	E-5	25	*			*			*			*			*											
Soil 23 (Surface)	3.90	E-3	25	1.29	E-4	25	2.65	E-5	25	*			*			*			*			*											
Soil 24 (Surface)	1.32	E-3	25	1.03	E-5	25	2.47	E-5	25	*			*			*			*			*											
Soil 25 (Surface)	1.06	E-3	25	1.01	E-5	26	2.35	E-5	25	*			*			*			*			*											
Soil 26 (Surface)	2.65	E-3	25	8.89	E-5	25	1.71	E-5	25	*			*			*			*			*											
Soil 27 (Surface)	1.31	E-3	25	4.33	E-5	25	3.35	E-5	25	*			*			*			*			*											
Soil 28 (Compositefrom10)	3.26	E-4	25	5.27	E-6	26	6.23	E-7	39	*			*			*			*			*											

Note: Values of greater than 25% indicate that the isotope concentration is questionable. Values greater than 50% cast doubt on the isotope identified.

*Indicates the isotope was not identified.

**Measurements performed by Metropolitan Edison Co. (TMI). All others were performed by Analytical Chemistry Branch, Idaho.

***Sample #21 is not applicable (not from Saxton site).

Table III, Samples inside and outside the Saxton Steam Generating Station Fence. For Sample Locations, see Figure 2.

