ATTACHMENT 2
REFERENCE 13
SUPPORTS QUESTION 24 RESPONSE

Saxton Nuclear Experimental Corporation Facility

Site Characterization Report

Prepared By

GPU Nuclear

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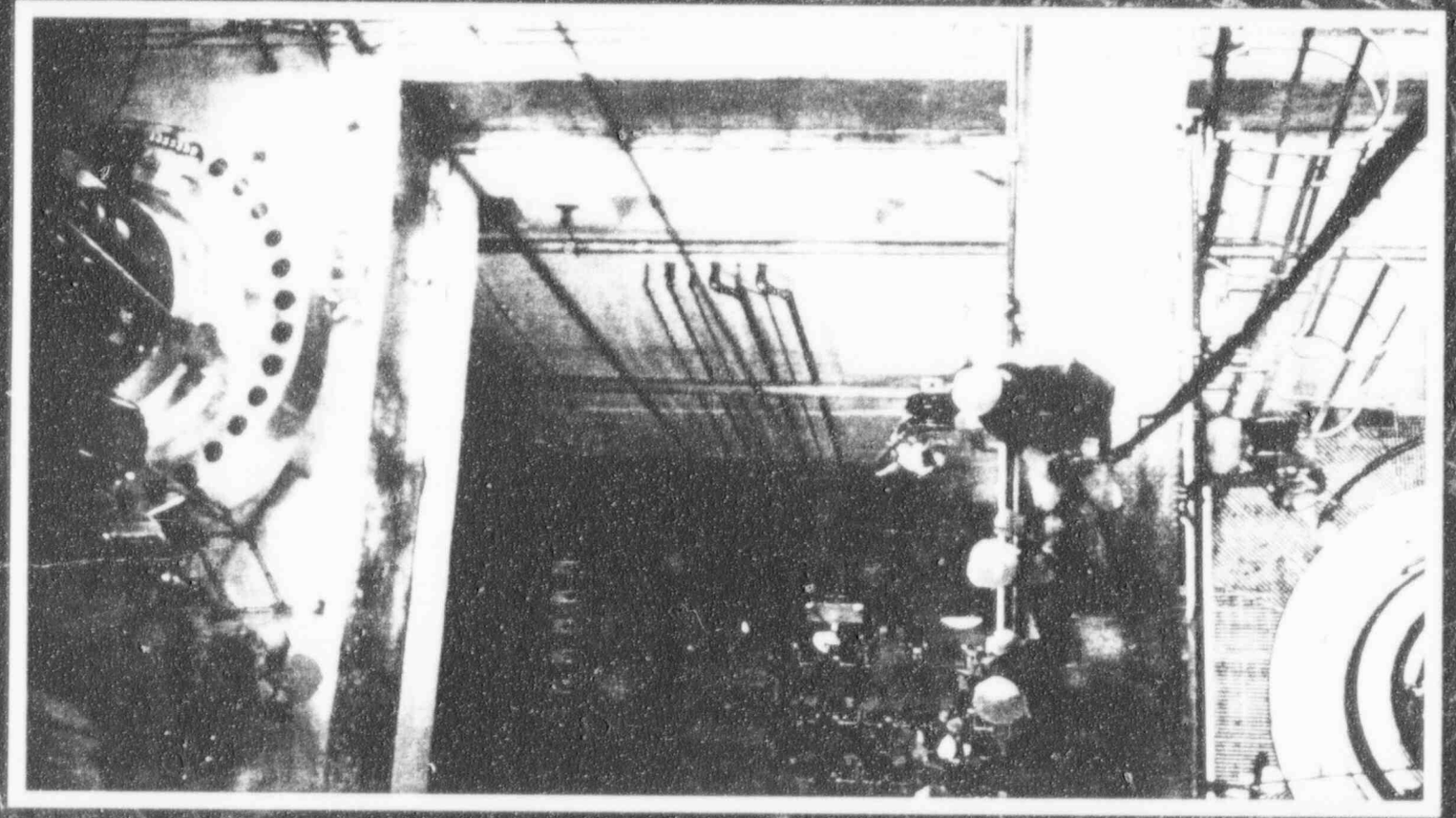

Site Characterization Report

Prepared By

GPU Nuclear

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SNEC FACILITY SITE CHARACTERIZATION REPORT

Radiological and Environmental Data Supporting the Development of the

Saxton Nuclear Experimental Corporation (SNEC), Decommissioning Plan

- Containment Vessel and Remaining External Facilities -

GPU Nuclear Corporation

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1.0 INTRODUCTION AND OVERVIEW

This report entitled "Radiological and Environmental Data Supporting the Development of the SNEC Decommissioning Plan", has been prepared from data collected as directed by the Saxton Nuclear Experimental Corporation (SNEC) Facility, Site Characterization Plan (SCP, Reference 1) and other related procedures and documents. The scope of this data collection process extends over areas of the facility that became internally or externally contaminated or activated during the SNEC facility's operating history.

1.1 PURPOSE

This document provides data summaries and interpretations, and defines methodologies by which areas, structures, systems and the surrounding soil at the SNEC facility were radiologically and environmentally characterized. This data summary is presented for planning purposes, and will be used to determine the effective and appropriate decontamination and dismantling techniques and activities supporting plant decommissioning and dismantlement. This data is also necessary for planning radioactive material disposal, assessing potential hazards during decommissioning and decontamination work, determining ALARA controls, and accurately scheduling and estimating the cost of overall program objectives.

1.2 SCOPE

This report is intended for use by SNEC personnel, GPU Nuclear Corporation (GPU Nuclear) personnel, contractors and subcontractors, and other organizations selected by GPU Nuclear as having a viable interest in fulfilling decommissioning and dismantlement objectives. This report includes the SNEC SCP (**Appendix A**), and presents the results of the data collection process as outlined in the SNEC SCP. The scope of this document includes the following characterization data:

1. **Structural Characterization (Section 4.1);**

- Locations, areas, and activity levels of structural surfaces (e.g. concrete, structural steel, decking materials, etc.).
- Radioactive materials retained in porous materials.
- Depth and activity levels of contaminant penetration into porous or cracked surfaces (e.g. depth of contamination in concrete floors, walls, and ceilings).

2. **System and Component Characterization (Section 4.2);**

- Location, surface areas and activity levels in piping systems and components.
- Location, dimensions, volume and activity levels of contaminated equipment, ducts, fixtures, etc.

3. **Reactor Vessel Activation Characterization (Section 4.3);**

- Calculation and confirmation of activity levels induced by activation in the reactor vessel, associated components, and adjacent structures.

4. **Environmental and Hazardous Materials Characterization (Section 4.4);**

- Waste classifications of contaminated materials.

5. **Soil Characterization (Section 4.4.2);**

- Location, volume, and activity levels of contaminated soil.

6. **Health Physics Surveys Supporting SNEC Site Characterization (Section 5.0).**

7. **QA/QC**

Additions, and or modifications to specific survey and or sampling requirements listed in the SNEC SCP were made with the concurrence of the SNEC Project Consultant, the SNEC facility Site Supervisor and the Manager Decommissioning Projects.

1.3 PROGRAM STRUCTURE

SNEC facility site characterization was conducted under the guidance of the SNEC Site Characterization Plan (SCP, Reference 1). This plan was originally developed by and in cooperation with TLG Services Incorporated[1]. Upon completion of the initial draft of the SCP, a fully reviewed, approved and proceduralized version was issued.

The SNEC Site Characterization Report, is divided into seven (7) sections. They are the Introduction, Historical Information, Data Presentation, Characterization Results, Health Physics Surveys Supporting SNEC Site Characterization, QA/QC Requirements and References. The Characterization Results section is further divided into Structural Characterization, System and Component Characterization, Activation of SNEC Reactor Vessel and Surrounding Structures, Environmental and Hazardous Materials Characterization and Data Tables. In addition, a photographic series has been included in Appendix B.

Whenever possible, tables and figures are included within the section where they were discussed. However, several large tables have been placed in Section 4.5.

1.4 REGULATORY CRITERIA FOR UNRESTRICTED RELEASE

The Nuclear Regulatory Commission (NRC), as the licensing authority for the SNEC facility, has the authority to define requirements for releasing materials for unrestricted use. The NRC has published Regulatory Guide 1.86, which details acceptable surface contamination levels below which a radioactive material license may be terminated. This is a guide, and is subject to interpretation contingent upon NRC approval on a case-by-case basis. NRC Regulatory Guide (RG) 1.86 Criteria, shown in **Appendix C**, is assumed to contain reasonable criteria for categorization of surface contamination on plant structures and within plant systems. When soil contamination is detected, the dose rate at 1 meter will be determined and compared to the 5 uR/hr level suggested by NUREG-0586, "Final Generic Environmental Impact Statement on Decommissioning of

---

1 TLG Services, Bridgewater, CT.

Nuclear Facilities". Determination of the final release criteria is not intended to be a part of this program. Rather, this program provided information that may be utilized later along with RG 1.86 or NUREG-0586, to separate survey data into three (3) easily defined categories:

(1) Undetectable (<MDA or <MDL)

(2) Detectable, but less than RG 1.86 or NUREG-0586 criteria

(3) Greater than RG 1.86 or NUREG-0586 criteria

Final criteria for unrestricted release will be specified at a later date.

1.5 ORGANIZATION AND RESPONSIBILITIES

The objectives of the SNEC SCP were achieved using implementing documents such as SNEC Work Instructions (SWI), SNEC Procedures or from other guidance provided by Standing Order Memorandums (SOM) and GPU Nuclear procedures. In addition to these documents, SNEC facility management personnel provided "on the spot" clarification and interpretation of site characterization issues and data collection requirements, as needed. A listing of references is included in Section 7.0.

To ensure that all facets of the plan were properly implemented, the site characterization process required the combined efforts and expertise of various personnel and other organizations within GPU Nuclear. This effort required extensive coordination and planning by managers assigned specific responsibilities. The SNEC Decommissioning Plan (Reference 2), details their positions and briefly describes these responsibilities. In addition, Nuclear Safety Assessment personnel provided inspection, observation and valuable input during the implementation of SCP activities.

1.6 CHARACTERIZATION ACTIVITY CONTROL

Characterization Activities were controlled as follows:

(1) Personnel performing site characterization work met all applicable requirements of existing SNEC training and qualification procedures and programs.

(2) Appropriate Health Physics procedures and work instructions were used to obtain and record all applicable radiological controls data.

(3) Environmental data were collected under appropriate Environmental Controls procedures.

(4) Contractors used to obtain concrete core bore sections were fully qualified through previous experience and/or training. Contractors met all SNEC or GPU Nuclear required training objectives.

(5) Off-site contractors used for sample analysis were pre-approved by GPU Nuclear through a quality assurance program.

(6) When necessary, data reduction and analysis was performed under the SNEC Technical Evaluations procedure (or equivalent) (Reference 35), which requires that a two (2) party calculation/verification process be used to evaluate data. Industry standard computer codes e.g. Microshield[2] and Lotus 1-2-3[3] were utilized as needed for data evaluation, organization and presentation.

2 Microshield is a product of Grove Engineering, Inc., Rockville, MD.
3 Lotus 1-2-3 is a product of Lotus Development Corp., Inc., Cambridge, MA.

2.0 HISTORICAL INFORMATION

2.1 SITE DESCRIPTION

The Saxton Nuclear Experimental Corporation (SNEC) facility, is a deactivated pressurized water reactor (PWR), which was licensed to operate at 23.5 megawatt thermal (23.5 MWTh). It is owned by the Saxton Nuclear Experimental Corporation and supported by GPU Nuclear Corporation. The SNEC reactor facility is maintained under a Title 10 Part 50 License and associated Technical Specifications. In 1972 the license was amended to possess but not operate the SNEC reactor. The license expires on February 11, 2000 or upon expiration of the SNEC corporate charter, whichever occurs first.

The facility was built from 1960 to 1962 and operated from 1962 to 1972 primarily as a research and training reactor. After shutdown in 1972, the facility was placed in a condition equivalent to a status later defined by the NRC as SAFSTOR. Since then, it has been maintained in a monitored condition. The fuel was removed from the Containment Vessel (CV) in 1972 and shipped to the Atomic Energy Commission (AEC) facility at Savannah River, SC., who remain as owner of the fuel. As a result, neither SNEC or GPU Nuclear have any responsibility relative to the spent fuel from the SNEC facility. In addition, the control rod blades and the superheated steam test loop were shipped offsite. Following fuel removal, equipment, tanks, and piping located outside the CV were removed. The buildings and structures that supported reactor operations were partially decontaminated from 1972 through 1974.

After the formation of the GPU Nuclear Corporation in 1980, SNEC formed an agreement with GPU Nuclear to use GPU Nuclear and its resources to maintain, repair, modify, or dismantle SNEC facilities as may be required. Both SNEC and GPU Nuclear are subsidiaries of the same parent company, General Public Utilities Corporation, (GPU). While SNEC remains the owner of the facility, a license amendment has been submitted to designate GPU Nuclear as a co-license holder. GPU Nuclear will then have responsibility to comply with the license and technical

specifications. GPU nuclear will carry out the SNEC facility decommissioning on behalf of the site owner, SNEC.

The radiological condition of the facility following shutdown was documented in a report titled "Decommissioned Status of the SNEC Reactor Facility" forwarded to the United States Nuclear Regulatory Commission (USNRC) on February 20, 1975.

Decontamination and removal of reactor support structures and buildings was performed in 1987, 1988, and 1989, in preparation for demolition of these structures. This included the decontamination of the Control and Auxiliary Building, the Radioactive Waste Disposal Facility, yard pipe tunnel, and the Filled Drum Storage Bunker, and the removal of the Refueling Water Storage Tank. A comprehensive final release survey was conducted from October, 1988 to June, 1989, to verify that residual contamination was within USNRC guidelines for unrestricted use. Details of the decontamination activities and final survey are provided in the report: "Final Release Survey of Reactor Support Buildings" (Reference 6). These buildings were demolished in 1992 after acceptance of the final release survey by the USNRC,.

In November 1994, the SNEC Soil Remediation Project was completed. This was a comprehensive project involving soil monitoring, sampling, excavation, packaging and shipment of slightly contaminated site soil. This program successfully reduced radioactive soil contamination levels below NRC current and presently proposed levels required to meet site cleanup criteria for unrestricted use.

2.1.1 Site Layout

The site is located about 100 miles east of Pittsburgh and 90 miles west of Harrisburg in the Alleghany Mountains, three fourths of a mile north of the Borough of Saxton in Liberty Township, Bedford County, Pennsylvania. The site is on the north side of Pennsylvania Route 913, 17 miles south of U.S. Route 22, and about 15 miles north of the Breezewood Interchange of the Pennsylvania Turnpike. Figure 2-1, identifies the location of the site relative to the landmarks of the local area.

The SNEC facility was built on the east side of and adjacent to the Saxton Steam Generating Station (SSGS) of Pennsylvania Electric Company. This station was located on the east bank of the Raystown Branch of the Juniata River as shown on property map, Figure 2-2. The property comprises approximately 150 acres. The SSGS was demolished in 1975.

The SNEC facility site comprises 1.1 acres containing the yard and buildings from the nuclear plant. An additional 9.6 acre area is fenced in around the electrical switchyard and buildings still in use by Penelec (Pennsylvania Electric Company, a subsidiary of GPU). This area adjoins the Raystown Branch of the Juniata River. Portions of the SNEC facility site as well as a portion of the Penelec area and the surrounding uncontrolled lands are in the 100-year floodplain of the Raystown Branch and Shoup Run. Additional large areas of low lying fields and scrub tree growth surround the site.

2.1.2 Station Structures

The only remaining SNEC facility buildings and structures are the Containment Vessel (CV), the concrete shield wall located around the NW and NE quadrant of the CV, the tunnel sections that are immediately adjacent to the outer circumference of the CV and portions of the septic system, weirs, and associated underground discharge piping. Concrete barrier walls have been installed to isolate the open ends of the tunnel that were connected to the Control & Auxiliary Building, the Radioactive Waste Disposal Facility, and the Steam Plant. Portions of the Steam Plant Tunnel still exist downstream of where it is blocked off. This area will also be verified to meet unrestricted release criteria following dismantlement.

2.1.3 Facility Operational History

Operational history of plant systems and support buildings and facilities is an important component of determining radiological status of the facility. The following

is a chronology of major operational events at the Saxton Nuclear Experimental Corporation since start of operation in 1962.

Event	Date
Construction Authorization	February 11, 1960
Initial License Issued	November 15, 1961
Initial Criticality	April 13, 1962
First Electricity Generated	November 16, 1962
Liquid Spill Outside SI Pump House (~1 gal.-10uCi's)	November 26, 1968
Storage Well Leaks, Possibly Resulting In Extensive Contamination Of Internal CV Concrete Structures	1968 Through Layup of SW
Experiments With Mixed Oxides Fuel, And Fuel Cladding Intentionally "Failed" (Last Fuel Cycle)	December 11, 1969 May 2, 1972
Unplanned Gas Releases	
7.32 Curies	May 14, 1970
0.034 Curies	August 26, 1970
80.2 Curies	November 29, 1971
19.7 Curies	December 15, 1971
Final Shutdown	May 1, 1972
Nuclear Fuel and Other Removable "Special Nuclear Materials" Shipped Off Site	July - November, 1972
By-Product Material Removed From Site (With Exception of Material in Exclusion Areas)	November, 1972 - Early 1974

Event	Date
Facility Placed In A "Mothball" Condition	February 1975
Groundwater Removed From RWDF and Yard Pipe Tunnel	Late 1986 - Early 1987
Decontamination of Control & Auxiliary Building RWDF, RWST, and Yard Pipe Tunnel	1987 & 1988
Final Release Survey of C&A Building, RWDF, RWST, and Yard Pipe Tunnel	October 1988 - June 1989
Pennsylvania State University Soil Characterization	December, 1988 & January, 1989
EG&G Measurements Aerial Survey	July 1989
Comprehensive Radiological Survey of CV (Scoping Survey)	1991
Demolition of C&A Building, RWDF, RWST and Yard Pipe Tunnel	1992
Soil Remediation Project	June - November 1994
Site Characterization of CV & Remaining Facilities	1995

2.1.4 Historical Radiological Survey Data (1971)

Radiological surveys were routinely performed during SNEC facility operation. The following information was collected September 13-17, 1971, and shows typical operational radiological conditions that existed within the containment vessel (CV).

Table 2-1, Historical Radiological Conditions During Operation (1971)

LOCATIONS	RADIATION LEVELS (mR/h)	DPM/100 cm^2
Operation Level CV (AREA 4)	1	~280
Storage Well Bridge (AREA 4)	1	~160
Auxiliary Level (AREA 3)	< 1	~110
Auxiliary Level (AREA 3)	< 1	~210
C. C. Pumps (AREA 3)	< 2	< 100
Storage Well Pumps (AREA 3)	< 2	~ 250
Letdown Valve (LRC-21V, AREA 3)	200	~2,550
CV Basement G.A. (AREA 1)	10	~ 420
Discharge Tank (AREA 1)	260	~ 8,450
Shutdown Cooling Pumps (AREA 1)	9	~ 270
Discharge Tank Pumps (AREA 1)	10	~ 450
Control Rod Room (AREA 1)	35	~270
Lower Primary Level (AREA 2)	80	~1,130
Regen. Heat Exchanger (AREA 2)	1,750	~790
Non-Regen. Heat Exchanger (AREA 2)	75	~760
Upper Primary Level (AREA 2)	100	~ 1,130
Main Coolant Pump (AREA 2)	325	~1,450
Pressurizer Bottom (AREA 2)	110	~ 110
Pressurizer Top (AREA 2)	5	~1,900
Valve HIC-27 (AREA 2)	100	~ 1,170
Steam Generator Bottom (AREA 2)	210	~ 300
Reactor Grating Level (AREA 6)	250	~ 107,640
Reactor Head Level (AREA 6)	260	~ 100

2.2 REMAINING SITE STRUCTURES

2.2.1 Area Designations

The remaining Containment Vessel facilities consist of eight principle structures and locations (see Figures 2-3 & 2-4, end of this section), designated as the following:

AREA 1 - Southwest, Southeast, and Northwest Quadrants of Containment Vessel between elevations 765'-8" (concrete floor) and El. 777'-8" (concrete ceiling) in southwest quadrant, El. 779'-0" (steel platform) in southeast quadrant, and El. 775'- 2" (concrete ceiling of the "Rod Room") in northwest quadrant. The area also includes the three and one half foot deep sump located in the floor, and a 4 foot wide concrete ledge (El. 768'-3") extending around the circumference of the area.

AREA 2 - The Southwest quadrant of the Containment Vessel between elevations 779'-8" (Concrete Floor) and 814'-6" (Concrete Ceiling). Three (3) steel platforms are installed. One platform, El. 789'-4", is located beneath the Steam Generator, Pressurizer and Primary Coolant Pump. The second, El. 795'-2", essentially extends over the entire area of the quadrant and the third, El. 807'-0" is located around the upper heads of the Steam Generator and Pressurizer.

AREA 3 - The Southeast quadrant of the Containment Vessel between elevations 781'- 4" (steel platform) and 810'-0" (concrete ceiling). One additional steel platform is installed at elevation 795'-2". Both steel platforms extend over the entire area of the quadrant, each containing an 8 foot by 8 foot open hatch. There is a similar opening in the concrete ceiling.

AREA 4 - The concrete operating floor of the containment vessel (CV) (El. 812'-0"), and surfaces up to the top of the CV dome. The area includes: 1) three access hatches (equipment, personnel, and escape); 2) the concrete walls and platform located in the southwest quadrant

containing the steam generator, pressurizer and reactor coolant pump; 3) the polar bridge crane; 4) a steel platform (El. 818'- 0"); and 5) the movable bridge over the reactor vessel and fuel storage area.