(March 25, 1980)	Reactor Fission and Activation Products									Naturally Occurring Isotopes																				
Sample Description	Cesium 137		6(%)	Cesium 134		6(%)	Cobalt 60		6(%)	Potassium 40		6(%)	Lead 212		6(%)	Lead 214		6(%)	Actinium 228		6(%)	Thallium 208		6(%)	Bismuth 214/212		6(%)
Soil A	2.84	E-5	3	3.98	E-7	14	1.42	E-7	30	7.55	E-6	9	9.61	E-7	14	5.73	E-7	31	1.06	E-6	12	8.67	E-07	23	8.55	E-7	14
Soil B	2.76	E-6	7	*			*			5.62	E-6	20	1.04	E-6	14	8.08	E-7	27	1.56	E-6	19	1.06	E-6	25	*		
Soil C	1.09	E-4	2	2.34	E-6	10	5.27	E-6	7	5.98	E-6	22	1.27	E-6	28	*			*			*			*		
Soil D	3.38	E-5	3	*			3.74	E-5	3	*			1.18	E-6	28	*			*			*			*		
Liquid 1 (RWDF)	3.54	E-7	13	*			*			*			*			*			*			*			*		
Liquid 2 (TUNNEL)	3.32	E-7	12	*			*			*			*			*			*			*			*		
Soil 1	3.99	E-7	20	*			*			7.14	E-6	17	1.00	E-6	14	8.02	E-7	21	1.01	E-6	28	1.08	E-6	21	*		
Soil 2	3.75	E-7	23	*			*			4.93	E-6	22	*			5.77	E-7	33	*			*			*		
Soil 3	1.21	E-6	13	*			*			6.85	E-6	23	1.09	E-6	17	1.74	E-6	15	8.24	E-7	44	*			*		
Soil 4	1.41	E-6	14	*			*			6.03	E-6	28	9.40	E-7	15	6.92	E-7	30	*			8.23	E-7	38	*		
Soil 5	4.10	E-4	2	*			6.01	E-5	3	9.51	E-6	16	*			*			*			*			*		
Soil 6	1.73	E-6	13	*			*			7.22	E-6	33	6.16	E-7	32	1.36	E-6	20	*			*			*		
Soil 7	1.56	E-6	17	*			*			*			7.57	E-7	36	1.43	E-6	24	*			9.19	E-7	48	*		
Soil 8	7.38	E-7	24	*			*			1.95	E-6	77	5.48	E-7	33	6.58	E-7	36	*			*			*		
Soil 9A	1.79	E-5	3	3.48	E-7	24	*			2.92	E-6	38	1.13	E-6	16	*			*			1.40	E-6	23	*		
Soil 10	7.25	E-7	14	*			*			9.97	E-6	15	6.37	E-7	20	3.94	E-7	43	*			*			*		
Soil 11	6.92	E-7	14	*			*			4.57	E-6	21	6.99	E-7	14	5.74	E-7	23	*			5.77	E-7	28	*		
Soil 12	5.03	E-7	20	*			*			7.80	E-6	18	7.61	E-7	17	9.03	E-7	18	8.07	E-7	29	1.08	E-6	21	*		
Soil 13	2.56	E-6	11	*			*			*			1.29	E-6	19	*			*			1.33	E-6	32	*		
Soil 14	1.53	E-6	13	*			*			4.75	E-6	40	1.04	E-4	17	4.82	E-7	50	*			6.62	E-7	50	5.62	E-6	28
Soil 15	1.38	E-6	16	*			*			*			7.44	E-7	28	7.30	E-7	38	*			7.24	E-7	43	*		
Soil 16	6.75	E-7	24	*			*			7.29	E-6	26	8.57	E-7	25	9.65	E-7	30	9.97	E-7	36	*			*		
Soil 17	8.55	E-7	16	*			*			1.00	E-5	18	1.11	E-6	15	1.14	E-6	18	*			1.38	E-6	20	*		
Soil 18	9.77	E-7	16	*			*			*			*			8.64	E-7	25	*			*			*		
Soil 19	1.57	E-7	46	*			*			1.60	E-5	11	1.37	E-6	10	5.32	E-7	28	1.12	E-6	26	9.42	E-7	27	3.38	E-6	30
Soil 20	1.25	E-7	65	*			*			1.52	E-5	12	1.48	E-6	9	6.69	E-7	22	*			1.28	E-6	18	3.37	E-6	30
Soil 21	*			*			*			1.62	E-5	12	1.31	E-6	14	8.41	E-7	23	*			1.41	E-6	23	*		
Soil 22	3.35	E-8	69	*			*			1.46	E-5	4	1.49	E-6	4	5.97	E-7	9	1.15	E-6	7	1.14	E-6	6	7.40	E-7	7
Soil 23	*			*			*			1.34	E-5	1	1.11	E-6	16	5.20	E-7	37	*			1.70	E-6	18	2.94	E-6	41
Soil 24	1.96	E-6	3	*			5.28	E-8	36	6.40	E-6	6	7.75	E-7	6	7.28	E-7	9	5.96	E-7	12	6.23	E-7	13	7.48	E-7	9
Soil 25	1.40	E-7	22	*			*			6.83	E-6	6	1.07	E-6	5	1.06	E-6	7	1.20	E-6	8	9.94	E-7	9	1.05	E-6	7
Soil 26	1.50	E-4	2	4.56	E-6	3	1.56	E-6	4	3.63	E-6	10	5.54	E-7	18	7.97	E-7	21	5.02	E-7	19	*			*		
Soil 27	1.51	E-6	11	*						6.46	E-6	22	1.08	E-6	18	9.06	E-7	25	5.53	E-7	49	1.39	E-6	23	3.40	E-6	35
Soil 28	2.50	E-6	3	*	E-8	18	*			5.67	E-6	7	1.02	E-6	5	7.03	E-7	9	6.44	E-7	14	7.93	E-7	9	8.71	E-7	8
Soil 29	9.21	E-7	*	*			*			4.49	E-6	21	8.62	E-7	13	5.57	E-7	23	8.58	E-7	23	6.21	E-7	27	1.70	E-6	41
Soil 30	3.69	E-7	23	*			*			8.33	E-6	18	1.25	E-6	12	6.19	E-7	27	1.39	E-6	19	5.04	E-7	52	*		
Soil 9B	2.30	E-6	8	*			2.03	E-7	40	3.31	E-6	33	3.08	E-7	45	7.24	E-7	26	*			*			*		

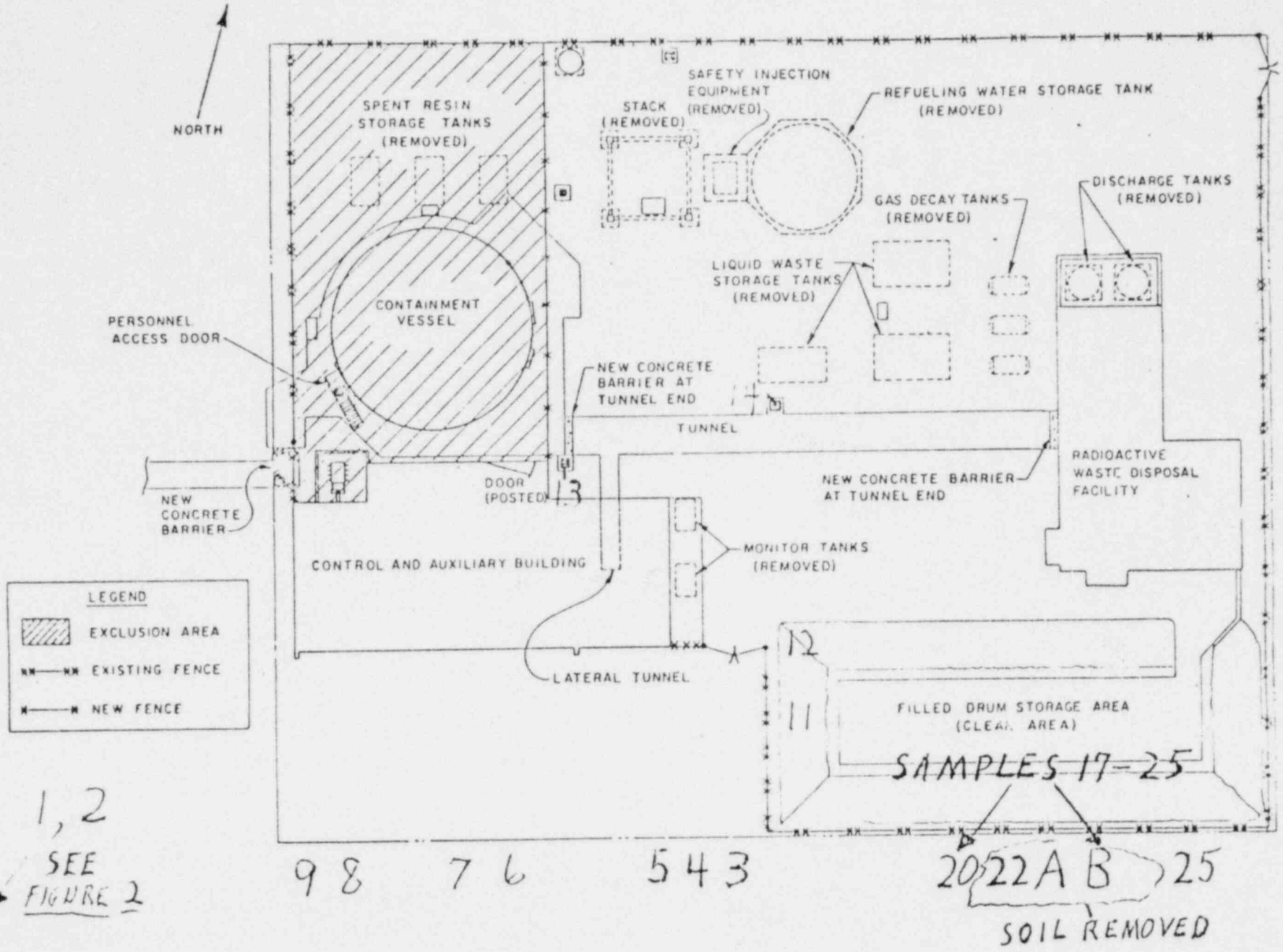

FIGURE 1

DECOMMISSIONED SAXTON NUCLEAR FACILITY LAYOUT

For Sample Results See Table II

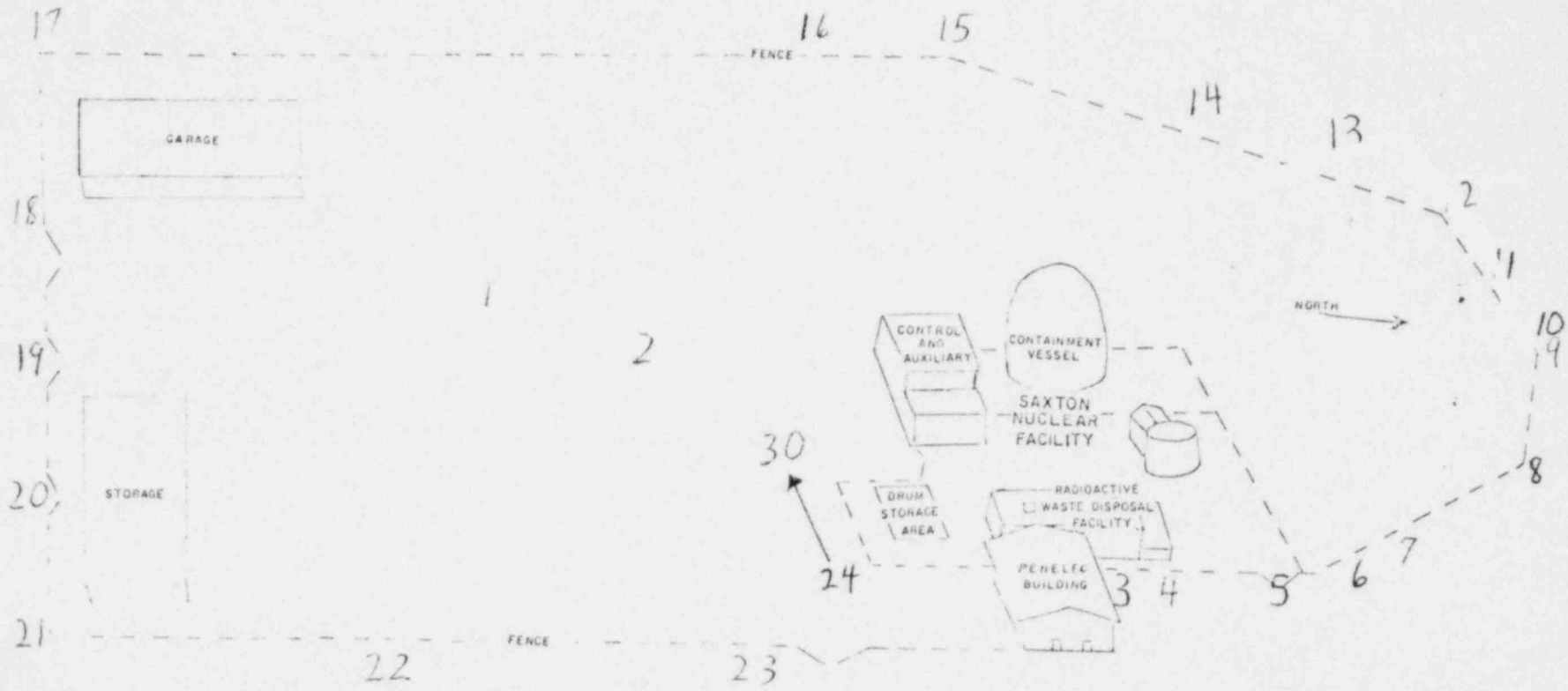

FIGURE 2

Fenced areas around the Saxton Nuclear Facility and the Saxton Steam Generating Station. The Outside Fence is referred to as the PENELEC Fence. For Sample Results See Table III