AREA 5 - The below grade concrete tunnel which wraps around the outer circumference of the containment vessel between azimuths 35 degrees and 270 degrees.

AREA 6 - This area is comprised of the Northwest and Northeast quadrants (reactor compartment and storage well, respectively) of the Containment Vessel between elevations 765'-8" (concrete floor) and 807'-0" (concrete ceiling). All concrete surfaces of this area, including the surrounding concrete walls are lined with a Series 300, four-coat, catalyzed phenolic protective lining. The reactor compartment contains the reactor vessel, associated piping, and the reactor vessel "can", which was used as a barrier to keep the storage well water off the piping and reactor vessel surfaces. There are two aluminum platforms installed in the reactor compartment. One removable platform at elevation 793'-2", and a second platform at elevation 800'-6". The storage well contains the movable fuel storage racks (up/down direction), three demineralizer vessels (Storage Well, Boric Acid, and Purification), which are mounted at elevation 776', and a concrete pad for storage of the fuel shipping cask (above El. 781'-4").

AREA 7 - The outside of the steel liner of the Containment Vessel (CV) extending from Grade Level (El. 811') to the top of the CV Dome. This area also includes the concrete shield structure located around the circumference of the CV between azimuths 270° and 35° (El. 811' to about 822').

AREA 8 - This area includes the tanks and enclosures which received the sanitary discharge from the C&A Building, processed the sewage, and

discharged the effluent to the Raystown Branch of the Juniata River. The system consisted of: 1) two concrete septic tanks installed in series, Tank "A" and Tank "B"; 2) a concrete pump well contained within a concrete block pump house (no above grade structures remaining); 3) a concrete Chlorine Contact Tank/Weir unit and a storm drain system.

2.2.2 Area Characterization Strategy

All of the areas designated in section 2.2.1 above, were evaluated with respect to their potential hazard. Comprehensive radiological surveys, equipment and material inventories, component inspections and hazardous materials analysis were performed which included some destructive sample collection and removal. Comprehensive characterization activities were not considered important for some materials and/or locations were early removal possibilities existed, and where these materials and items retain little radiological or hazardous materials. Other areas in section 2.2.1 above were more extensively characterized to provide detailed information that will be used to "map-out" a strategy for safe removal and disposal. This "graded" approach to characterization is appropriate and has provided the best balance between the time available for work activities, ALARA considerations and reducing the expense of conducting the characterization effort and associated activities.

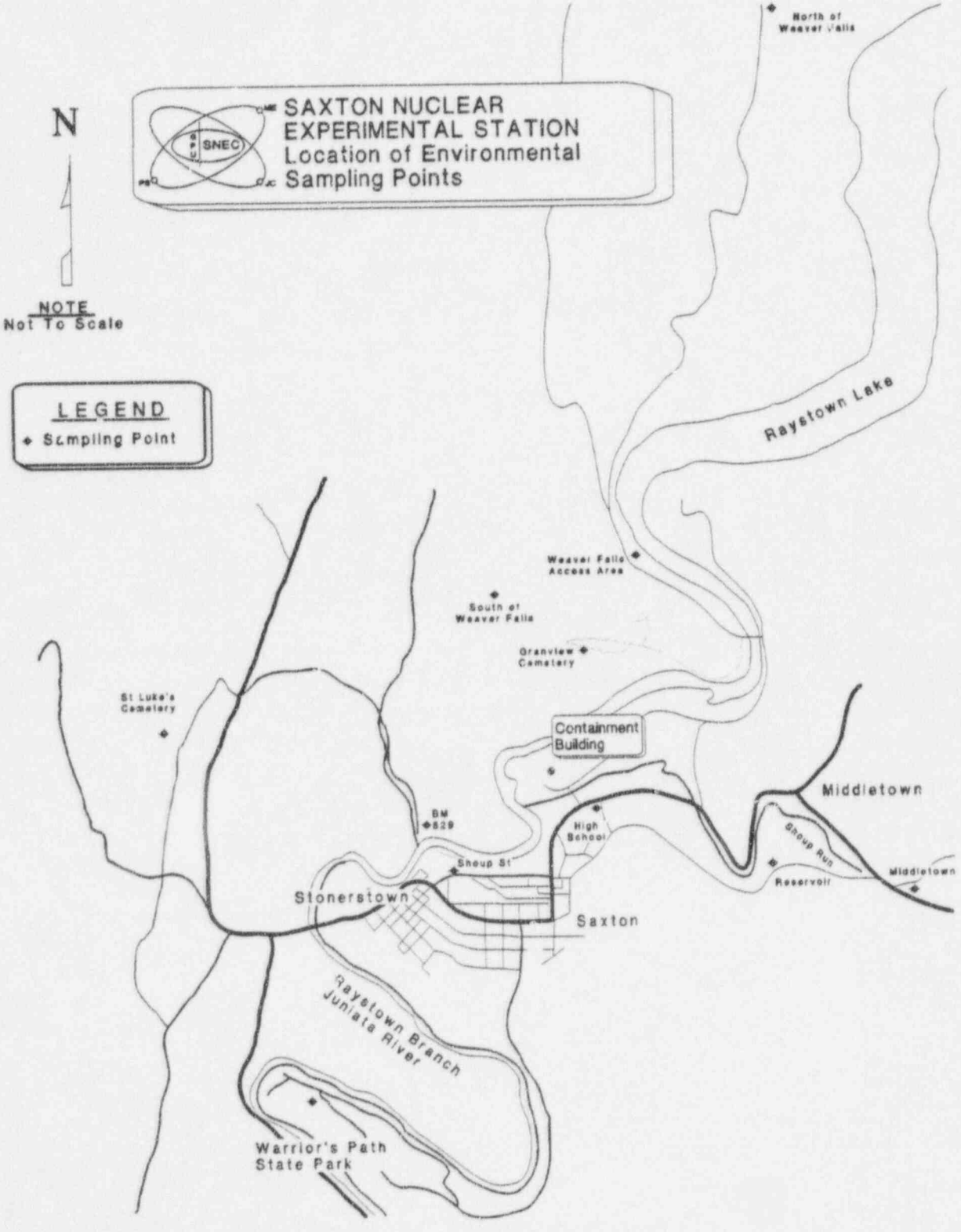

N
SAXTON NUCLEAR
EXPERIMENTAL STATION
Location of Environmental
Sampling Points
SNEC
NOTE
Not To Scale
LEGEND
Sampling Point
North of
Weaver Falls
Raystown Lake
Weaver Falls
Access Area
South of
Weaver Falls
Granview
Cemetery
St Luke's
Cemetery
Containment
Building
Middletown
BM
829
High
School
Sheup St
Sheup Run
Reservoir
Middletown
Stonerstown
Saxton
Raystown Branch
Juniata River
Warrior's Path
State Park

Figure 2-1

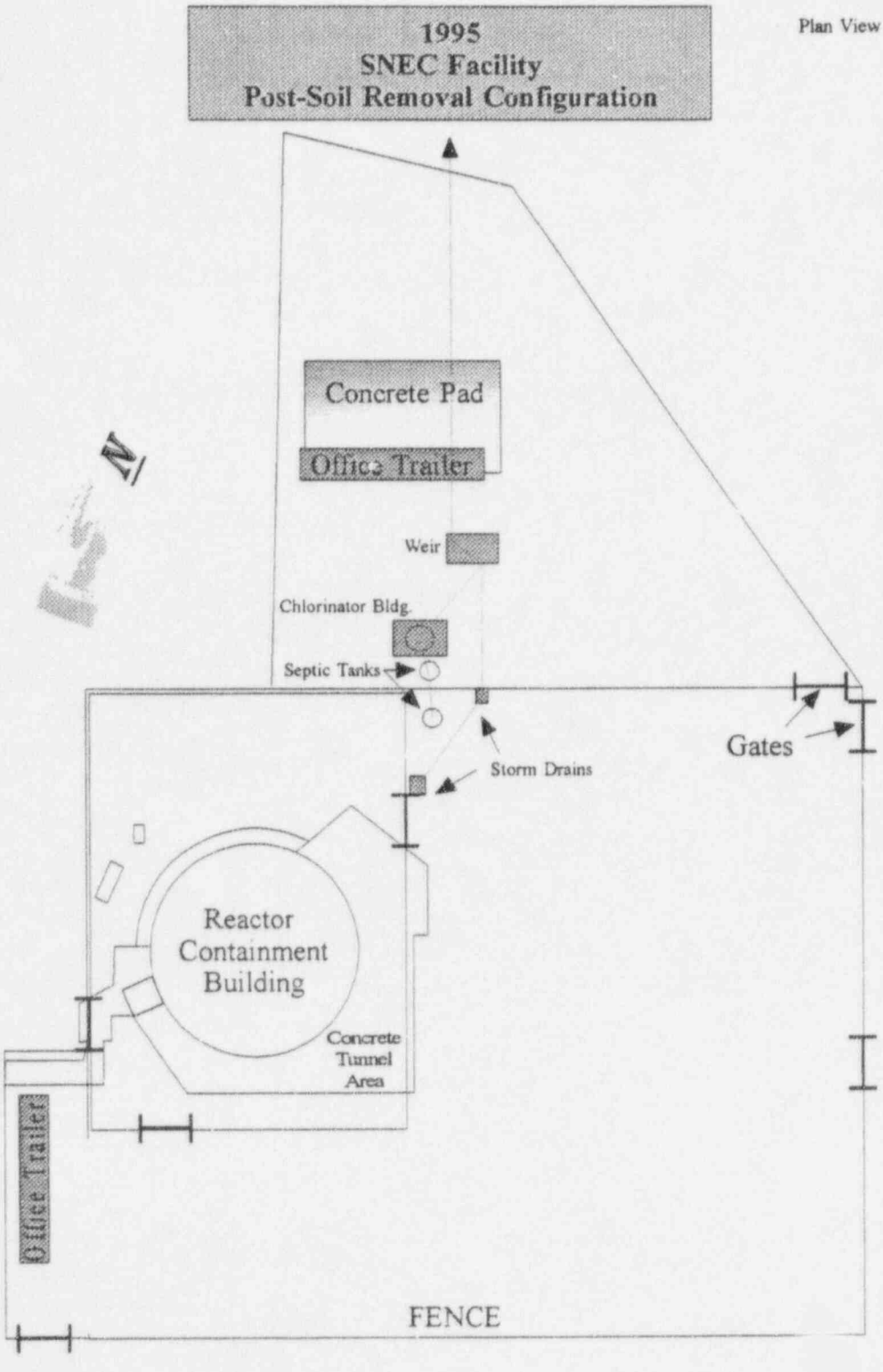

1995
SNEC Facility
Post-Soil Removal Configuration
Plan View (No Scale)
N
Concrete Pad
Office Trailer
Weir
Chlorinator Bldg.
Septic Tanks
Storm Drains
Gates
Reactor
Containment
Building
Concrete
Tunnel
Area
Office Trailer
FENCE

Figure 2-2

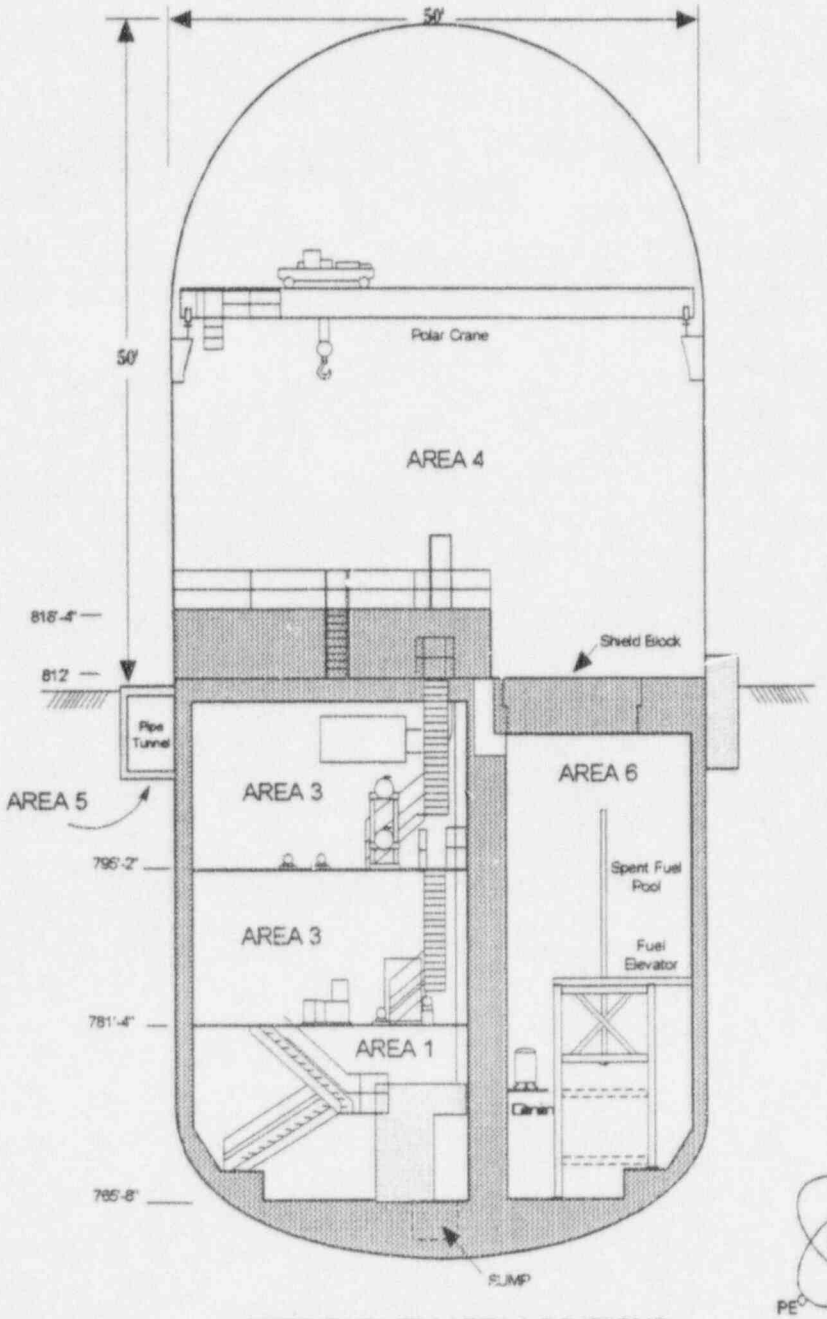
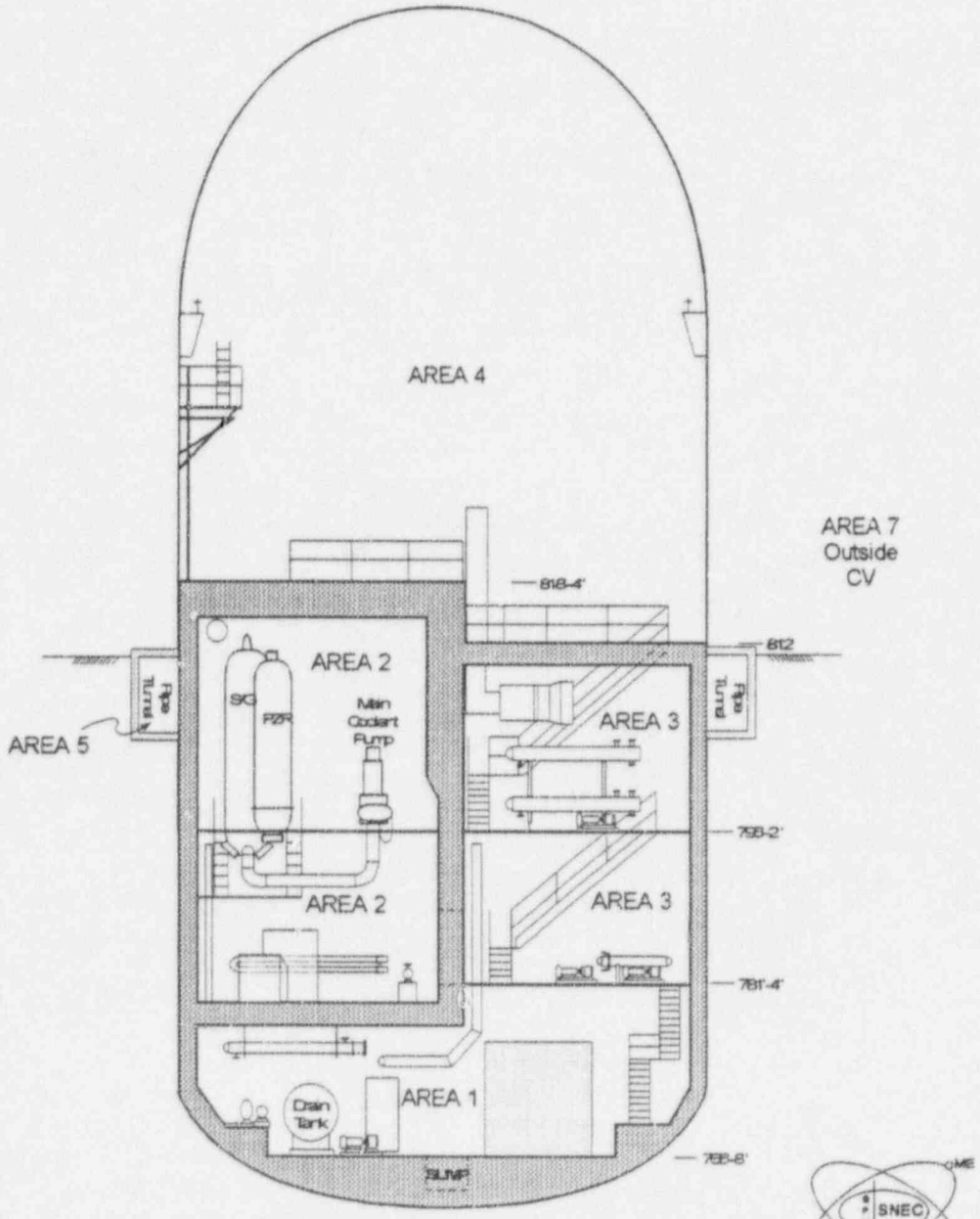

50'
50'
Polar Crane
AREA 4
AREA 7
Outside
CV
818'-4"
812'
Shield Block
Pipe
Tunnel
AREA 5
AREA 3
AREA 6
795'-2"
Spent Fuel
Pool
AREA 3
Fuel
Elevator
781'-4"
AREA 1
Caisson
765'-8"
SUMP
SNEC FACILITY AREA LOCATIONS
Rotary Bridge Crane, Sectional View
(Looking West)
NO SCALE
ME
GPU
SNEC
PE
JC

Figure 2-3



SNEC FACILITY AREA LOCATIONS
Containment Vessel, Sectional View
(Looking North)

Figure 2-4

3.0 CHARACTERIZATION DOCUMENTATION AND REPORT

3.1 GENERAL DOCUMENTATION

Proper documentation of every aspect of the characterization program included accurate mapping of the survey data, with its relationship to the site. In addition, instrument measurements and analytical results were documented to include the following items as applicable.;

(1) Location of measurements or samples taken (diagram, map, etc.).

(2) Date or dates measurements or samples were taken or collected.

(3) The measured concentration of the specific nuclides in bulk samples as applicable.

(4) Measurements of contamination were reported as removable alpha, beta/gamma activity levels (dpm/100 cm^2, uCi/unit area, etc.).

(5) The analytical error was reported for all laboratory analysis.
Note: Outside vendor analysis results are included in **Appendix D** for all samples collected.

(6) Name of surveyor(s), sampler and analyst, if applicable.

(7) Analysis date.

(8) Instrument Manufacturer, Model No., Serial No. and reference to calibration data.

(9) Reviewer's name. Other data and information is documented according to approved SNEC procedures referenced in Section 7.0.

3.2 DATA PRESENTATION

Data reduction and analysis results calculated from information collected during the Site Characterization Program have been presented in the appropriate segment of section 4.0 and the Appendices. The specific areas, data acquisition methods, sampling techniques, and calculational methods employed are described in some detail in the SNEC facility SCP, Section 4 (Appendix B), or are presented in detail within this report or references listed in Section 7.0.

3.3 RADIOLOGICAL DATA

The sensitivity of the measuring and sampling techniques used depends on the purpose of the survey. Direct measurements taken in "unbiased" surveys require the use of techniques having a Minimum Detection Level (MDL) less than the maximum permissible levels identified in Table 1 of USNRC Reg. Guide 1.86 or more recent regulatory documents. When background radiation levels precluded practical achievement of desired sensitivity, alternate methods of establishing contamination or radiation levels were used. Measurement methodology is described for each technique used. Some data collection efforts outlined or required by the SNEC facility SCP were deferred or performed under a reduced scope because of the difficulties in obtaining the data without simultaneously performing some dismantlement operations. In other cases, characterization efforts may have been postponed or deferred to accommodate weather conditions, decommissioning plans or ALARA considerations.

3.3.1 Unbiased Survey Results

For purposes of this document, unbiased surveys are surveys that do not preferentially select measurement points which have a higher probability of contamination than other locations not selected. The SNEC Facility Site Characterization Plan (SCP), has specified AREA 7 as a candidate for unbiased surveys. However, a limited number of survey points were indicated for AREA 7 in the SNEC SCP. A more applicable use of unbiased survey methods is presented

within soil release surveys conducted externally but in the vicinity of the SNEC CV (AREA 7). No locations within the SNEC Facility CV were chosen for the application of unbiased survey measurement methodology.

3.3.2 Biased Survey Results

Most of the survey data collected at the SNEC Facility is collected using a biased survey technique. This information is presented in a tabular presentation, employing a graphic depiction of the area and location on maps or diagrams. These locations are clearly marked and identified.

3.4 STRUCTURAL DATA

Structural data is compiled in tables within the applicable sections. Concrete surfaces, steel and aluminum grating and platforms, comprise the majority of this information. Calculated information is presented along with the reasons and assumptions used in determining the estimated values.

3.5 SYSTEMS AND COMPONENT DATA

Systems and component survey data are compiled in tables and summarized for ease of review. The tables include the gross total and removable surface contamination level estimates. In addition, nuclides detected during sampling evolution's are listed along with their abundance normalized to one (1) curie. Actual survey data is presented on SNEC facility radiological surveys referenced in section 7.0 and are summarized within this report.

3.6 REACTOR VESSEL AND ADJACENT STRUCTURES - ACTIVATION DATA

The results of the activation verification analysis are presented. Confirmatory radiological survey measurements performed by SNEC facility Radiological Controls and GPU Nuclear engineering personnel are included to show how the calculated radiation measurements compare to actual measurements. In addition, thermoluminescent dosimeter (TLD), data is presented and compared to calculated values. The expected waste volume produced by the activation of the reactor vessel

and surrounding support materials are also presented. The benchmarking process used is described and summarized.

3.7 ENVIRONMENTAL AND HAZARDOUS MATERIALS DATA

The environmental samples and information acquired under the SNEC Site Characterization Plan include the following:

- Location of suspected asbestos containing materials (paint, insulation, etc.).
  Results include type of asbestos, presence of non-asbestos fibers (%), presence of non-fibrous materials etc.

- Location and concentration of lead in painted surfaces and other materials
  Results reported in ppm, mg/kg etc.

- Location of bulk lead materials (shielding etc.)
  Results reported as weight (lbs) and volume (ft^3).

- Location of PCB's and substances identified for TCLP, inorganic analysis.
  Results reported in ppm, mg/kg or mg/l as appropriate.
  Test parameter sited with detection limit.

- Location of and quantities of mercury and cadmium within the CV.
  Results reported in volume (cc's, ft^3, etc.), and or weight (lbs, gms.,etc.)

4.0 CHARACTERIZATION RESULTS SUMMARY

Approximately 93% of the SNEC facility radionuclide inventory is retained within the steel structures of the reactor vessel. The remaining radionuclides (~7% of the total) are located within/on components, system piping, concrete and facility structural surfaces. The estimate of record for the SNEC facility is presented in the following table. This listing represents greater than 95% of the total calculated facility radionuclide inventory (nuclides >1% of total are listed in bold text).

Table 4-1, Radionuclide Inventory For The SNEC Facility

Radionuclide	Curies	% Of Total
Ag-108m	3.73E-02	0.0024
Am-241	2.05E+00	0.1316
Am-243	3.79E-03	0.0002
Ag-39	2.34E-03	0.0002
Ce-144	1.81E-01	0.0116
Cm-242	2.14E-02	0.0014
Cm-243/Cm-244	7.14E-02	0.0046
Co-60	**6.04E+02**	**38.7276**
Cs-134	4.53E-02	0.0029
Cs-137	8.47E+00	0.5431
C-14	7.37E+00	0.4727
Eu-152	5.47E-01	0.0351
Eu-154	1.89E-01	0.0121
Eu-155	8.21E-02	0.0053
Fe-55	**3.84E+01**	**2.4606**
H-3	4.15E+00	0.2661
I-129	2.10E-01	0.0135
Nb-94	1.16E+00	0.0745
Ni-59	7.26E+00	0.4659
Ni-63	**8.56E+02**	**54.8803**
Np-237	1.44E-01	0.0092
Pu-238	6.57E-01	0.0422
Pu-239/Pu-240	3.15E+00	0.2022
Pu-241	**2.29E+01**	**1.4659**
Pu-242	6.98E-03	0.0004
Ru-106	3.71E-01	0.0238
Sb-125	1.13E-01	0.0073
Sr-90	1.98E+00	0.1270
Tc-99	8.77E-02	0.0057
U-234	4.11E-02	0.0026
U-235	4.58E-03	0.0003
U-238	3.35E-02	0.0022
Totals⇒	~1560	~100%

In the following sections of this report, data collected from each area of the facility is examined. The methods used to determine the curie estimates for components, system piping and structural surfaces is presented. In all cases, radionuclides are assumed to be present at the detection limits provided by the analytical laboratory.

4.1 STRUCTURAL CHARACTERIZATION

4.1.1 Data Needs

Structural characterization results contained within this report, include a determination of the:

- Amount of surface contamination (fixed & loose), on structural materials.
- The distribution of radionuclides present on contaminated surfaces.
- The depth of contamination which penetrated porous surfaces.

4.1.2 Applicable Areas and Surfaces

Structural characterization included the interior and exterior surfaces of the Containment Vessel, the adjoining below grade tunnel, and portions of the underground septic system. A detailed listing of the structural locations examined is provided within **APPENDIX A**. Typical structural characterization subjects are presented below:

Floors - areas of potential spills; areas of heavy traffic

Walls - less than 2 meters high - potential for splashes from nearby equipment

Walls - greater than 2 meters high - settling of dust and sprays

Horizontal Surfaces - gravitational settling of dust and dirt

Ceiling Surfaces - sprays or steam leaks

4.1.3 Analytical Methods

The following describes the analytical techniques which were used to characterize existing SNEC structures, and the criteria under which these methods were implemented.

A. Surface Contamination Determinations (fixed & loose, α-β-γ):

- Measurements of fixed and loose α-β-γ radioactivity were performed on representative surfaces within each AREA and from each survey unit specified in the SCP.

- Appropriate radiological instrumentation and methodology were employed. See Section 5.0 for types and characteristics of typical instrumentation used.

- Alpha analysis of smear samples was performed in accordance with existing procedures. A minimum of one alpha measurement was made in each survey unit.

Fixed Contamination

Fixed contamination is defined as the subsurface contamination and activation products plus surface contamination that is tightly bound or adherent. Subsurface contamination and activation products may be evaluated from core bore analysis or some other destructive methodology. For purposes of this report, tightly bound or adherent materials on the surface of the concrete is defined as the fixed surface contamination component.

Loose Surface Contamination

Loose surface contamination is that amount of contamination that can be easily removed by simple physical or mechanical actions. For the purposes of this report, smear contamination surveys measure this component. The removal efficiency for a typical smear is assumed to be ~10% but will depend on surface and contaminant characteristics (Reference 14 and GPU Nuclear Radiological Engineering/Instrumentation Information). A typical smear samples 100 cm^2 of surface area.

B. Contamination At Depth:

Determinations of the amount of contamination penetrating porous structural materials were performed in locations where significant surface contamination was found and there was a likelihood of contaminants penetrating the surface. The following method was employed to determine the depth of contamination in concrete surfaces.

Core Drilling (core bores)

The purpose of core drilling is to determine the extent of contamination or activation of materials where the potential existed for contamination or activation to exist beneath the exposed surface of the structure. Core drilling was performed by utilizing a hollow-bit concrete coring drill, 3 inches in outside diameter, and drilling out the specified depth of material. Coring apparatus consisted of electrically driven, water lubricated, heavy duty drills attached to masonry hole saws. The core bores removed were 2 3/4" in diameter. All sampling was performed in accordance with the direction contained within SNEC Work Instruction SWI-94-001 (Reference 56).

C. Bulk Sampling and Analysis:

Bulk Samples were collected and analyzed to determine the radioisotope concentrations and relative distributions of these isotopes in sediment, scrape samples, filter media and core bore sections. A representative selection of sample types were analyzed to determine the presence of hard to detect radionuclides, and in some cases, were also analyzed to determine potential hazardous materials concentrations.

Nuclide Identification

High resolution gamma spectroscopy was used to identify gamma emitting isotopes on site. In addition, many samples were also analyzed at off-site facilities for typical 10 CFR 61 type radionuclides (shown on following page).

Ag-108m	Am-241	C-14	Co-60
Cm-244	Cs-134	Cs-137	Eu-152
Eu-154	Eu-155	Fe-55	Fe-59
H-3	I-129	Nb-94	Ni-59
Ni-63	Pu-238	Pu-239	Pu-240
Pu-241	Sb-125	Sr-90	Tc-99
U-234	U-235	U-238	

D. Additional Classifications:

In addition to the above analytical requirements, the results of the structural evaluations will be used to classify surfaces according to the following two criteria:

- ***Less than or equal to the applicable release criteria***
- ***Greater than the applicable release criteria***

4.1.4 Selection of Measurement And Sampling Locations

Sampling locations for biased surveys were selected from areas or locations that represented the highest contamination levels (whenever possible), with the following exceptions:

(1) Situations where contamination levels in a selected area were extremely low. No discernible levels above background were detected with standard measurement techniques.

(2) Areas where general area contamination or radiation levels were extremely high (mrad smearable and/or high mR/h general area exposure rates). Therefore, maintaining personnel exposures ALARA was considered along with data collection requirements.

4.1.5 Estimates of Structural Surface Area (ft^2)

Surface contamination results were tabulated for various elevations and surfaces within the eight (8) areas previously designated at the SNEC facility. Estimates of surface area for major structural components are tabulated below.

AREA 1

Location: Lower Level of CV, Southwest, Southeast and Northwest Quadrants

SURFACE/MATERIALS	ESTIMATED SURFACE AREA
Concrete Floor (El. 765'-2")	705 ft^2
Concrete Ledge (El. 768'-3")	350 ft^2
Exposed (Steel-Lined) Sump (El. 765'-2")	64 ft^2
Concrete Ceiling (El. 775'-2")	733 ft^2
Concrete Walls (El. 765'-8" to 781'-4")	2543 ft^2
Steel Platform Ceiling (El. 781'-4")	370 ft^2

AREA 2

Location: Middle Level of CV, Southwest Quadrant

SURFACE/MATERIAL	ESTIMATED SURFACE AREA
Concrete Floor Surface	475 ft^2
Concrete Ceiling Surface	475 ft^2
Concrete Wall Surfaces	2843 ft^2
Steel Platform (El. 789'-4")	89 ft^2
Steel Platform (El. 795'-2")	325 ft^2
Steel Platform (El. 807'-0")	89 ft^2

AREA 3

Location: Middle Level of CV, Southeast Quadrant

SURFACE/MATERIAL	ESTIMATED SURFACE AREA
Steel Platform (El. 781'-4")	414 ft^2
Steel Platform (El. 795'-2"	414 ft^2
Concrete Ceiling Surface	381 ft^2
Concrete Wall Surface	2405 ft^2

AREA 4

Location: Operating Level of CV, and Above

SURFACE/MATERIAL	ESTIMATED SURFACE AREA
Concrete Operating Floor (El. 812'-0")	1202 ft^2
Concrete Platform (El. 818'-0")	669 ft^2
Steel Platform (El. 818'-0")	75 ft^2
Concrete Walls (El. 812'-818')	341 ft^2
CV Steel Walls (El. 812'-818')	666 ft^2
CV Steel Walls (El. 818'-845'-2")	4267 ft^2
Movable Bridge (El. 812'-0")	28 ft^2
Polar Bridge Crane (El. 845')	196 ft^2
CV Upper Dome (El. 845'-2" to 870'-2")	3926 ft^2
Equipment Access Hatch (El. 814'-5")	33 ft^2
Personnel Access Hatch (El. 823'-9-1/2")	71 ft^2
Escape Access Hatch (El. 815'-6")	20 ft^2

AREA 5

Location: Tunnel Outside of CV

SURFACE/MATERIAL	ESTIMATED SURFACE AREA
Concrete Floor (El. approx. 803')	953 ft^2
Concrete Wall (El. 803' to 811')	2014 ft^2
Concrete Ceiling (El. 811')	953 ft^2
Concrete Surface Above Grade Outside Tunnel	953 ft^2

AREA 6

Location: Reactor Compartment and Storage Well of CV

SURFACE/MATERIAL	ESTIMATED SURFACE AREA
Concrete Floor Surface	217 ft^2
Concrete Ceiling	574 ft^2
Concrete Wall Surface	4025 ft^2
Platform (El. 793'-2")	206 ft^2
Concrete Ledge (El. 768'-3")	818 ft^2
Concrete Ledge (El. 779'-8")	113 ft^2
Platform (El. 800'-6")	234 ft^2

AREA 7

Location: Outer Wall and Dome of CV

SURFACE/MATERIAL	ESTIMATED SURFACE AREA
Steel Walls (< 2 meter high) (El. 811' to 817')	615 ft^2
Steel Wall (> 2 meter high) (El. 817' to 845')	4424 ft^2
Steel Dome (El. 845' to 870')	3927 ft^2
Concrete Shield Wall (Horizontal Surface)	173 ft^2
Concrete Shield Wall	327 ft^2

AREA 8

Location: Sanitary Sewage Treatment Facilities

SURFACE/MATERIAL	ESTIMATED SURFACE AREA
1000 gallon concrete Septic Tank "A"	173 ft^2
600 gallon concrete Septic Tank "B"	107 ft^2
1000 gallon concrete Pump Well	173 ft^2
Concrete block Pump House (below grade)	348 ft^2
Concrete Chlorine contact Tank/Weir unit	192 ft^2

4.1.6 Unbiased and Biased Surveys

Most structural surfaces within the SNEC CV retain some surface (loose or fixed), contamination. Radiological survey personnel routinely included areas of higher

contamination levels whenever possible. Therefore, no unbiased surveys were performed for areas within the CV interior. Unbiased surveys were limited to locations external to the SNEC facility CV.

4.1.7 Data Reporting and Analysis

Structural surfaces that have been characterized were sorted by total and removable surface contamination results (i.e., as less than the applicable release criteria or greater than or equal to the applicable release criteria). Results of structural surveys were interpreted, analyzed and the average values and isotopic distributions of radionuclides on these surfaces were calculated from smear analysis results.

4.1.8 Surface Contamination Evaluations

Several methodologies were used to determine the loose contamination components on structural surfaces at the SNEC Facility. Smear surveys were used to evaluate the loose or removable surface contamination component. Direct frisk measurements (when possible), were used to determine fixed surface contamination levels.

Smears

Standard smear survey techniques were used to evaluate loose contamination on surfaces. One hundred square centimeters of sampled surface area per smear is the standard smear area sample size.

Direct Surface Measurements

Standard Geiger-Mueller, thin window, pancake type detectors were used to estimate the fixed surface contamination levels at the SNEC facility. Typical detection equipment of this type is a HP-210T probe attached tc an Eberline instrument model number E-140N. This unit reads out in counts per minute (CPM). Field measurement requirements specified a probe to surface distance of about 1/2". The probe is sensitive to a surface area of approximately 15 cm^2.

Special Surface Measurements

Typical frisker probes respond to the beta radiation component predominately, in SNEC facility radionuclide combinations. For purposes of this report, beta radiation is assumed to be a surface phenomena since Cs-137 beta particles are stopped in about a millimeter of concrete and Cs-137 is the dominant isotope found in surface contamination at the SNEC facility. Standard frisker probes, with and without 1/4" thick Plexiglas covers over the sensitive area; held at fixed distances from the surface to be surveyed, were used to provide both background and surface contamination levels (in counts per minute (CPM)). With Plexiglas covers removed ("open window" readings), the total response of the instrument to background and surface contamination may be estimated. With Plexiglas covers installed (closed window), readings provide only the background gamma and x-ray radiation response, since almost all beta radiation is shielded by the cover material. Then the difference between an open and closed window frisker measurement is the estimated surface beta radiation component. Standard Health Physics HP-210T detector efficiencies for the nuclide mixtures present on SNEC facility structural surfaces are established by the GPU Nuclear Radiological Instrument Department as ~10%. Using the frisker probe sensitive area of ~15 cm^2, and the detector efficiency, the total, fixed and loose surface activities were estimated for affected surfaces.

Surface Decontamination Experiment

Radiologically contaminated surfaces were hand wiped to remove the majority of loose surface contamination present after initial open and closed window readings were taken using a pancake frisker type probe with a 1/4" Plexiglas cover. A second set of open and closed window readings were then taken to determine the remaining surface contamination levels after simple decontamination. This remaining surface radiation component is a reasonable approximation of the "fixed" contamination component for surface deposited materials. These values do not include the

contamination that may have penetrated porous surfaces below about one millimeter, such as into concrete.

This approach provides an estimate of the total (loose and fixed), surface contamination present on SNEC facility structural materials. In addition, the results also give an indication of the fraction of surface contamination that may be easily removed with standard non-destructive cleaning techniques (hand wiping).

4.1.9 Concrete Surfaces-General Description

The majority of concrete surfaces within the SNEC facility CV have been painted. In the storage well (**AREA 6**), many cracks are visible in the walls and floors, and the liner of the storage well is separating from the concrete (see photographic section in **Appendix B**). The walls in the storage well are believed to have been penetrated to a significant depth by storage well water containing soluble fission products. The majority of this contamination occurred when the Storage Well was filled to about the 791' elevation during reactor operations and greater levels during fuel transfer evolutions. Core bore samples from below the operational water line have shown significant penetration of contaminants below the exposed surface area. Potentially contaminated concrete will be re-surveyed and re-evaluated as necessary during decommissioning. Any concrete found to be above USNRC approved release criteria will be removed and packaged as radioactive waste. This area is classified as affected and generally above release criteria.

In **AREAS 1**, **2** and **3**, low to moderate levels of contamination have been detected at depth. However, most of this concrete may be below release criteria with the exception of the floor in AREA 1 and the four and five foot thick concrete divider walls that separate AREAS 1, 2 and 3 from the Storage Well. The remaining concrete surface is only lightly contaminated near the surface with some locations already below Regulatory Guide 1.86 release limits.

In **AREA 4**, the surface of the concrete is lightly contaminated. However, some of the exposed surface area in this region of the CV is at or below applicable release limits. The one exception is the shield blocks over the reactor cavity. Samples from these 20 ton concrete blocks have shown activation products at some depth in their underside (towards the reactor). This is an affected area with some surfaces at or below applicable release limits.

In **AREA 5** (tunnel outside of CV), a limited number of concrete core bore samples have been taken, but these samples have shown almost no contamination above applicable release criteria and almost no depth penetration. However, most of the surface area in **AREA 5** is currently under water. An off-site analysis by B&W has detected Cs-137 and Co-60, which are the only positively detected radionuclides found in tunnel water or sediment. The water is slightly radioactive but near release limits for radionuclides. The sediment retains higher levels of contamination (see Table 4-2).

This structure will be re-surveyed during or prior to facility decommissioning, when the water has been removed. **AREA 5** is an affected area with the possibility of having significant portions of structural materials at or below release criteria.

Table 4-2, Radionuclide Concentrations In CV Tunnel Water And Sediment

Sample Number	Cs-137 Concentration	Co-60 Concentration
SX856950167-SD (Liquid)	$3.44E^{-7}$ uCi/ml	$1.16E^{-7}$ uCi/ml
SX856950167-SD (Solids)	$2.94E^{-4}$ uCi/g	$6.39E^{-6}$ uCi/g

AREA 7 concrete is already below applicable release criteria, with the exception of one concrete pad. This is a lightly affected area.

The **AREA 8** sewer system, has not shown any contaminated concrete surfaces. These structures will be removed almost entirely during or prior to decommissioning.

There are a few small pipe sections that connect the sewer system components and one ten inch pipe that originally discharged effluent into the river (now closed off). Limited information exists concerning these pipe sections. During or prior to dismantlement, this system will be re-examined, removed or released as unaffected.

4.1.10 Field Measurements Of Concrete Surfaces

The following table presents the results of measurements of concrete surfaces using the method described in Section 4.1.8. While these values are approximations, they provide an indication of the degree of contamination that exists on concrete surfaces throughout the SNEC facility containment vessel. In addition, they satisfy the requirements set forth in the SNEC Site Characterization Plan (**Appendix A**). In Section 4.1.11, the same measurement method is used to estimate the degree of loose and fixed contamination present on metallic surfaces within the SNEC CV.

Table 4-3, Direct Frisk Measurements Of Concrete Surfaces

***Note: Assumes an HP-210T probe is sensitive to ~15 cm^2 of surface area.**

Radiological Survey No.	SNEC CV Location	Pre-Decon Net CPM*	Post-Decon Net CPM*	% Loose	% Fixed	uCi/100cm^2 Loose
817-95-0327	Concrete Floor AREA 1	4,400	1,400	~68%	~32%	$9.01E^{-2}$
811-95-0481	Concrete Floor AREA 1	10,800	6,800	~37%	~63%	$1.20E^{-1}$
817-95-0327	Concrete Floor AREA 1	6,200	4,200	~32%	~68%	$6.01E^{-2}$
821-95-0328	Concrete Floor AREA 2	37,000	16,000	~57%	~43%	$6.31E^{-1}$
821-95-0328	Concrete Floor AREA 2	4,400	1,000	~77%	~23%	$1.02E^{-1}$
843-95-0330	Concrete Floor AREA 4	750	500	~33%	~67%	$7.51E^{-3}$
843-95-0330	Concrete Floor AREA 4	2,700	2,100	22%	~78%	$1.80E^{-2}$
817-95-0327	Concrete Wall AREA 1	4,400	350	~92%	~8%	$1.22E^{-1}$
836-95-0480	Concrete Wall AREA 3	300	300	None	None	<MDA
836-95-0480	Concrete Wall AREA 3	13,400	11,800	~12%	~88%	$4.80E^{-2}$
821-95-0328	Concrete Wall AREA 2	24,000	23,000	~4%	~96%	$3.00E^{-2}$
836-95-0482	Concrete Wall AREA 3	800	400	~50%	~50%	$1.20E^{-2}$
834-95-0325	Concrete Wall AREA 3	24,600	22,800	~7%	~93%	$5.41E^{-2}$
824-95-0329	Concrete Wall AREA 2	600	300	~50%	~50%	$9.01E^{-3}$
843-95-0330	Concrete Head Stnd. AREA 4	600	400	~33%	~67%	6.01E-3

4.1.11 Metallic Surfaces

Metallic surfaces include gratings, platforms, upper containment walls, component exterior surfaces, piping external surfaces, and other miscellaneous structural materials. Some of these surfaces at the SNEC facility have been painted. Table 4-4 provides the information collected from direct frisk measurements of metallic surfaces within the SNEC facility CV. These measurements were performed in accordance with the method described in Section 4.1.8.

Data Tables, Section 4.5

Among the data tables presented in Section 4.5, are radiological survey results from characterization surveys of most metallic surfaces, equipment and components within the SNEC facility CV. The mean and range of contamination levels present on components and surfaces, is provided. The number of smears taken (In most cases), is equal to or greater than the number specified by the SCP, for the item or surface listed therein. In some cases, items not specified by the SCP survey program are presented in these tables as additional information. For some equipment, it is assumed that the external contamination levels are the same as the average contamination level present on other similar miscellaneous surfaces or equipment, within the respective area where the item is located. In all cases the data presented in Section 4.5 is reasonably comprehensive and representative of exterior surfaces of components, equipment and structural surfaces within the SNEC facility CV.

Table 4-4, Metallic Surfaces

***Note: Assumes a frisker is sensitive to ~15 cm^2 of surface area.**

Radiological Survey No.	SNEC CV Location	Pre-Decon Net CPM*	Post-Decon Net CPM*	% Loose	% Fixed	uCi/100cm^2 Loose
817-95-0327	Steel Tank AREA 1	7,500	4,800	~36%	~64%	$8.11E^{-2}$
817-95-0327	Pump Motor AREA 1	10,800	8,800	~19%	~81%	$6.01E^{-2}$
817-95-0327	SS CRDM'S AREA 1	4,000	2,000	~50%	~50%	$6.01E^{-2}$
817-95-0327	SS Pump Drain Tnk. AREA 1	25,800	16,200	~37%	~63%	$2.88E^{-1}$
833-95-0326	Stl. Flr. Grating AREA 3	11,000	9,000	~18%	~82%	$6.01E^{-2}$
833-95-0326	Stl. Chiller AREA 3	3,500	800	~77%	~23%	$8.11E^{-2}$
833-95-0326	Stl. Flr. Grating AREA 3	4,600	2,600	~44%	~56%	$6.01E^{-2}$
833-95-0326	SS Piping AREA 3	4,400	1,600	~64%	~36%	$8.41E^{-2}$
821-95-0328	Stl. Vent Hsn. AREA 2	11,000	8,000	~27%	~73%	$9.01E^{-2}$
821-95-0328	Heat Exchanger AREA 2	12,000	6,000	~50%	~50%	$1.80E^{-1}$
834-95-0325	Stl. Pump Basin AREA 3	2,100	900	~57%	~43%	$3.60E^{-2}$
834-95-0325	Stl. Floor Grating AREA 3	4,000	2,800	~30%	~70%	$3.60E^{-2}$
834-95-0325	Steel Hanger AREA 3	2,100	450	~79%	~21%	$4.95E^{-2}$
834-95-0325	Stl. Floor Grating AREA 3	2,000	1,600	~20%	~80%	$1.20E^{-2}$
824-95-0329	Stl. Floor Grating AREA 3	5,400	3,400	~37%	~63%	$6.01E^{-2}$
824-95-0329	Stl. Vlave #27V AREA 2	12,000	8,000	~33%	~67%	$1.20E^{-1}$
824-95-0329	Stl. Elect. Bx. AREA 2	7,000	4,600	~34%	~66%	$7.21E^{-2}$
843-95-0330	Stl. Eq. Hatch Door AREA 4	1,200	600	~50%	~50%	$1.80E^{-2}$
843-95-0330	Stl. Tool Rack AREA 4	2,800	2,000	~29%	~71%	$2.40E^{-2}$
843-95-0330	Stl. Eq. Trolly AREA 4	800	600	~25%	~75%	$6.01E^{-3}$

4.1.12 Smear Analysis (General Area (GA), Smear Analysis Results)

Off-site analysis of groups of smears from AREAS 1, 2, 3, 4 and 6 was performed by Teledyne Brown Engineering. These composited smears were collected and analyzed in January and June of 1995. Smears were taken from randomly selected surfaces within each of the AREAs of the CV. These surfaces included concrete, steel platform grating, components (external locations) and other miscellaneous exposed surfaces. Each composite smear group from each of the above areas,

contained between twenty (20) and sixty (60) smears. The June 1995 sample group included another set of AREA 2 smears, and provides confirmation of the January 1995 analysis results for AREA 2. See Tables 4-5 and 4-6.

January 1995 Smear Results

The following sample information was reported by Teledyne Brown Engineering for the January 1995 analysis of smears from AREAS 1, 2, 3 & 4†. See **Appendix D** for Teledyne data sets.

TABLE 4-5

SNEC Facility Surface Contamination Analysis Results

Composited Smears Of January 1995

NUCLIDES	AREA 1 (uCi's)	% OF TOTAL	AREA 2 (uCi's)	% OF TOTAL	AREA 3 & 4† (uCi's)	% OF TOTAL
C-14	3.0E-5*	0.0081	2.0E-5*	0.0242	2.0E-5*	0.2319
Ni-59	3.0E-4*	0.0814	3.0E-4*	0.3628	3.0E-4*	3.4781
Sr-90	6.8E-4	0.1845	1.0E-3	1.2094	3.0E-5	0.3478
Fe-55	5.0E-4*	0.1356	4.0E-4*	0.4838	3.0E-4*	3.4781
Tc-99	4.0E-5*	0.0109	3.0E-5*	0.0363	4.0E-5*	0.4637
I-129	5.0E-5*	0.0136	4.0E-5*	0.0484	7.0E-5*	0.8116
Co-60	2.87E-3	0.7786	8.31E-4	1.0050	2.59E-4	3.0028
Zn-65	3.0E-4*	0.0814	8.0E-5*	0.0968	1.0E-5*	0.1159
Ru-106	3.0E-3*	0.8139	1.0E-3*	1.2094	9.0E-5*	1.0434
Cs-134	2.0E-4*	0.0543	4.0E-5*	0.0484	6.0E-6*	0.0696
Cs-137	3.56E-1	96.5780	7.66E-2	92.6432	6.26E-3	72.5768
Ce-144	2.0E-3*	0.5426	5.0E-4*	0.6047	4.0E-5*	0.4637
H-3	5.0E-4*	0.1356	5.0E-4*	0.6047	8.0E-4*	9.2750
Ni-63	1.2E-3	0.3255	5.4E-4	0.6531	8.9E-5	1.0318
Pu-238	4.6E-5	0.0125	3.1E-5	0.0375	4.0E-6	0.0464
U-234	1.1E-6*	0.0003	1.0E-6*	0.0012	1.1E-6*	0.0128
U-235	1.1E-6*	0.0003	1.0E-6*	0.0012	1.1E-6*	0.0128
U-238	1.1E-6*	0.0003	1.0E-6*	0.0012	1.1E-6*	0.0128
Am-241	1.8E-4	0.0488	1.3E-4	0.1572	1.2E-5	0.1391
Cm-242	1.3E-6*	0.0004	2.6E-6	0.0031	1.3E-6*	0.0151
Cm-244	2.2E-6*	0.0006	1.0E-6*	0.0012	9.5E-7*	0.0110
Pu-239	1.0E-4	0.0271	8.3E-5	0.1004	8.6E-6	0.0997
Pu-241	6.1E-4	0.1655	5.5E-4	0.6652	2.8E-4*	3.2462
Pu-242	9.9E-7*	0.0003	1.2E-6*	0.0015	1.2E-6*	0.0139
TOTALS	3.69E-1	100%	8.27E-2	100%	8.63E-3	100%

* Reported as "Less Than" values

Note†: Because of similar nuclide compositions, smear results from AREA 3 and 4 (Table 4-5), were combined prior to analysis.

June 1995 Smear Results

The following sample information was reported by Teledyne for the June 1995 analysis of smears from AREAS 2 and 6. See **Appendix D** for the actual data sets.

TABLE 4-6

SNEC Facility Surface Contamination Analysis Results

Composited Smears Of June 1995

NUCLIDES	AREA 2 (uCi's)	% OF TOTAL	AREA 6 (uCi's)	% OF TOTAL
C-14	1.1E-5	0.0017	1.1E-5	0.0001
Ni-59	1.0E-3*	0.1585	1.7E-3	0.0096
Sr-90	1.2E-2	1.9021	2.3E-2	0.1304
Fe-55	5.0E-4*	0.0793	2.5E-2	0.1418
Tc-99	3.2E-5	0.0051	6.2E-4	0.0035
I-129	2.0E-5*	0.0032	2.0E-5*	0.0001
Mn-54	3.0E-4*	0.0476	4.0E-2*	0.2268
Co-60	1.49E-2	2.3618	7.18E+0	40.7143
Zn-65	7.0E-4*	0.1110	1.0E-1*	0.5671
Nb-94	3.0E-4*	0.0476	5.0E-2*	0.2835
Ru-106	5.0E-3*	0.7925	4.0E-1*	2.2682
Ag-110m	4.0E-4*	0.0634	7.0E-2*	0.3969
Sb-125	3.0E-3*	0.4755	1.0E-1*	0.5671
Cs-134	3.0E-4*	0.0476	5.0E-2*	0.2835
Cs-137	5.63E-1	89.2394	9.03E+0	51.2048
Ce-144	3.0E-3*	0.4755	3.0E-1*	1.7012
Np-237	1.0E-3*	0.1585	8.0E-2*	0.4536
H-3	6.0E-4*	0.0951	2.0E-3	0.0113
Ni-63	1.9E-2	3.0116	1.3E-1	0.7372
Pu-238	3.5E-4	0.0555	3.1E-3	0.0176
U-234	1.0E-6*	0.0002	9.0E-7*	0.0000
U-235	1.0E-6*	0.0002	9.0E-7*	0.0000
U-238	1.0E-6*	0.0002	9.0E-7*	0.0000
Am-241	8.5E-4	0.1347	1.3E-2	0.0737
Cm-242	7.4E-6	0.0012	1.0E-4	0.0006
Cm-244	1.9E-5	0.0030	3.0E-4	0.0017
Pu-239	8.9E-4	0.1411	8.2E-3	0.0465
Pu-241	3.7E-3	0.5865	2.8E-2	0.1588
Pu-242	4.8E-6	0.0008	2.4E-5	0.0001
TOTALS	6.31E-1	100%	1.76E+1	100%

*** Reported as "Less Than" values (values listed in Bold were positively identified).**

Nuclides with half-lives of < 100 days or naturally occurring isotopes e.g. K-40, Ra-226 and Th-228, were not included in the percent of total columns. These nuclides are not present in sufficient quantity to be significant. "Less than" values are assumed to be valid for calculations related to curie evaluations.

Use

These results are useful in estimating typical contamination levels for nuclides commonly found on surfaces throughout the SNEC facility. In addition, these values will provide information useful to health physics personnel when estimating the hazard from potential airborne radioactivity levels and nuclide compositions during future decommissioning work.

4.1.13 Penetration Studies - Concrete Core Bore Sampling Methodology

As described in Section 4.1.3-B, core bore samples were removed under the guidance of SNEC Work Instructions (Reference 34). Core bores were then subdivided for further examination including contamination penetration studies and bulk sample 10 CFR 61 type analysis. A masonry saw was used to slice the core bore samples into ~13 mm (1/2") thick slices, starting with the top or exposed portion and continuing through each core bore, until MDA values were encountered for detectable SNEC generated nuclides. The contamination levels of concrete core bore sections was determined by gamma-ray spectroscopy. Calibration of the HP(Ge) detection system was performed by use of a commercial standard prepared with approximately the same density and thickness as a typical 1/2 inch concrete slice. SNEC Work Instruction 94-006 (Reference 61), governed the core bore cutting and analysis operation.

All core bore slices were analyzed from both sides and the average of the two results was used to represent the activity concentration for the individual slice. A suitable background slice was counted prior to each potentially affected sample and repeatedly throughout the core bore analysis effort. Typical background MDA values for Cs-137, Co-60 and Eu-152 were less than 0.30 pCi/g for the unaffected blank. The complete data set for all the concrete sample counting effort is contained in SNEC Technical Evaluation Calculation 6575-95-0032 (Reference 81).

Sample Location Assignments

Core bore sample locations were originally specified in the SNEC facility Site Characterization Plan (SCP). Additions and deletions to these locations were made

under the guidance of SNEC and GPU Nuclear management personnel after considering current radiation survey results, available funding, ALARA concerns and facility structural integrity . Figures 4-1 to 4-5 show the final locations selected and the core bore sample numbers assigned by SNEC management personnel.

In addition to the core bore locations selected from within the SNEC CV, core bore samples were also taken from surrounding Penelec property and from locations in and around the town of Saxton. These last two groups of samples are believed to be from the same construction time period as that of the SNEC facility, and are considered to be representative of concrete background for relevant nuclides. The following table presents sample locations and results for these two groups.

Table 4-7, Off-Site Core Bore Locations and Counting Results.

CORE BORE SAMPLE NO.	LOCATION	CORE LENGTH	pCi/g Co-60	pCi/g Cs-137	pCi/g Eu-152
SX895010090 Slice 1	Saxton IGA Supermarket Sidewalk West Side	8.7 cm	<0.31	<0.31	<0.32
Slice 2	(same as above)	--	<0.26	<0.27	<0.28
SX895010091 Slice 1	Saxton IGA Supermarket Sidewalk East Side	8.7	<0.30	<0.28	<0.26
Slice 2	(same as above)	--	<0.34	<0.21	<0.29
SX895010092 Slice 1	Tussey Mountain High School, Front Sidewalk, West Side	9.8	<0.26	<0.25	<0.29
Slice 2	(same as above)	--	<0.23	<0.26	<0.27
SX895010093 Slice 1	Tussey Mountain High School, Front Sidewalk, East Side	8.4	<0.30	<0.29	<0.33
Slice 2	(same as above)	--	<0.28	<0.26	<0.25
SX895010095 Slice 1	South East Corner of Penelec Property, Concrete Slab #1	14.6	<0.25	<0.27	<0.28
Slice 2	(same as above)	--	<0.27	<0.23	<0.28
SX895010096 Slice 1	South East Corner of Penelec Property, Concrete Slab #2	10.8	<0.25	<0.27	<0.27
Slice 2	(same as above)	--	<0.33	<0.25	<0.28
SX895010097 Slice 1	Old Westinghouse Air Sample Station Pad, Penelec Property-NE	30.5	<0.26	<0.40	<0.26
Slice 2	(same as above)	--	<0.37	<0.27	<0.29
SX895010098 Slice 1	Penelec Line Shack, Front Sidewalk North Side	7.9	<0.28	<0.29	<0.26
Slice 2	(same as above)	--	<0.26	<0.24	<0.28
SX895010099 Slice 1	Penelec Line Shack, Front Sidewalk South Side	7.6	<0.28	<0.27	<0.29
Slice 2	(same as above)	--	<0.27	<0.21	<0.28

Concrete sample counting results from on-site, but outside of the containment building are reported in the following table.

Table 4-8, Counting Results, On-Site Core Bore Locations Outside Of CV.

CORE BORE SAMPLE NO.	LOCATION	CORE LENGTH	pCi/g Co-60	pCi/g Cs-137	pCi/g Eu-152
SX871950001 Slice 1	Concrete Slab Below Personnel Airlock At CV	11.9 cm	<0.32	1.09 ±0.30	<MDA**
Slice 2	(same as above)	--	<0.29	<0.24	<MDA
SX872950002* Subsurface Slice	Concrete Shield Wall External To CV (Used As Bkgnd Blank)	~10 cm	<0.28 (Avg.)	<0.30 (Avg.)	<0.27 (Avg.)
SX871950003 Slice 1	Concrete Ledge Adjacent To Northeast Side Of CV	11.6 cm	<0.23	2.00±0.40	<MDA
Slice 2	(same as above)	--	<0.29	<0.26	<MDA
SX871950004 Slice 1	Concrete Pad WNW Of CV - Former HEPA/Vent System	15 cm	<0.91	156.1±19.9	<MDA
Slice 2	(same as above)	--	<0.30	<0.38	<MDA
SX881950101 Slice 1	Concrete Core From Weir Floor	15.3 cm	<0.34	<0.34	<MDA
Slice 2	(same as above)	--	<0.36	<0.28	<MDA
SX882950102 Slice 1	Weir, Through Concrete Divider Wall (West End)	19.4 cm	<0.32	<0.33	<MDA
Slice 2	(same as above)	--	<0.27	<0.24	<MDA
Slice 8	Through Concrete Divider Weir Wall (East End)	--	<0.30	<0.25	<MDA
Surface Slice Slice 9	(same as above)	--	<0.34	0.73 ±0.24	<MDA
SX852950103 Slice 1	Through Concrete Support Wall In Tunnel (West End)	23.8 cm	<0.34	8.51 ±1.22	<MDA
Slice 2	(same as above)	--	<0.26	0.37 ±0.16	<MDA
Slice 3	(same as above)	--	<0.31	<0.27	<MDA
Slice 7	Through Concrete Support Wall In Tunnel (East End)	--	<0.36	<0.26	<MDA
Slice 8	(same as above)	--	<0.30	<0.27	<MDA
Surface Slice Slice 9	(same as above)	--	<0.34	2.72 ±0.51	<MDA

Table 4-8, Counting Results, On-Site Core Bore Locations Outside Of CV (Continued)

CORE BORE SAMPLE NO.	LOCATION	CORE LENGTH	pCi/g Co-60	pCi/g Cs-137	pCi/g Eu-152
SX853950104 Slice 1	Through Concrete Ceiling Of Tunnel (Top End-Outside)	37.3 cm	<0.33	12.56 ±1.76	<MDA
Slice 2	(same as above)	--	<0.33	<0.37	<MDA
Slice 3	(same as above)	--	<0.31	<0.28	<MDA
Slice 7	Through Concrete Ceiling Of Tunnel (Bottom End-Inside)	--	<0.29	<0.22	<MDA
Slice 8	(same as above)	--	<0.23	<0.22	<MDA
Surface Slice Slice 9	(same as above)	--	<0.29	0.58 ±0.20	<MDA
SX852950105 Slice 1	Tunnel Wall At South Entrance Hatch	15.9 cm	<0.31	1.35 ±0.31	<MDA
Slice 2	(same as above)	--	<0.26	<0.27	<MDA
Slice 3	(same as above)	--	<0.27	<0.24	<MDA
SX801950106 Slice 1	Westinghouse Concrete Pad Below SNEC Office Trailer	6.8 cm	<0.35	<0.37	<MDA
Slice 2	(same as above)	--	<0.34	<0.31	<MDA
SX801950107 Slice 1	Westinghouse Concrete Pad Below SNEC Office Trailer	9.7 cm	<0.29	<0.29	<MDA
Slice 2	(same as above)	--	<0.28	<0.25	<MDA
SX871950108 Slice 1	Shield Wall Adjacent To CV, NW Side (High n-Flux Region)	18.8 cm	<0.30	<0.33	<MDA
Slice 2	(same as above)	--	<0.30	<0.30	<MDA
Slice 9 Taken At A Depth Of ~17.5 to 18.8 cm Below Exposed Surface	(same as above)	--	<0.23	<0.17	<MDA

* This core was used as a background blank sample and counted frequently throughout the core bore analysis program.

** All <MDA values are approximately the same as that obtained for the blank or background core slice for this isotope.

Table 4-53 (Section 4.5), provides the remaining core bore results for the core bore samples taken from within the SNEC CV. The depth of the concrete slice is referenced to the starting point of the drilling operation, and is the bottom side of the slice listed. The following table presents all of the SNEC CV concrete sample locations.

Table 4-9, SNEC CV Concrete Core Bore Sample Locations.

SNEC Sample Number	Location
SX841950008	CV Floor, 818' El., West Side
SX841950009	CV Floor, 818' El., East Of 008
SX841950012	CV Floor Plug, 818' El.
SX842950013	Wall, Between 812' & 818' El., East Side
SX842950014	Wall Between 812' & 818' El., By Steps
SX842950015	Wall Between 812' & 818' El., North Side
SX841950016	CV Floor, 812' El., West Side Under Platform
SX841950017	CV Floor, 812' El., NE Of Reactor Cavity
SX841950018	CV Floor, 812' El., West Side By Platform
SX832950019	SW Wall, ~799' El., Above Water Line
SX832950020	CV Outer Wall, ~802" El.
SX832950021	CV SW Wall, ~791'6" El., At Water Line
SX832950022	North Wall, ~788' El.
SX832950023	North Wall, ~786' El.
SX812950024	CV Outer Wall, Rod Room, ~768' El.
SX811950025	CV Floor, Below RV, ~765'-8" El.
SX811950026	CV Floor, SE Corner Of Sump, ~765'-8" El.
SX811950027	CV Floor, Between Drain Pumps, ~765'-8" El.
SX811950028	CV Ledge, West Of Drain Tank, ~768' El.
SX812950029	CV Outer Wall, West Of Drain Tank, ~770' El.
SX812950030	Ledge/Wall, South Of Filter Cubicle, ~766' El.
SX822950031	SW Wall, ~10' East Of Hot Leg Penetration, ~789' El.
SX821950032	CV Floor Under S/G, ~779' El.
SX821950033	CV Floor Under S/G, ~779' El.
SX822950034	Wall East Of Non-Regen Heat Exchanger, ~782' El.
SX822950035	CV Outer Wall NW Of S/G, ~798' El.
SX822950036	SW Wall Next To Hot Leg, ~790'-8" El., At Water Line
SX822950037	SW Wall 8'-3" East Of Hot leg, ~799' El.
SX861950056	Storage Well Floor, ~765'-8" El.
SX861950057	Storage Well Floor, ~765'-8" El.
SX862950058	Storage Well, Outer Wall, ~771' El.
SX862950059	Storage Well, Outer Wall, ~771' El.
SX862950060	Storage Well, Inner Wall, East Of Rx, ~768' El.
SX862950061	Storage Well, Inner Wall, East Of Rx, ~768' El.
SX862950062	Reactor Cavity Area, South Wall, 797' El.
SX862950063	Reactor Cavity Area, South Wall, 797' El.
SX862950064	Reactor Cavity, Shield Wall North West Of RV, 784' El.
SX862950065	Reactor Cavity, Shield Wall North East Of RV, 784' El.
SX861950066	Reactor Cavity Floor, ~779'-8" El.
SX862950119	CV Outer Wall, NE Of RV, In Hi-Flux Region, ~795' El.
SX841950120 To SX841950125	Reactor Cavity Shield Blocks, 1 To 6, ~812' to 807' El.

4.1.14 Activation Of Concrete Core Bores

Activation products have been detected and predicted in concrete material located in the reactor compartment near the reactor vessel head, above the operational water line (~791' El.). The predominant gamma emitters detected are Co-60 and Eu-152, with measurable quantities of Eu-154. A later discussion of the analysis results from activated concrete is presented in Section 4.3,

An analysis by B&W of SNEC concrete core bore sample SX862950119, taken from the suspected high flux area of the CV containment wall, has provided the following information and respective radionuclide mix. This is a composite result for slice numbers 1, 2, 6, 9 & 13. Slice number 6 contained a 57.74 gram sample of steel reinforcement material (rebar).

Table 4-10, Composite Results - Concrete Core Bore Sample SX862950119.

Isotope	As % Of Total Activity
Ag-108m	0.0266
Am-241	0.0464
Ce-144	0.0924
Co-60	**2.4443**
Cs-134	0.0213
Cs-137	**7.5581**
C-14	2.3263
Eu-152	**3.5327**
Eu-154	**0.1996**
Eu-155	0.0489
H-3	**63.5044**
I-129	0.4071
Nb-94	0.0204
Ni-59	**0.7042**
Ni-63	**18.6422**
Ru-106	0.1540
Sb-125	0.0506
Tc-99	0.2206

Note: Isotopes listed above in bold text were positively identified.

4.1.15 Fission Product Contaminated Core Bores

The predominant fission product detected by SNEC personnel was Cs-137. This nuclide represents greater than 95% of the activity detected by SNEC facility personnel within and on concrete surfaces. Removal of the first 1 to 2 inches of concrete materials will remove the majority of this isotope.

4.1.16 Applied Limits

Current regulations set forth requirements that limit total dose to populations from released materials. A release limit for radionuclides present at the SNEC facility, that will result in a dose of $\leq$15 mRem per year (residential scenario) to the population, will be maintained as a requirement during decommissioning. To achieve this, typical SNEC radionuclide concentrations present within and on structural materials were input to the RESRAD[4] computer code (Reference 8). Calculated concrete values from the Reactor Vessel activation analysis and surface contamination radionuclide mixtures were selected as the limiting cases. The resulting, and limiting isotopes were: Cs-137, Co-60 and Eu-152. Conservative isotopic concentrations based on appropriate modeling were selected to meet the $\leq$15 mRem per year dose to the population requirement. GPU Nuclear will adjust the release criteria for concrete or other materials to be within the regulatory requirements, but reserves the right to recalculate the applicable site release limits during the decommissioning process to applicable limits, as required. For purposes of this report, the methodology described above was used to conservatively estimate the concrete waste volumes that may be generated during dismantlement.

4.1.17 Conclusions

Cs-137 is the most significant radionuclide detected in concrete sampled during the characterization program. The Cs-137 activity concentration decreases dramatically beyond the first 1/2" slice, with only a small fraction of the total activity detected beyond the first slice (> 1/2"). The bulk of the contaminated concrete is found in the

4 RESRAD is a US DOE computer code used to develope compliance with residual radioactive material guidlines.

Storage Well/Reactor cavity (AREA 6). A large part of the total concrete waste volume presented in this report, is the result of the expected need for removal of concrete material from this area. The four and five foot walls that separate AREA 6 from AREAS 1, 2 and 3 are contaminated to well below surface depth. In addition, the Reactor Cavity containment walls in the NE and NW sectors, and above the original operating water level (El. 791'), were exposed to neutron streaming. The most affected section is in the north east sector (high flux area). Sample number SX862950119, containing a section of rebar, was taken in this region. The elevated Co-60, Eu-152 and Eu-154 concentrations found in the rebar and concrete indicate that a significant amount of concrete will have to be removed from the containment wall in this region. The shield blocks above the reactor vessel were also affected by the increased neutron occurrence above the operational water line. No neutron activation of concrete was observed below the operational water line in the vicinity of the Reactor Vessel. See Table 4-12 for estimated concrete volumes.

4.1.18 B&W Analysis Of Core Bore Samples

A select group of concrete core bore slices were sent to B&W for analysis that included hard to detect nuclides as well as typical gamma emitters. B&W positively identified Cs-137, Co-60, Eu-152 and Eu-154 as well as Cs-134, Ni-59, Ni-63, H-3 & Nb-94. All other isotopes were reported as "less than" values.

Comparison of the SNEC and B&W Results

The following table presents the analytical results from SNEC facility and B&W analysis of concrete materials. These two analysis results were obtained by use of different counting geometry's and preparation methods. As previously mentioned, SNEC personnel counted slices of concrete in total. B&W pulverized the slices, dissolved them, and then took an aliquot from the solution for the analysis. GPU Nuclear personnel were informed by B&W after the analysis results were reported, that there was a possibility that the concrete crusher used to pulverize the concrete slices was inadvertently cross contaminated with low level activities of Cs-137. This makes the B&W results somewhat more uncertain for at least the low level Cs-137

activities reported herein. GPU Nuclear believes that the analysis performed by SNEC personnel, identifying Cs-137, Co-60, and Eu-152 has incorporated a smaller total error, except for the core slice that contained steel rebar. In part, the reason for this is that the whole slice was counted intact, rather than a small portion of the whole. The B&W concrete analysis report is provided in **Appendix D**.

SNEC And B&W Concrete Results Summary

The SNEC facility counting results average about 111% of B&W results for Co-60, with a standard deviation of ± 34%. SNEC facility Cs-137 results average ~63% of B&W reported values, with a standard deviation of ± 34%. SNEC facility Eu-152 counting results are more consistant with B&W values but show a negative bias. SNEC facility results for this isotope average 65% of the B&W results with a standard deviation of ± 6%. These overall differences between SNEC facility results and B&W results have been discussed with B&W personnel. The SNEC facility did not perform analysis for non-gamma emitting radionuclides in concrete.

Use

The results of the B&W analysis of concrete core bore sections were, and will be used to provide radionuclide concentrations for hard to detect nuclides in relation to other gamma emitters. As a fraction of the total radionuclide mix, they were input to the RESRAD computer code to determine what level of remediation may or should be performed. However, for the majority of concrete at the SNEC facility, Cs-137 is the important radionuclide. Removal of this radionuclide to concentrations compatible with current release criteria will in most cases remove or reduce other radionuclides to acceptable levels. The exception is the area above the water line in the reactor cavity where neutron activation has occurred in excess of the results predicted by the reactor vessel activation analysis (Section 4.3).

These results will also provide additional waste stream information for waste packaging and shipping purposes.

Table 4-11, Comparison Of SNEC and B&W Concrete Analysis Results (pCi/g)

No.	Core Bore Sample No.	SNEC Number	Co-60 SNEC	Cs-137 SNEC	Eu-152 SNEC	Eu-154 SNEC	Co-60 B&W	Cs-137 B&W	Eu-152 B&W	Eu-154 B&W
1	0091	0127	<0.29	<0.24	<0.27	N/R	<0.01	0.12	<0.11	<0.04
2	0026, 0027	0128	<0.96	1717	<1.87	N/R	0.5	1480	<0.35	<0.09
3	0032, 0033	0129	8.14	5836	<2.56	N/R	6.37	4690	0.73	<0.13
4	0021	0130	<0.84	12.16	<0.65	N/R	0.26	58.6	<0.14	<0.15
5	0021	0131	2.07	6.87	<0.38	N/R	1.32	14.2	<0.44	<0.10
6	0021	0132	<0.31	0.36	<0.29	N/R	0.03	1.24	<0.18	<0.06
7	0016, 0017, 0018	0133	<0.61	15.01	<0.65	N/R	0.1	13.5	<0.14	<0.05
8	0103	0134	<0.31	3.05	<0.3	N/R	0.03	3.06	<0.13	<0.05
9	0056, 0057	0135	24.69	10668	<4.29	N/R	31.9	13800	<4.49	<0.51
10	0056, 0057	0136	<1.17	665.2	<2.34	N/R	2.15	945	<0.64	<0.14
11	0025	0137	3.25	6074	<6.7	N/R	1.9	7180	2.16	<0.23
12	0025	0138	<0.51	1419	<3.04	N/R	0.29	1870	2.61	<0.10
13	0025	0139	<0.38	18.34	<0.47	N/R	0.21	31.4	1.18	<0.15
14	0025	0140	<0.36	2.82	<0.33	N/R	0.05	11.5	<0.48	<0.15
15	0031	0141	<0.65	108.8	<1.28	N/R	0.16	127	<0.17	<0.05
16	0031	0142	14.8	195.8	<1.08	N/R	14.5	246	<0.89	<0.15
17	0031	0143	<0.4	6.55	<0.37	N/R	0.12	13.8	<0.18	<0.07
18	0031	0144	<0.33	4.77	<0.32	N/R	<0.03	8.98	<0.18	<0.06
19	0037	0145	<0.65	106.4	<0.79	N/R	0.09	132	<0.15	<0.05
20	0037	0146	3.41	29.22	7.09	N/R	2.67	27.8	9.31	0.59
21	0037	0147	<0.36	17.28	<0.53	N/R	0.1	32.1	0.33	<0.08
22	0037	0148	<0.99	7.63	5.1	N/R	0.88	14.9	7.57	0.37
23	0125	0149	1.4	3.43	5.91	N/R	1.47	6.47	10.7	0.64
24	0125	0150	<0.68	0.39	6.01	N/R	0.92	1.62	9.05	0.61
25	0125	0151	<0.33	0.19	2.22	N/R	0.32	1.08	3.3	<0.14
26	0125	0152	<0.23	0.23	<0.26	N/R	0.08	1.89	0.48	<0.04
27	0066	0153	14.97	498.6	<2.49	N/R	11.8	513	<0.78	<0.13
28	0066	0154	<0.32	1.06	<0.28	N/R	0.13	3.66	<0.26	<0.09
29	0062	0155	11.22	127.3	5.67	N/R	8.81	119	8.4	0.59
30	0062	0156	0.97	35.86	6.45	N/R	1.25	46.7	10.2	0.37
31	0063	0157	25.72	211.2	4.92	N/R	15.7	261	7.81	0.56
32	0063	0158	1.12	0.41	6.8	N/R	1.7	3.94	10.6	0.53
33	0065	0159	<1.23	36.82	<0.79	N/R	1.09	37.4	<0.16	<0.05
34	0065	0160	<0.38	0.6	<0.27	N/R	0.12	1.39	<0.23	<0.07
35	0119	0161	11.53	279.9	22.99	<3.27	9.02	233	31.5	1.94
36	0119	0162	53.39	0.83	25.89	<2.12	92.896	5.67	46.99	3.34
37	0119	0163	4.02	0.69	37.37	<2.25	4.42	2.19	60.8	2.67
38	0119	0164	2.12	0.56	22.56	<1.96	2.59	1.66	32	1.32

Note: SNEC number 0162 above, is the composite results from the rebar and concrete sample materials. Presence of rebar affected the SNEC counting results for this sample (slice 6, SX862950119). A rebar locator was used to avoid rebar in all other sampling locations.

N/R - Not Reported.

4.1.19 Estimating Concrete Waste Volumes

Core bore sample locations were selected after reviewing radiological survey results and specifications of the SCP. Whenever possible, samples were selected from locations that contained higher contamination levels, but it was not possible to sample (core bore), every concrete surface in or around the SNEC CV. While a significant number of surfaces were sampled, few samples were taken from ceiling areas. This was because of the lower level of contamination typically found on ceiling areas and the difficulty encountered with safely mounting core bore equipment to ceiling surfaces. Therefore, a minimum removal thickness of 0.25 inches was used for purposes of estimating concrete volumes generated from scabbling ceiling and low contamination level concrete surfaces. In instances where several concrete core bore samples were taken from the same surface, average activity concentrations were developed for slices taken from at or near the same depth. Conservative assumptions about the depth of penetration were made when radionuclide concentrations appeared to continue beyond the length of the core bore samples taken from a selected location. For instance, the 5 foot concrete wall separating the primary and reactor compartments (based on three (3) through-wall core bore samples), was assumed to be in need of complete removal. This represents about 45% of the total concrete volume estimate for the SNEC facility.

Table 4-12 presents the estimate of the concrete waste volume for the SNEC facility. This estimate will be refined as necessary to remain within the current or future regulatory release guidelines as more information becomes available during or prior to decommissioning.

Table 4-12, SNEC Concrete Waste Volume Estimate

SNEC AREA	LOCATION	Square Feet	Depth (in)	Volume ft^3	Weight (lbs)	Weigh (tons)
1	765' 8" El. Floor	705	6.8	399.5	56862	28.4
1	768' 8" El. Ledge	350	1.3	37.9	5397	2.7
1	765' 8" El. Walls	2543	4.3	911.2	129700	64.9
1	775' 2" El. Ceiling*	733	0.25	15.3	2174	1.1
2	779' 8" El. Floor	475	5.1	201.9	28734	14.4
2	5' Thick Primary Compartment Wall (See Note 1)	968	59.9	4833.9	688029	344.0
2	Primary Compartment Walls, Other Than 5' Section	1875	5.3	827.9	117845	58.9
2	814' 6" El. Concrete Ceiling*	475	0.25	9.9	1409	0.7
3	Auxiliary Compartment Walls (All)	2405	2.7	541.1	77020	38.5
3	810' El. Ceiling*	381	0.25	7.9	1130	0.6
4	818' El Operating Floor	669	0.6	33.5	4761	2.4
4	812' El Operating Floor, Includes Top Of Shield Plugs	1202	1.8	180.3	25663	12.8
4	812' El Operating Flr., Interior Walls	341	0.6	17.1	2427	1.2
5	CV Tunnel Walls, Below Grade	2014	0.4	67.1	9555	4.8
5	CV Tunnel Ceiling, Below Grade	953	0	0.0	0	0.0
5	CV Tunnel Floor, Below Grade (Assume 812' Ops. Floor Depth)	953	1.8	143.0	20347	10.2
5	CV Tunnel Ceiling, Exterior (Grade level)	953	0.6	47.7	6782	3.4
6	765' 8" Storage Well Floor	1035	5.6	483.0	68747	34.4
6	Storage Well Walls-SW Side	2465	2.8	575.1	81855	40.9
6	Rx Cavity Side Walls, < Operating Level Water Line (NO 5' WALL)	387	1.6	51.5	7337	3.7
6	Rx Cavity Side Walls, > Operating Level Water Line (NO 5' WALL)	545	18	817.5	116358	58.2
6	Rx Cavity Side Ledge At 779' 8" Elevation	113	1.9	17.9	2547	1.3
6	807' El. Ceiling Of Storage Well (Shield Blocks etc.)	574	12.8	612.3	87146	43.6
7	Concrete Walls And Pads Outside Of CV	500	0.2	8.3	1186	0.6
8	Sanitary Sewage Treatment Facilities, Weir, Tanks etc.	993	0	0.0	0	0.0
	TOTALS⇒	**24606**	**N/A**	**10841**	**1543009**	**772**

*** Volume Based On A Minimum Removal Depth Of 0.25 Inches.**
Note: 10841 $ft^3 \cong 307\ M^3$ of Concrete Waste Materials.

Significant assumptions concerning several wall and floor areas were made in assembling the above information. One assumption is that the 5 foot wall between the primary and reactor compartments will be removed entirely. A second assumption is that all concrete around the inside of the reactor compartment, adjacent to the outer CV steel liner and above the operational water line must be removed. The elimination of both of these walls in their entirety may not be necessary or prudent. In addition, the presence of the reactor vessel and associated support structures makes in place measurements impossible. Only detailed surveys and sampling during the decommission phase will determine additional needs regarding concrete removal.

The following table summarizes the concrete activity concentrations with the addition of the hard to detect radionuclides obtained from the B&W report. Note that with the addition of the activation products and surface contamination, Cs-137 is ~50% of the nuclide mix with H-3 at about 27% of the total inventory. Many of the isotopic totals are the result of including "less than" values from analytical reports. Surface contamination is about 40% of the total.

Table 4-13, SNEC Facility Radionuclide Inventory Of Contaminated Concrete

ISOTOPE	ACTIVITY (Ci's)	% Of Total
Ag-108m	4.36E-04	0.09
Am-241	8.24E-05	0.02
Ce-144	1.87E-03	0.40
Co-60	**4.6E-02**	**9.75**
Cs-134	3.12E-04	0.07
Cs-137	**2.38E-01**	**50.42**
C-14	**5.74E-03**	**1.22**
Eu-152	1.42E-03	0.30
Eu-154	4.09E-04	0.09
Eu-155	1.60E-04	0.03
Fe-55	1.61E-04	0.03
Fe-59	6.23E-04	0.13
H-3	**1.29E-01**	**27.35**
I-129	9.01E-04	0.19
Mn-54	2.49E-04	0.05
Nb-95	3.11E-04	0.07
Ni-59	1.67E-03	0.35
Ni-63	**3.93E-02**	**8.34**
Np-237	4.98E-04	0.11
Pu-239	5.24E-05	0.01
Pu-241	1.84E-04	0.04
Ru-106	2.50E-03	0.53
Sb-125	6.25E-04	0.13
Sr-90	1.59E-04	0.03
Tc-99	5.22E-04	0.11
Zn-65	6.23E-04	0.13
Totals⇒	**4.72E-01**	**100%**

Nuclides greater than 1% of total are in bold text.

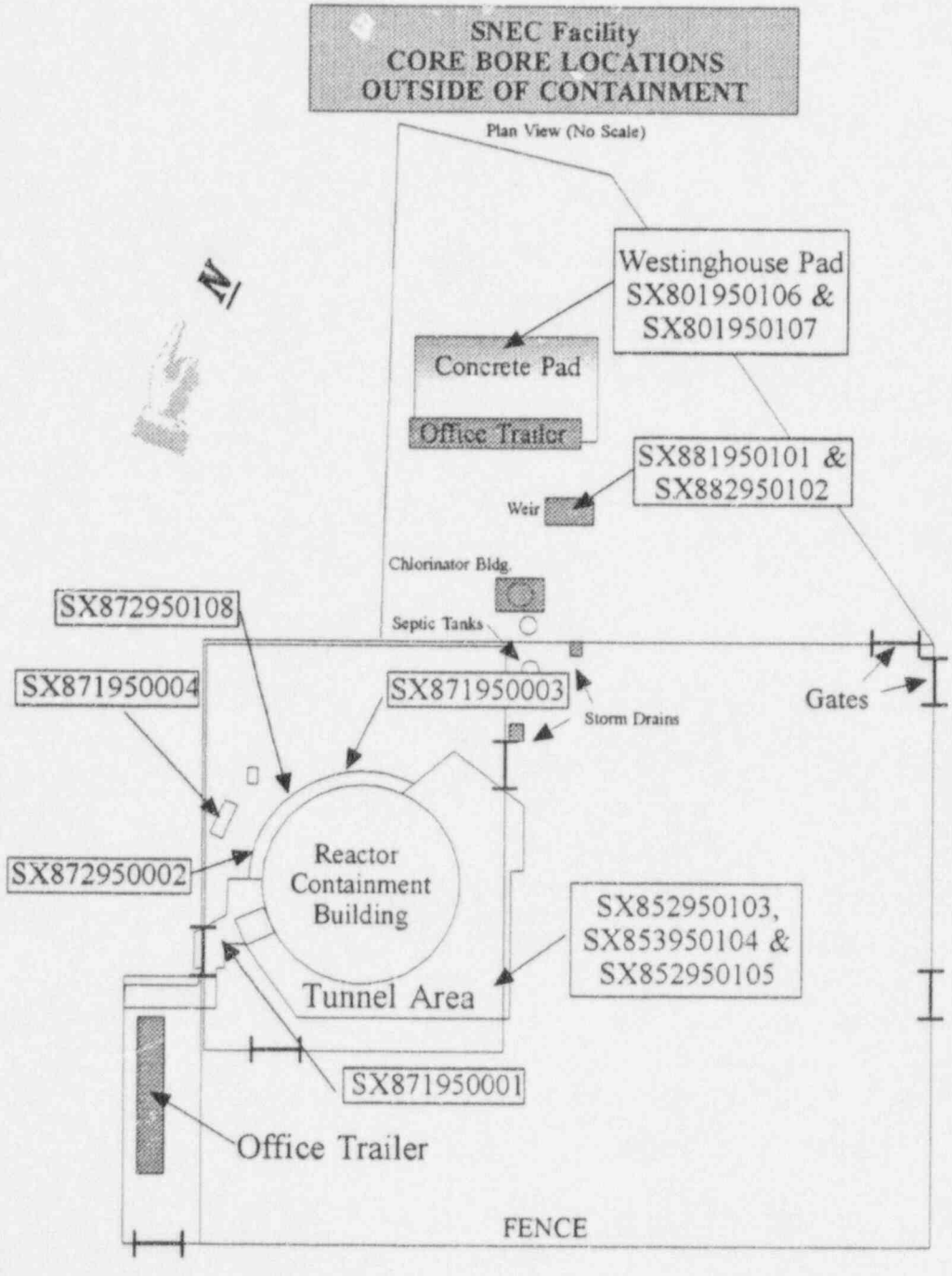
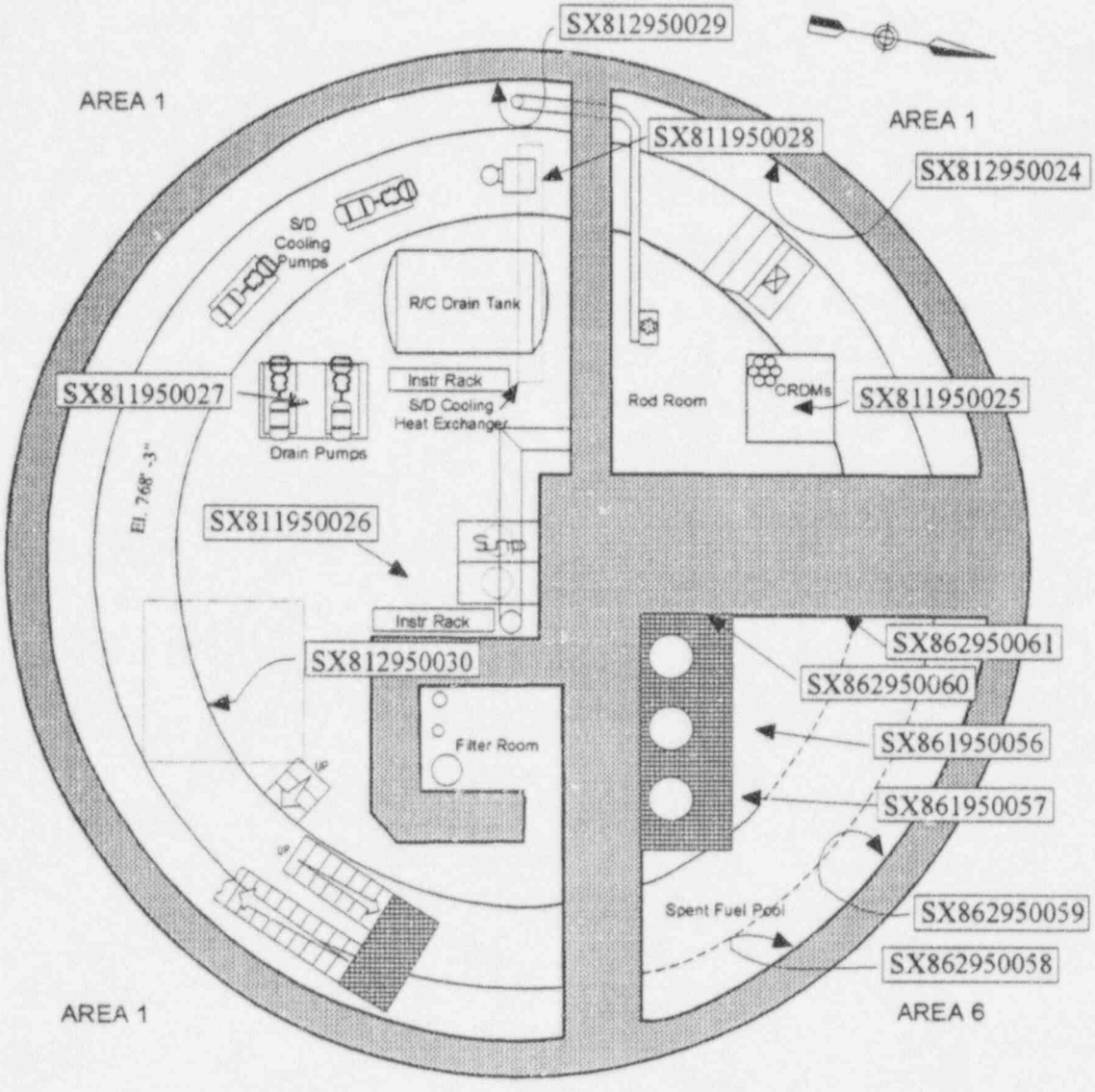

SNEC Facility
CORE BORE LOCATIONS
OUTSIDE OF CONTAINMENT
Plan View (No Scale)
N
Westinghouse Pad
SX801950106 &
SX801950107
Concrete Pad
Office Trailer
SX881950101 &
SX882950102
Weir
Chlorinator Bldg.
Septic Tanks
SX872950108
SX871950004
SX871950003
Storm Drains
Gates
Reactor
Containment
Building
SX872950002
SX852950103,
SX853950104 &
SX852950105
Tunnel Area
SX871950001
Office Trailer
FENCE

Figure 4-1

SNEC FACILITY AREA MAP AND
CORE BORE SAMPLE LOCATIONS



CONTAINMENT VESSEL (CV) -- Areas by Quadrant
Plan Above Operating Floor Elev 765'-8"

NO SCALE

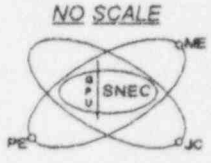
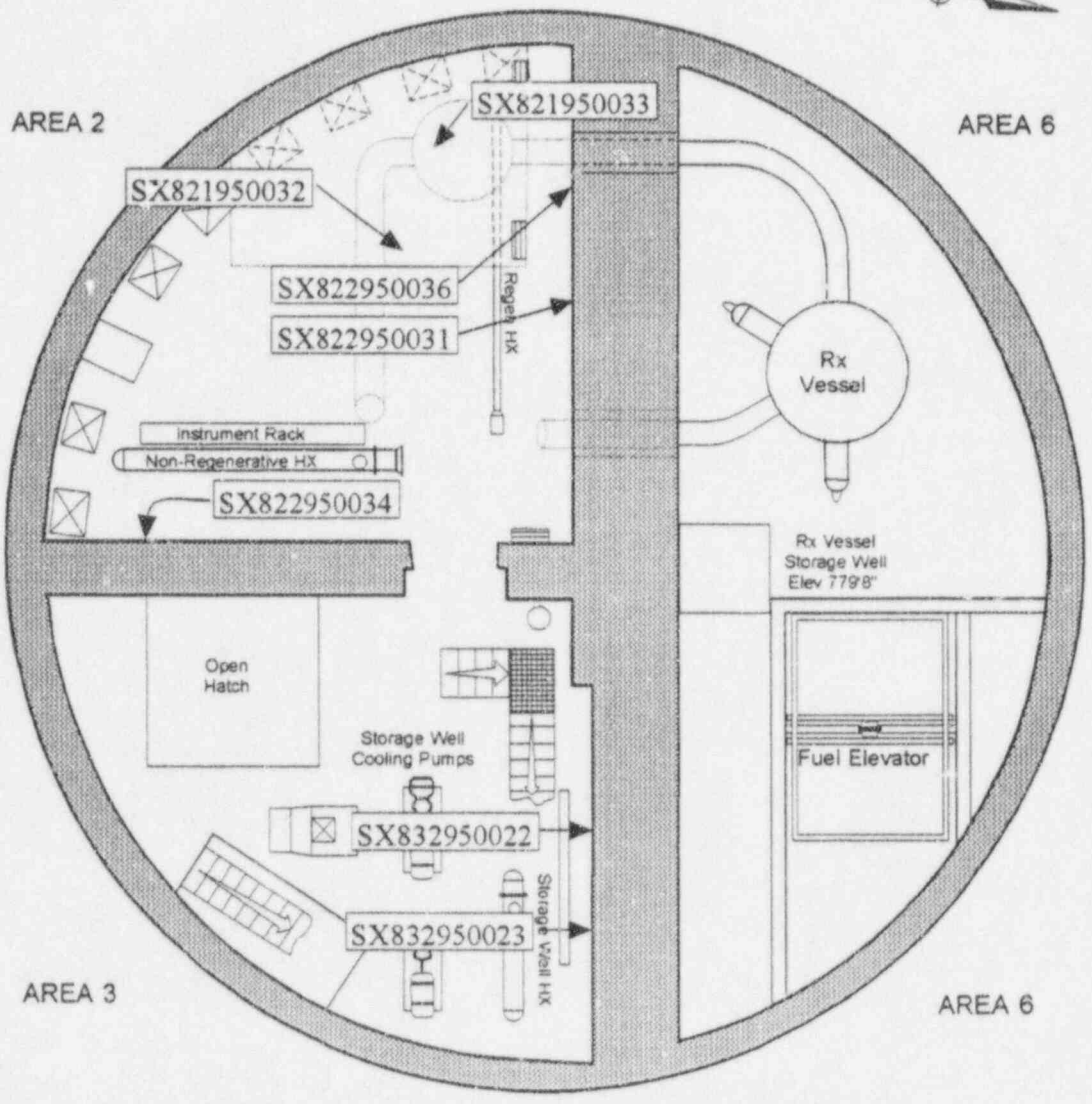


Figure 4-2

SNEC FACILITY AREA MAP AND
CORE BORE SAMPLE LOCATIONS



CONTAINMENT VESSEL (CV) -- Areas by Quadrants
Plan Above Operating Floor Elev 781'-4"

NO SCALE

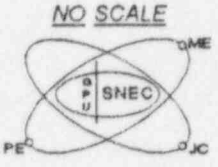


Figure 4-3

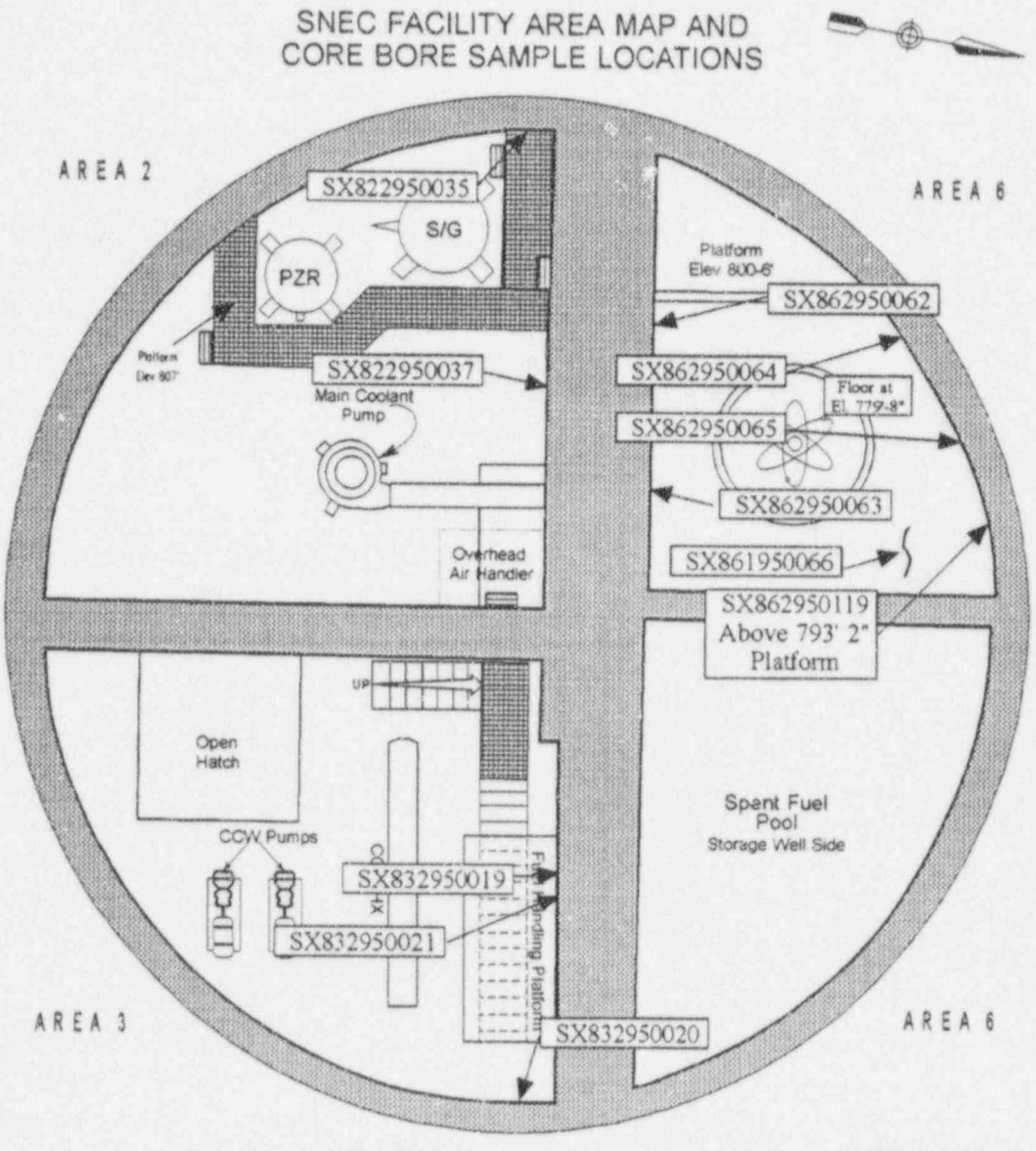
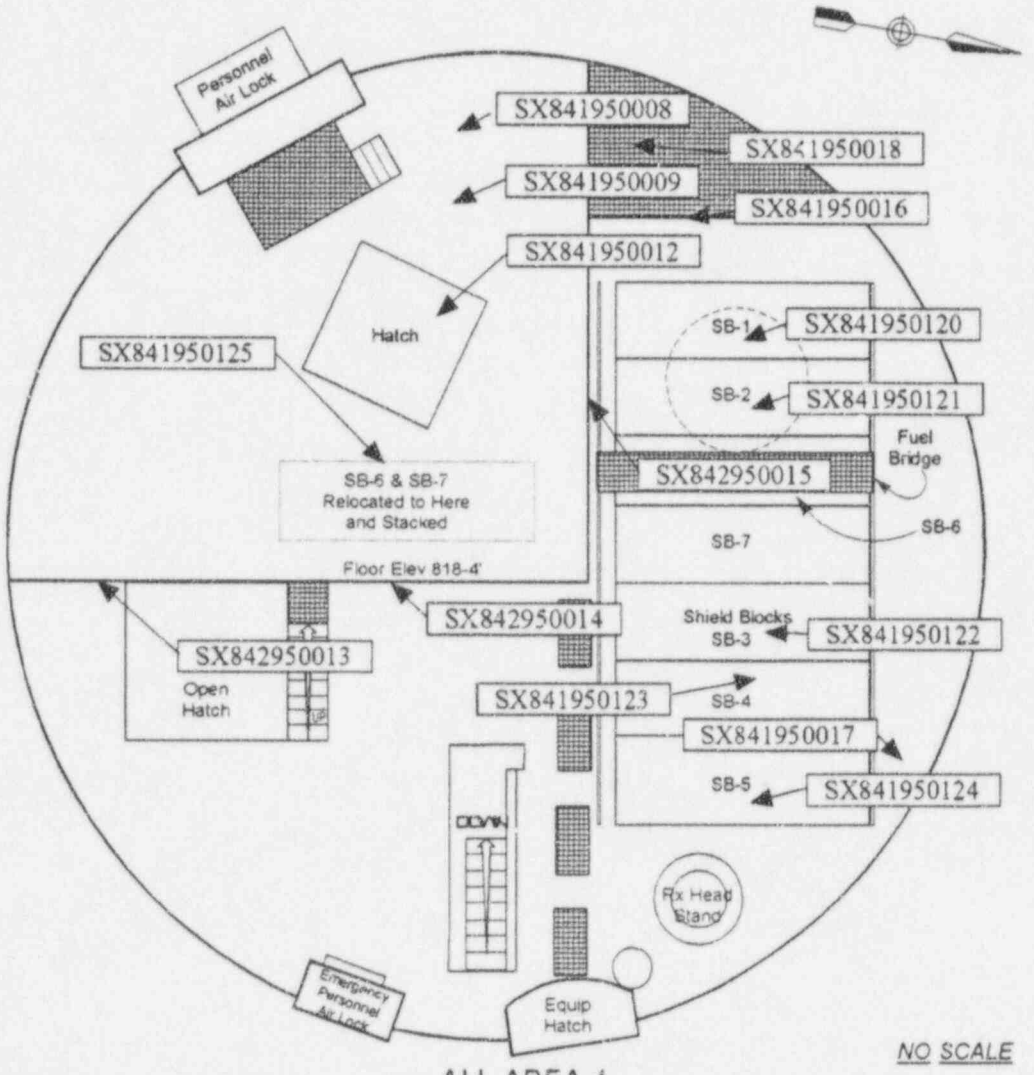

SNEC FACILITY AREA MAP AND
CORE BORE SAMPLE LOCATIONS
AREA 2
AREA 6
AREA 3
AREA 6
SX822950035
S/G
PZR
Platform
Elev 807'
SX822950037
Main Coolant
Pump
Overhead
Air Handler
Platform
Elev 800-6"
SX862950062
SX862950064
Floor at
El 779-8"
SX862950065
SX862950063
SX861950066
SX862950119
Above 793' 2"
Platform
UP
Open
Hatch
CCW Pumps
SX832950019
HX
SX832950021
Fuel Handling Platform
SX832950020
Spent Fuel
Pool
Storage Well Side
CONTAINMENT VESSEL (CV) -- Areas by Quadrant
Plan Above Operating Floor Elev 795'-2"
NO SCALE
SNEC
ME
PE
JC

Figure 4-4

SNEC FACILITY AREA MAP AND
CORE BORE SAMPLE LOCATIONS



ALL AREA 4

CONTAINMENT VESSEL (CV) -- Plan View Above
Operating Floor Elev 812'-0"

Figure 4-5

4.2 SYSTEMS AND COMPONENT CHARACTERIZATION

Systems characterization activities determine the radiological characteristics of known or potentially contaminated systems. The scope of these activities include:

(1) Determining the contamination levels on the interior surfaces of components.
(2) Performing gamma surveys adjacent to components (used to estimate internal curie content).
(3) Quantitative and qualitative isotopic determinations of representative samples, as applicable.

Systems were characterized by selecting sections of piping systems for direct measurements, and sampling these same systems (or like systems), to obtain representative radioactive contamination samples. Components that were selected were opened to expose the interior surfaces for measurements, or sections of system piping or equipment were removed as deemed appropriate, for analysis on-site or at off-site laboratories.

4.2.1 Data Needs

This section of the SNEC Facility Site Characterization Report (SCR), sets forth the methodology by which potentially contaminated systems and equipment at the SNEC facility were characterized. The data that was obtained as part of the system and component characterization efforts includes:

- Data for estimating the total radionuclide inventory within each system.

- Determinations of isotopic identity and concentration ratios of radionuclides that comprise the radioactive contaminants within selected systems.

- Comparisons of characterization data with applicable release criteria to determine decommissioning work scope.

- Waste stream identification and classification.

4.2.2 Applicable Areas and Equipment

Equipment and systems within the Containment Vessel that could conceivably contain radioactive materials were reviewed. These systems and components were then identified and selected based on the following criteria:

- Systems or equipment which carry fluids or gases that may have circulated through the reactor vessel, radioactive waste systems or spent fuel storage systems.

- Systems or equipment with indications of contamination as determined from previous surveys and maintenance records, as well as gamma external exposure rate scans performed specifically for the systems and equipment characterization program (scoping measurements).

4.2.3 Selection of Sampling Locations

Component characterization is on a system by system basis. Specific items within each system were chosen for characterization and selected to represent the overall condition of that system. The distribution of radioactive contaminants within a system were determined and a realistic curie estimate was prepared.

4.2.4 Analytical Methods

The following describes the analytical techniques that were used to characterize internal systems contamination, and the criteria under which they were implemented at sample locations.

A. Removable Contamination Determinations

When practical, smear or scrape samples were taken from internal surfaces of equipment or components opened for characterization. All samples collected were gamma scanned. If appropriate, the samples were counted for gross beta

and alpha contamination. In most cases, samples were sent to off-site analytical laboratories for 10 CFR 61 type analysis.

B. Total Internal Surface Contamination Determinations

Total internal surface contamination levels were estimated for component surfaces expected and not expected to be internally contaminated. These estimates were made from measurements using appropriate radiological detection instrumentation, and/or from results provided by on-site or off-site analytical laboratories.

C. Bulk Sampling and Analysis

Sediment deposits were collected on a case by case basis for isotopic analysis. Types of analysis specified are listed in SCP (**Appendix A**). Typical subjects for this type of sampling was the CV sump and the tunnel external to the CV.

D. Piping Systems Samples

Samples from individual piping systems representing potentially different waste streams were gathered by cutting out and removing portions of these systems. Each piping system was first identified and radiologically surveyed to verify that a reasonable sample could be obtained without exposing cutting team personnel to excessive radiation hazards during the cutting operation. The piping sections were typically less than 30 centimeters (~12"), long and from about 4 to 10 centimeters (~1.5" to ~4"), in diameter. Pipe sections from various systems were removed, capped and sent to off-site laboratories for analysis that in all cases included a 10 CFR 61 type radionuclide determination.

4.2.5 Data Reporting and Analysis

Equipment and components that have been characterized are presented in tables along with relevant radiological survey information (Section 4.5). Results of gamma surveys were interpreted and analyzed and the total internal surface contamination results are estimated. The "average" isotopic distribution of radionuclides on internal piping and components is then presented.

4.2.6 Radiation Measurements On Equipment And Components

The data tables presented in section 4.5 provide results of general radiation and contamination measurements of external surfaces of plant structures and components. When available, smear and direct frisk measurements are also shown. Measurements of radiation from components were taken at one foot intervals along their lengths and insulation thickness was measured. This was done in four locations approximately 90 degrees apart around each component. All the results were then averaged and input to a computer radiation shielding code.

4.2.7 Radiation Measurements Of Piping Systems

Piping systems that were evaluated, are listed within the SCP. Radiation surveys were specifically designated. Surveys were conducted along the length of a section of system piping. Radiation measurements were taken at one foot intervals from the top and bottom of horizontal pipe runs, and from two opposite sides of vertical pipe sections. Measurements were taken on contact with piping insulation (when present), and at one foot from pipe section centerlines. Insulation thickness was determined for each pipe section and the average radiation measurement result was then calculated for the length of pipe surveyed. This was done for each system evaluated. All of these parameters were input into a radiation shielding computer code along with the appropriate sample data. Activity per unit area within each pipe section was calculated using the output of the shielding code. The calculated internal activity per unit area was then applied to the remainder of the unsurveyed piping system. The

complete piping system curie estimate is presented within SNEC Technical Evaluation Number 5830-95-023 (Reference 79).

An engineering walk-down was performed early in the characterization process to determine all of the SNEC facility piping system pipe lengths and sizes. This information is presented in **Appendix E**.

4.2.8 Samples Of Internal/External Contamination

The SNEC SCP provides a listing of systems and components that are to be characterized. Samples from these systems and components were collected during characterization efforts in 1995. Samples included ~17 sediment samples from sumps and tanks, ~17 pipe sections from system piping, ~8 scrapings from air handling units and instrument racks etc., and smears from internal surfaces of components. From these samples, about 30 were sent to B&W for analysis. The complete sample log from the SNEC facility can be seen in **Appendix F**. All samples were given a SNEC facility sample number and logged into the sample log.

Several systems samples that were specified by the SCP, could not be obtained because of high radiation levels present in the vicinity of the intended sampling locations. However, reasonable substitutes were found. The septic system and associated piping and drainage system had limited accessibility during the 1995 characterization effort. This was partially due to elevated ground water levels from inclement weather and winter snow and ice buildup. Several samples were collected from Septic Tanks A & B. Radioactivity content of the septic tanks is presented below (only positively identified radionuclides are shown).

Table 4-14, Radionuclide Content Of Septic Tanks A & B

ITEM	ISOTOPES	ACTIVITY
Septic Tank A (Liquid Phase)	Ni-63	1.79E-05 uCi/ml
Septic Tank A (Solid Phase)	Ni-63	8.49E-05 uCi/g
..	Co-60	1.07E-06 uCi/g
..	Cs-137	2.11E-05 uCi/g
Septic Tank B (Liquid Phase)	Ni-63	8.83E-05 uCi/ml
..	Sr-90	1.00E-06 uCi/ml
Septic Tank B (Solid Phase)	Ni-63	5.04E-05 uCi/g
..	Pu-238	5.56E-06 uCi/g
..	Co-60	1.23E-06 uCi/g
..	Cs-137	3.20E-05 uCi/g

The complete isotopic analysis results of Septic Tank materials is shown in **Appendix D**.

A planned drainage line inspection will be performed prior to decommissioning. Information from this effort will be available at a later time.

The following table presents the SNEC facility system samples that were collected and sent off-site for analysis during the characterization program. These samples, while not all inclusive, are representative of the SNEC facility systems internal contamination. The radionuclide concentrations indicated from these sampling results and surface contamination data were directly applied within computer shielding code calculations to develop the curie estimate of record for the facility.

Table 4-15, Systems Samples From SNEC Facility

Item	Sample No.	Sample Description (Sample Type in Bold Text)
1	SX815950005	CV Sump **Sediment**
2	SX815950006	**Scrape** Sample From Instrument Rack No. 1
3	SX815950007	**Scrape** Sample From Instrument Rack No. 2
4	SX815950010	Vents & Drains System, **Pipe Section** Between CV Sump Pumps & CV Wall
5	SX815950050	Control Rod Room Air Handler **Scrape** Sample
6	SX815950068	Discharge Tank **Sediment**
7	SX815950168-SD	Condensate Tank **Sludge/Sediment**
8	SX825950011	**Pipe Section** from Make-Up Demin Water Line
9	SX825950038	Primary Air Handler **Scrape Sample**
10	SX825950040	Purification System, **Pipe Section** Between MC Piping & Purification Demin.
11	SX825950041	Pressure Control & Relief, **Pipe Section** Between MC Cold Leg & PZR - Spray Line
12	SX825950042	Shutdown Cooling, **Pipe Section** Between MC Piping & Safety Injection Piping
13	SX825950043	Pressure Control & Relief, **Pipe Section** Between MC Piping Hot Leg & PZR - Surge Line
14	SX825950044	Pressure Control & Relief, **Pipe Section** Between PZR Relief Valves & Discharge Tank
15	SX825950045	Component Cooling **Pipe Section**, Between CC Heat Exchanger & Discharge Header Of Pumps
16	SX825950046	Storage Well System, **Pipe Section** Between Inlet Of SW Pumps & Discharge Point In SW
17	SX825950047	Vents & Drains System, **Pipe Section** From Vent & Drain Header Exiting To Discharge Tank
18	SX825950086	S/G Bottom Blowdown Line **Pipe Section**
19	SX825950087	S/G Surface Blowdown Line **Pipe Section**
20	SX825950111	S/G Bowl **Smear**, Cold Leg Side
21	SX835950039	**Scrape** Sample From Auxiliary Air Handler
22	SX835950071	**Scrape** Sample From Secondary Side Of Steam Generator
23	SX835950085	Component Cooling River Water **Pipe Section**
24	SX856950167-SD	CV Tunnel **Sediment/Water**
25	SX865950053	Safety Injection **Pipe Section**, Between RV & Check Valve
26	SX865950069	Safety Injection **Pipe Section**, Between Check Valve & CV Wall
27	SX865950118	Make-Up Demin Line **Pipe Section**
28	SX865950165-SM	Reactor Vessel **Swab/Smear** Of Internal Surface Activity
29	SX885950048	Septic Tank A **Sediment**
30	SX885950049	Septic Tank B **Sediment**

4.2.9 Sample Results Relating To Decontamination

Off-site analysis of systems samples included an attempt to remove the materials from the piping internals. Acid leaching operations for periods of three to four hours, using a 30% HNO3/5%HCL acid solution netted anything from greater than 90% removal of internal contamination to almost no removal (less then 1%). This suggests that a field effort designed to remove internal contamination "in-place", may encounter mixed success. Additionally, the internal contamination of some pipe sections, has a considerable transuranic nuclide content (~73,000 nCi/g), with Pu-241 as high as 75% of the total mixture for at least one sample. Ni-63 is also a

consistent contributor to the mix of individual nuclides, reaching as much as 90% of the mix for one sample. This information is summarized for fifteen SNEC pipe section samples in the table presented below.

Table 4-16, TRU & Ni-63 Content Of Piping System Sample Materials

System	nCi/g TRU	Grams Removed	Ni-63 as a % of Total Activity	Co-60 % Activity Removed	Cs-137 % Activity Removed
Vents & Drains	1.9	163	61	77	77
MUP Demin. H2O	1	10	3	<1	65
Purification	1349	10	3	<1	~0
Pressure Control & Relief	213	10	48	17	~0
Shutdown Cooling	1404	11	8	21	64
Pressure Control & Relief	74	53	89	9	~0
Pressure Control & Relief	35	2	16	43	32
Component Cooling	74	<1	8	~0	30
Safety Injection	72,800	<1	44	86	65
River Water Cooling	.04	134	4	~0	17
Resin Sluice	29	2	27	~0	~0
S/G Surface Blowdown	.06	34	23	~0	52
Vents & Drains	107	69	49	97	92

Note: Several samples from the same system are shown in the above table. However, each sample was taken at significantly different points within the respective system.

In Table 4-16 above, the Cs-137 and Co-60 values were obtained from externally scanning the pipe section, both before and after acid leaching the internal surfaces. The percent activity removed from the leaching process is shown. It is believed that leaching the pipe sections with strong acid removes sample material more evenly and provides more accurate information relating to the relative mix of radionuclides than haphazard scraping operations. All sample data analysis results from sampling SNEC facility systems is provided in the **Appendix D**. Included with the original analysis reports are the normalized isotopic concentrations (as a percent of total activity) for each sample.

4.2.10 Results Of Piping System Analysis

The following summary table presents the curie totals as reported for SNEC facility piping systems. With daughter radionuclides added, this listing is represents greater than 95% of the calculated total inventory for the SNEC facility piping systems.

Table 4-17, Radionuclide Inventory For SNEC Facility Piping

Radionuclide	Curies	% Of Total
Ag-108m	1.83E-03	0.0157
Am-241	**2.88E-01**	**2.4679**
Am-243	2.71E-04	0.0023
Ce-144	7.24E-03	0.0620
Cm-242	1.86E-03	0.0159
Cm-243/Cm-244	1.34E-02	0.1146
Co-60	**1.26E+00**	**10.8019**
Cs-134	2.51E-03	0.0215
Cs-137	**1.35E+00**	**11.6564**
C-14	2.75E-02	0.2356
Eu-152	2.75E-02	0.2356
Eu-154	3.17E-02	0.2715
Eu-155	1.04E-02	0.0890
Fe-55	**1.45E-01**	**1.2513**
Fe-59	2.16E-05	0.0002
H-3	3.25E-02	0.2783
I-129	4.12E-03	0.0353
Nb-94	6.10E-03	0.0523
Ni-59	5.31E-02	0.4547
Ni-63	**2.77E+00**	**23.6983**
Np-237	1.06E-02	0.0908
Pu-238	1.15E-01	0.9815
Pu-239/Pu-240	**5.66E-01**	**4.8549**
Pu-241	**4.52E+00**	**38.7335**
Pu-242	5.24E-04	0.0045
Ru-106	1.78E-02	0.1527
Sb-125	5.15E-03	0.0441
Sr-90	**3.91E-01**	**3.3503**
Tc-99	2.53E-03	0.0217
U-234	3.82E-04	0.0033
U-235	1.32E-04	0.0011
U-238	1.37E-04	0.0012
Totals⇒	**11.67**	**100%**

Note: Bold text indicates major contributors.

Worth noting, is that almost six (6) curies of TRU materials are calculated to be present in the piping systems. The majority of this material is expected to be in the Safety Injection system, Reactor Primary Coolant lines, Shutdown Cooling and Purification system piping. The waste classification for the SNEC facility piping system (collectively), is expected to be Class C waste. However, several pipe sections are greater than Class C individually.

4.2.11 Sample Data Used In Curie Estimates For Components And Structures

The following table presents the assigned sample results for each major component within the SNEC facility. In addition, the radiological survey number from the radiation or contamination survey used to evaluate the listed items is provided.

Table 4-18, Radiological Samples And Survey Data Used In SNEC Curie Estimates

COMPONENT	SAXTON SAMPLE No.	RADIOLOGICAL SURVEY No.
AREA 1		
Shutdown Down Cooling Heat Exchanger	SX825950042	895-95-0371
Shutdown Down Cooling Pumps	SX825950042	224A-91-0338, 0339
Condensate Return Pump	SX815950168SD, SX825950038	89B-95-0652
Condensate Return Unit Tank	SX815950168SD, SX825950038	89B-95-0652
Pressurizer Discharge Tank	SX815950068	810-95-0262
Discharge Tank Pumps	SX815950068	225A-91-0343
CV Sump Pumps	SX815950005	214-95-0647
Storage Well Demin. Suction Filter	SX825950046	214-95-0648, 893-95-0755
Purification Filter	SX825950040	241-95-0648
Storage Well Demin. Discharge Filter	SX825950046	214-95-0648, 893-95-0755
CCW Pump Filter	SX825950040	241-95-0648
Rod Room Air Handler	SX815950050	898-96-008
Rod Room Vent Fan	SX815950050	218/219-91-0229, 218-91-0274
Control Rod Drives	Smear Composite 1	218/219-91-0229, 81Z-95-0671
Instrument Rack 1	SX815950006, SX815950007	818-95-0742
Instrument Rack 2	SX815950007, SX815950006	818-95-0742
New Fuel Storage Racks	Smear Composite 1	214/216-91-0282
Reactor Head Insulation Ring	Smear Composite 1	214/216-91-0280
Pump Leak-off Drain Tank	Smear Composite 1	89B-95-0756
Containment Vessel Sump Volume	SX815950005	Volumetric Analysis
AREA 2		
Steam Generator	SX825950111,071,053	891-95-0397, 0344, 220/221-91-0347
Pressurizer	SX825950043	892-95-0381
Main Coolant Pump	SX825950111	891-95-0396
Regen Heat Exchanger	SX825950040	893-95-0456
Non-Regen Heat Exchanger	SX825950040	893-95-0455
Instrument Rack	Smear Composite 2/6	82Z-95-0672
Air Handler In Overhead	SX825950038	898-95-0757
Primary Air Handler	SX825950038	898-85-0757, 210-91-0251, 0230

COMPONENT	SAXTON SAMPLE No.	RADIOLOGICAL SURVEY No.
AREA 3		
Storage Well Heat Exchanger	SX825950046	897-95-0445, 227B-91-0336
Storage Well Pumps	SX825950046	227A-91-0335
Component Cooling Heat Exchangers	SX825950045	894-95-0670
Component Cooling Storage Tank	SX825950045	83Z-95-0668
Component Cool Pumps	SX825950045	830-95-0105
Incore Instrument Drives	Smear Composite 3/4	206-91-0231, 212-91-0216
Auxiliary Air Handler	SX835950039	898-95-0757, 898-95-0757
Operating Floor Air Handler	SX835950039	898-95-0757
AREA 4		
Inside Upper Dome	Smear Composite 3/4	842-95-088
Steel walls, El. 812' To 818'	Smear Composite 3/4	201-91-0149, 0189, 0191
Steel walls, El. 818' To 845'-2"	Smear Composite 3/4	201-91-0217, 201/204-91-0197
Equipment Hatch	Smear Composite 3/4	201-91-0189
Personnel Hatch	Smear Composite 3/4	201-91-0169, 0217, 202-91-0182
Emergency Escape Hatch	Smear Composite 3/4	201-91-0191, 84D-95-060
Polar Crane	Smear Composite 3/4	203-94-0423, 0385
Movable Refueling Bridge	Smear Composite 3/4	204-91-0163, 849-95-046
Small Contaminated Pump	Smear Composite 2/6	89B-95-0651
Large Contaminated Pumps	Smear Composite 2/6	89B-95-0651
Electrical Distribution Box	Smear Composite 3/4	201-91-0169, 201-91-0192
Equipment Hatch Trolley	Smear Composite 3/4	84Z-95-0667
Tool Rack	Smear Composite 3/4	204-91-0179
Fuel Handling Tools	Smear Composite 3/4	Not Surveyed
Teleflex shields (Steel Section)	Smear Composite 3/4	201-91-0194
Fuel Trnsfer Cask Skid	Smear Composite 3/4	203-91-0162
Head Stand	Smear Composite 3/4	204-91-0163, 204-91-0179
Lights	Smear Composite 3/4	Not Surveyed
Air Circulating Fan	Smear Composite 3/4	Not Surveyed
AREA 6		
Reactor Vessel	Calculated Value TLG	867-95-0428, 0434, 0228
Reactor Vessel Insulation Can	Calculated Value TLG	867-95-0428, 0434, 0228
Reactor Vessel Support Can	Calculated Value TLG	867-95-0428, 0434, 0228
Spent Fuel Rack	Smear Composite 6	862-95-0228
Boric Acid Demineralizer Vessel	SX865950118	869-95-0429
Storage Well Demineralizer Vessel	SX865950118	869-95-0429
Purification Demineralizer Vessel	SX865950118	869-95-0429
Spent Fuel Pool Elevator	Smear Composite 6	Not Surveyed
Support Stand	Smear Composite 6	Not Surveyed
Internals Rigging Fixture	Smear Composite 6	862-95-0228
Reactor Vessel Head Lift Rigging	Smear Composite 6	Not Surveyed
Super Heated Test Equipment Tank	SX825950111 & SX865950053	86Z-95-0427

OTHER MISCELLANEOUS ITEMS	SNEC SAMPLE No.	SURVEYS OR METHODS
All Grating (Steel) (All Areas)	Smear Composites 1, 2, 3/4 or 6	Average Smear Results Using Surface Area Estimate
All grating (Aluminum) (Reactor Compartment)	Smear Composites 1, 2, 3/4 or 6	Average Smear Results Using Surface Area Estimate
Step Grating (All Areas)	Smear Composites 1, 2, 3/4 or 6	Average Smear Results Using Surface Area Estimate
Site Concrete	SNEC Gamma Scans	Many Surveys & Core Bore Analysis
Site Piping	Misc. SNEC Samples Numbers	Many Surveys
RV Internal Surface Contamination	SX865950053, SX865950165SM	Surface Area Estimate With Sample Results

At the time of this report preparation, not all of the items in the table above have been evaluated for total activity. However, all major components, surfaces and piping systems have been analyzed. The items that do not have curie estimates prepared as of this reporting date are items such as the CV lighting and other items listed above, still unsurveyed or evaluated for external surface area. In all cases, these unevaluated components are surface contaminated objects (SCO's) with small surface areas representing only uCi quantities of radioactive contamination. These items represent less than 1/10 of 1% of the total activity of the SNEC facility. During decommissioning these items will be evaluated prior to disposal.

4.2.12 Curie Estimates For Components And Equipment

The following three pages present the tables originally presented in the "SNEC Facility Decommissioning Plan" (DP) (Reference 2). These tables have been updated with the latest information with respect to the estimated curie content for components and structural materials. The original data included daughter nuclides such as Ba-137m, Y-90 and Te-125m etc. The daughter nuclides have been removed from the tables which may now show a slightly different value then originally presented. In addition, some round-off errors have been corrected. Concrete activity now includes the estimate for H-3 and other nuclides not assayed for by SNEC personnel. The activated concrete materials have been scaled to the hi-flux core bore sample (SX862950119). The remainder of the concrete hard to detect nuclides were scaled to a composite of other core bore samples from the SNEC facility.

Several items within the following tables are not grouped with respect to their waste classification. These items are listed as "To Be Determined" (TBD). At the time of this report, these items are under evaluation. However, several conservative assumptions were used to estimate the curie loading of these items. These assumptions provided a higher curie estimate for these components than may be necessary. The solution to this problem may be simply re-evaluating the components

in question to obtain a more realistic curie estimate. The following approach will be used to re-evaluate these items on an as needed basis:

1. A review of the assigned waste stream will be performed.

2. Radiation measurements performed around the component (General Area Measurements) will be reviewed to estimate the affects of background radiation levels on the component radiation measurement results.

3. Radiation shielding code input will be reviewed and a more realistic shielding code model may be developed.

4. Additional radiation surveys may be taken to verify existing measurements.

5. Additional samples may be collected.

6. An engineered solution may be used.

Conclusions

The majority of SNEC facility systems, components and equipment have been reviewed with respect to total curies and waste classifications. Problem areas have been identified that will be addressed prior to the start of the decommissioning process. "TBD" items will be managed or handled appropriately, within the framework of SNEC procedures or work instructions.

Summary Listing of Activities and Waste Classifications

COMPONENT	AVERAGE ACTIVITY CONCENTRATION (uCi/cc)	AVERAGE uCi's PER 100 cm^2 FOR SCO	ESTIMATED CURIES	VOLUME IN CUBIC METERS	WASTE CLASSIFICATION
AREA 1					
SHUT DOWN COOLING HEAT EXCHANGER	4.09E+00	N/A	8.63E-01	0.21	TBD
SHUT DOWN COOLING PMPS	5.77E-01	N/A	2.45E-01	0.42	Class C
CONDENSATE RETURN PUMP	1.02E-03	N/A	3.40E-05	0.03	Class A
CONDENSATE RETURN TANK	5.16E-04	N/A	4.57E-05	0.09	Class A
DISCHARGE TANK	7.25E-02	N/A	3.36E-01	4.63	Class A
DISCHARGE TANK PMPS	2.32E-02	N/A	4.80E-03	0.21	Class A
SUMP PUMPS	1.43E-01	N/A	3.59E-03	0.03	Class A
STORAGE WELL DEMIN. SUCTION FILTER	2.82E-02	N/A	2.40E-03	0.09	Class A
PURIFICATION FILTER	1.20E-01	N/A	5.42E-04	0.005	Class A
STORAGE WELL DEMIN. DISCHARGE FILTER	5.96E-02	N/A	1.88E-04	0.003	Class A
CCW PUMP FILTER	1.29E-01	N/A	2.76E-03	0.02	Class C
ROD ROOM AIR HANDLER	4.76E-04	2.3E-02	1.18E-03	2.48	Class A
ROD ROOM VENT FAN	N/A	2.1E-02	TBD	0.03	Class A
CONTROL ROD DRIVES	N/A	1.2E-01	TBD	0.05	Class A
INSTRUMENT RACK 1	1.4[illegible]E-02	N/A	1.90E-02	1.35	Class A
INSTRUMENT RACK 2	3.01E-03	N/A	3.69E-03	1.23	Class A
NEW FUEL STORAGE RACKS	N/A	3.7E-02	TBD	5.05	Class A
REACTOR HEAD INSULATION RING	N/A	3.6E-01	TBD	5.45	Class A
PUMP LEAKOFFS DRAIN TANK	1.45E-02	N/A	3.43E-03	0.24	Class A
CONTAINMENT VESSEL SUMP VOLUME	3.95E-02	N/A	2.09E-02	0.53	Class A
AREA 2					
STEAM GENERATOR	5.23E+00	N/A	3.72E+01	7.12	Class C
PRESSURIZER	3.84E+00	N/A	2.46E+01	6.41	Class C
MAIN COOLANT PUMP	6.20E-02	N/A	3.28E-02	0.53	Class A
REGEN HEAT EXCHANGER	3.73E+00	N/A	3.02E+00	0.81	TBD
NON-REGEN HEAT EXCHANGER	2.08E-01	N/A	4.85E-02	0.23	Class C
INSTRUMENT RACK	2.79E-03	N/A	6.47E-03	2.32	Class A
AIR HANDLER IN OVERHEAD (see Primary)	1.39E-03	1.1E+00	4.99E-03	3.60	Class A
PRIMARY AIR HANDLER	1.77E-03	1.1E+00	6.39E-03	3.60	Class A

TBD – To Be Determined At A Later Time.
SCO – Surface Contaminated Object.

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Table 4–19

Summary Listing of Activities and Waste Classifications

COMPONENT	AVERAGE ACTIVITY CONCENTRATION (uCi/cc)	AVERAGE uCi's PER 100 cm^2 (SCO)	ESTIMATED CURIES	CUBIC METERS	WASTE CLASSIFICATION
AREA 3					
STORAGE WELL HEAT EXCHANGER	2.88E–02	N/A	2.89E–03	0.10	Class A
STORAGE WELL PUMPS	2.91E–03	N/A	1.45E–03	0.50	Class A
COMPONENT COOLING HEAT EXCHANGER	8.93E–03	N/A	8.94E–03	1.00	Class A
COMPONENT COOLING STORAGE TANK	1.25E–02	N/A	1.24E–03	0.10	Class A
COMPONENT COOLING PUMPS	8.15E–03	N/A	3.46E–03	0.42	Class A
INCORE INSTRUMENT DRIVES	N/A	1.8E–01	TBD	0.93	Class A
AUXILIARY AIR HANDLER	4.00E–04	3.6E–01	2.96E–04	0.74	Class A
OPERATING FLOOR AIR HANDLER	4.81E–04	6.3E–01	2.70E–03	5.62	Class A

COMPONENT	AVERAGE ACTIVITY CONCENTRATION (uCi/cc)	AVERAGE uCi's PER 100 cm^2 (SCO)	ESTIMATED CURIES	VOLUME IN CUBIC METERS	WASTE CLASSIFICATION
AREA 4					
INSIDE UPPER DOME	N/A	4.5E–06	9.62E–05	4.78	Class A
STEEL WALLS, El. 812' TO 818'	N/A	1.2E–06	4.36E–06	0.77	Class A
STEEL WALLS, El. 818' TO 845–2"	N/A	1.3E–06	2.96E–05	3.47	Class A
EQUIPMENT HATCH	N/A	1.3E–06	2.36E–07	3.29	Class A
PERSONNEL HATCH	N/A	2.4E–06	9.21E–07	8.55	Class A
EMERGENCY ESCAPE HATCH	N/A	7.7E–06	8.33E–07	1.56	Class A
POLAR CRANE	N/A	5.9E–06	6.33E–06	113.27	Class A
REFUELING BRIDGE	N/A	3.9E–06	5.98E–07	0.68	Class A
SMALL CONTAMINATED PUMP	1.09E–03	N/A	4.24E–05	0.04	Class A
LARGE CONTAMINATED PUMPS	4.08E–04	N/A	1.31E–04	0.32	Class A
ELECTRICAL DISTRIBUTION BOX	N/A	1.6E–02	TBD	0.91	Class A
EQUIPMENT HATCH TROLLEY	N/A	4.2E–02	TBD	4.58	Class A
TOOL RACK	N/A	8.4E–02	TBD	0.19	Class A
FUEL HANDLING TOOLS	N/A	8.4E–02	TBD	0.10	Class A
TELEFLEX SHIELD (Steel Section)	N/A	1.5E–03	TBD	4.25	Class A
FUEL TRANSFER CASK SKID	N/A	1.8E–03	TBD	2.98	Class A
HEAD STAND	N/A	1.8E–02	TBD	1.16	Class A
LIGHTS	N/A	8.7E–02	TBD	0.70	Class A
AIR CIRCULATING FAN	N/A	5.0E–01	TBD	0.51	Class A

TBD – To Be Determined At A Later Time.
SCO – Surface Contaminated Object.

REV 0

Summary Listing of Activities and Waste Classifications

COMPONENT	AVERAGE ACTIVITY CONCENTRATION (uCi/cc)	AVERAGE uCi's PER 100 cm^2 (SCO)	ESTIMATED CURIES	VOLUME IN CUBIC METERS	WASTE CLASSIFICATION
AREA 6					
REACTOR VESSEL	1.13E+02	N/A	1.45E+03	12.85	Class C
REACTOR VESSEL INSULATION CAN	1.21E−01	N/A	1.08E+00	8.95	Class A
REACTOR VESSEL SUPPORT CAN	1.66E−01	N/A	3.03E+00	18.26	Class A
SPENT FUEL RACK	4.09E−04	6.0E−01	4.60E−03	11.25	Class A
BORIC ACID DEMINERALIZER VESSEL	3.80E+01	N/A	1.59E+01	0.42	TBD
STORAGE WELL DEMINERALIZER VESSEL	5.65E+00	N/A	8.33E−01	0.16	TBD
PURIFICATION DEMINERALIZER VESSEL	1.04E+00	N/A	4.35E−01	0.42	TBD
SPENT FUEL POOL ELEVATOR	N/A	6.8E−01	TBD	2.72	Class A
SUPPORT STAND	N/A	6.8E−01	TBD	0.45	Class A
INTERNALS RIGGING FIXTURE	N/A	6.8E−01	TBD	0.51	Class A
REACTOR VESSEL HEAD LIFT RIGGING	N/A	6.8E−01	TBD	0.51	Class A
SUPER HEATED TEST EQUIPMENT TANK	1.79E−02	N/A	6.36E−03	0.36	Class A
GRATING (all areas) (Steel Only)				0.004 *M^3/ft^2*	
		2.9E−01 *Average*	8.37E−03 *Total*	5.74 *Total M^3*	Class A
GRATING (Rx Compartment) (Aluminum Only)				0.004 *M^3/ft^2*	
		8.5E−01 *Average*	7.62E−03 *Total*	1.56 *Total M^3*	Class A
STEP GRATING (all areas) (Steel Only)				0.002 *M^3/ft^2*	
		2.9E−01 *Average*	4.58E−04 *Total*	0.27 *Total M^3*	Class A
SITE CONCRETE	1.54E−03		4.72E−01	307.0	Class A
SITE PIPING	1.68E+00		1.17E+01	7.0	Class A & C
INSULATION	TBD		TBD	17.2	Class A
PROCESS WASTE GENERATED	TBD		Included	TBD	TBD
RV INTERNAL SURFACE CONTAMINATION	N/A		1.13E+01	N/A	Included With RV
TOTALS			1559	604	

TBD – To Be Determined At A Later Time.
SCO – Surface Contaminated Object.
Note: The Volume Estimate Takes No Credit For Decontamination, Volume Reduction Or Packaging Arrangements.

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The summarized results of the component and system curie estimate, with the RV radionuclides removed are shown below.

Table 4-20, Radionuclide Inventory For SNEC Facility Components & Systems

Radionuclide	Curies	% Of Total
Ag-108m	3.65E-02	0.0381
Ag-110m	4.95E-04	0.0005
Am-241	1.63E+00	1.6982
Am-243	3.37E-03	0.0035
Ce-144	1.78E-01	0.1860
Cm-242	1.79E-02	0.0187
Cm-243/Cm-244	5.88E-02	0.0613
Co-60	7.42E+00	7.7476
Cs-134	4.38E-02	0.0457
Cs-137	8.22E+00	8.5788
C-14	6.21E+00	6.4861
Eu-152	3.66E-01	0.3823
Eu-154	1.80E-01	0.1875
Eu-155	7.95E-02	0.0830
Fe-55	1.15E+00	1.2022
Fe-59	7.65E-04	0.0008
H-3	2.74E+00	2.5733
I-129	2.10E-01	0.2192
Mn-54	2.95E-04	0.0003
Nb-94	1.15E+00	1.1984
Ni-59	6.54E-01	0.6823
Ni-63	3.98E+01	41.5772
Np-237	1.34E-01	0.1395
Pu-238	5.65E-01	0.5896
Pu-239/Pu-240	2.74E+00	2.8595
Pu-241	2.01E+01	20.9517
Pu-242	6.33E-03	0.0066
Ru-106	3.62E-01	0.3777
Sb-125	1.11E-01	0.1158
Sr-90	1.74E+00	1.8165
Tc-99	8.60E-02	0.0897
U-234	4.05E-02	0.0422
U-235	4.40E-03	0.0046
U-238	3.32E-02	0.0347
Zn-65	7.13E-04	0.0007
Totals⇒	95.82	100%

4.3 ACTIVATION OF SNEC REACTOR VESSEL AND SURROUNDING STRUCTURES

This section provides a summary of the results from the activation analysis of the SNEC facility reactor vessel, reactor internals, reactor compartment structural supports and surrounding concrete. Radiation measurements and sample results supporting this effort are provided. In addition, an estimate of the amount of surface contamination present on the SNEC facility reactor vessel internals is included. The neutron-induced radioactivity and surface contamination levels of these components are then used to assist in determining their 10 CFR Part 61 waste classifications and subsequent Low Level Radioactive Waste (LLRW) volumes to be disposed of during decommissioning. Additionally, these analyses provide the data required to assist ALARA planning for work activities such as reactor vessel removal.

The activation analysis of the SNEC reactor vessel was performed by TLG Services[5] at the request of GPU Nuclear Corporation. The analysis scenario considered was a final shutdown of the facility on April 2, 1972, after three (3) cycles of both power and experimental operation, with an ensuing decay period of 24 years to July 1, 1996. The information included in this section is taken directly from the analysis report and other supporting survey data supplied by GPU Nuclear (Reference 4). The survey information is used to confirm and validate the analytical effort, and provides assurance that a solid basis exists for presenting the Reactor Vessel and surrounding structures as acceptable for disposal at commercial burial facilities.

This information is the result of efforts by GPU Nuclear and SNEC management personnel to provide reasonable and representative information about the SNEC Reactor Vessel and its surroundings.

4.3.1 Data Needs

The following characterization information was required by the SNEC SCP:

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5 TLG Services, Bridgewater, CT

From Activation Analysis:

Provide the curies per gram radionuclide concentrations for all RV internals and the reactor vessel. Provide LLRW classifications and waste volume estimates.

From Bulk Sample Analysis As Required By The Site Characterization Plan:

Obtain primary system component(s) samples representative of the reactor and reactor primary system.

Gamma Radiation Surveys As Required By SCP:

In the Reactor compartment, external to the water seal can, survey a minimum of four (4) locations, 90 degrees apart, at the core centerline. Survey primary system piping, as best shielded from other nearby sources, using a reproducible geometry that may be input to a point kernel radiation shielding computer code for source term confirmation calculations.

4.3.2 Applicable Areas and Items

The Reactor Support Structure, Insulation Can, Water Seal Can, surrounding concrete and structural materials all require characterization. The neutron activation analysis was performed to support SNEC facility site characterization of the reactor pressure vessel and internals. This analysis models these components.

4.3.3 Analytical Methods

The Saxton Nuclear Experimental Corporation has enlisted the support of TLG Services, to perform the activation analysis and thereby estimate the neutron-induced radioactivity contained in the reactor pressure vessel and internals. The activation analysis was performed using a one-dimensional neutron transport computer code (ANISN) to calculate neutron flux levels radially and axially external to the reactor core. A point neutron activation and depletion computer code (ORIGEN2) was used to determine the total radioactivity induced in the irradiated components. Input to this analysis includes:

1. Plant operating history and total effective full power hours.

2. Plant operation parameters.

3. Nuclear fuel characteristics and use, including fuel burn-up.

4. Geometry and material composition of the reactor pressure vessel, internals, and surrounding components and concrete structures.

Where plant specific information was not available, reasonable and conservative assumptions were used. Available literature was researched and referenced as appropriate.

From the above input, a one-dimensional neutron transport computer model of the reactor internals, vessel wall and irradiated portions of the support and concrete structures was created. Radial and axial neutron fluxes at full reactor power were subsequently calculated. Point neutron activation and depletion calculations were run for each component at each location of interest, using the neutronics data generated and the plant operating history. Output from these calculations is in curies per gram for radionuclide concentrations, which is required for the determination of 10 CFR Part 61 waste classifications and LLRW volumes estimates. Additionally, this data may be used to estimate personnel exposure rates during other decommissioning activities.

Verification of the activation analysis has been performed by comparing exposure rate measurements to calculated values based on predicted neutron activation isotopic distributions.

4.3.4 Confirmatory Survey Data

Several confirmation surveys have been performed by SNEC/GPU Nuclear personnel. As shown below:

- **4 strings of thermoluminescent dosimeters (TLD's) were hung in four quadrants of the SNEC reactor (external to the vessel), 90 degrees apart, and at known distances from the RV horizontal centerline.**

The following figure presents the results of the TLD study. The TLD's were placed at one foot intervals, starting from one foot below the reactor head platform (~793' El.).

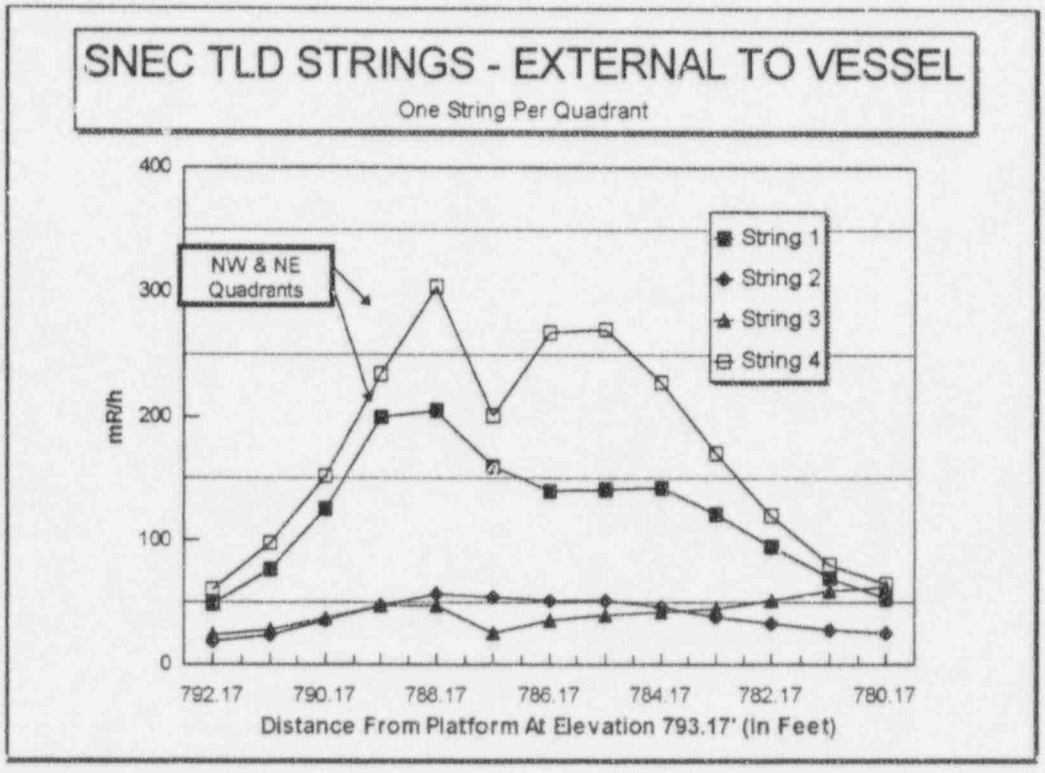


Figure 4-6

The TLD information presented above, shows the asymmetric core exposure rate profiles. Depressions in the exposure rate values at the center of strings 1 & 4 are believed to be due to obstructions that shield the TLD's from the reactor vessel. The obstructions are structural supports that once retained the ex-core instrumentation monitors at core centerline. Strings 2 & 3 show reduced gamma exposure rate profiles due to non-uniform core loading. The distance from the TLD strings to the core horizontal centerline was between 74" and 76".

- **A single TLD string was inserted into the RV, at near the center of the core (horizontally & vertically).**

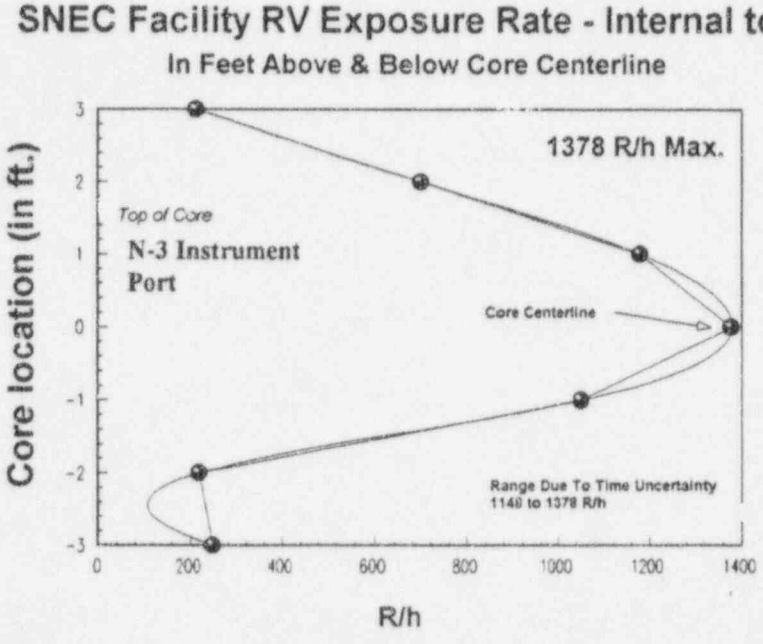


Figure 4-7

TLD String Placement Internal To SNEC RV At Core Centerline.

Figure 4-7 above shows the maximum possible exposure rate at the core centerline. This value is probably overstated (from 10 to 20%), because of a problem encountered during the removal of the TLD assembly. The calculated value from the activation analysis for the same location is ~1098 R/h (TLG).

- **Radiation measurements were performed at the perimeter of the support structure on contact with the support can and at selected distances around the core centerline.**

Radiological controls personnel surveyed the reactor vessel exterior. The following data was assembled from radiological survey information.

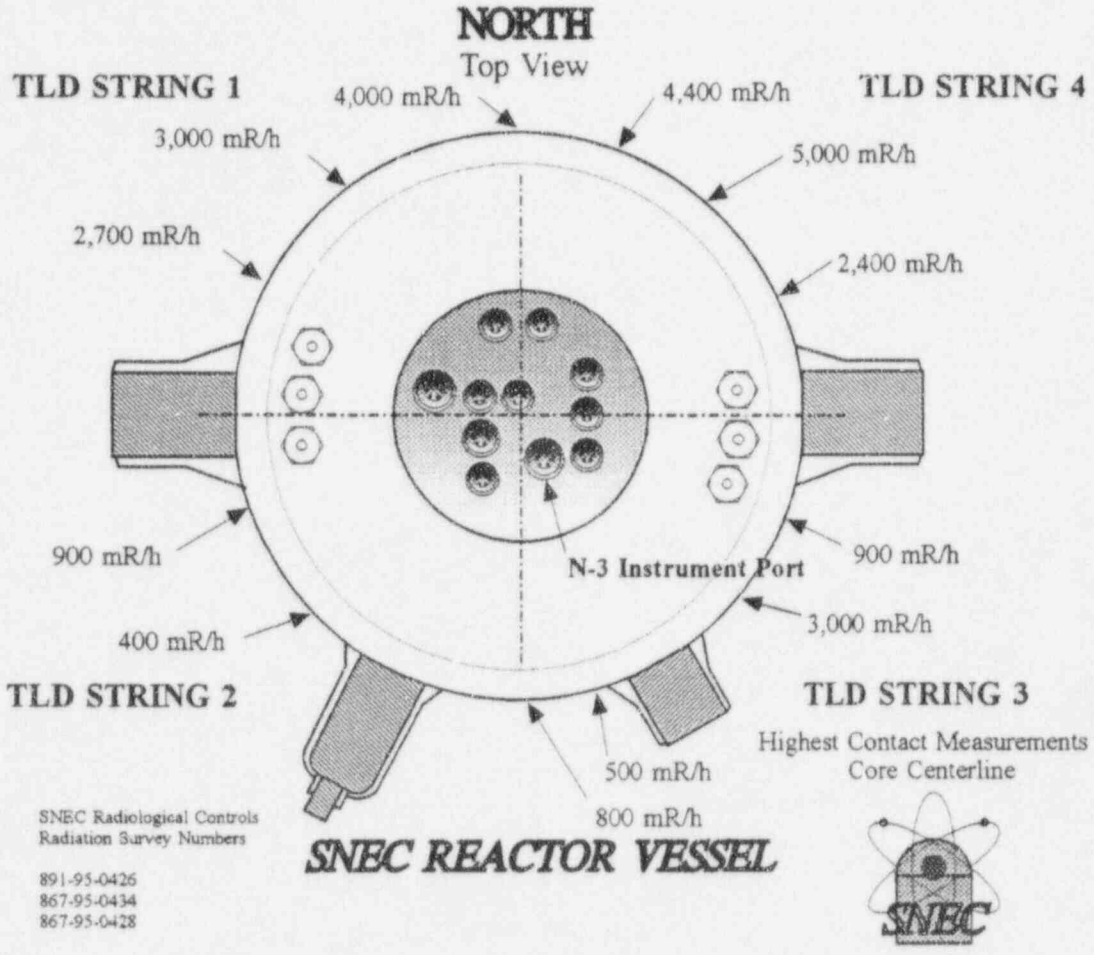


Figure 4-8

Radiological survey information confirm that the highest exposure rate region around the vessel is located in the north east quadrant, at the vertical centerline of the core region. This information supports the activation analysis and augments the results from the ex-vessel TLD measurements.

Surface Contamination Analysis:

The external surface contamination present on the Reactor Vessel and structures external to the reactor vessel is typical of AREA 6 surface contamination (see Section 4.1). The Reactor Vessel internal surface contamination has been estimated

from contamination levels present in safety injection piping between an installed check valve and the Reactor Vessel. The estimated internal surface area of the SNEC Reactor Vessel is ~1.13X10^6 square centimeters. The safety injection piping is estimated to contain approximately 10.4 uCi/cm^2 of internal contamination. The current estimate of ~11.8 curies of RV internal contamination assumes that:

1. No significant quantities of fuel related materials remain internal to the RV and,
2. Only a surface coating of materials similar in composition and activity per unit area to the materials present in the SI system remain within the RV.

Items one and two above, have been confirmed by reactor vessel internal video inspection during February 1996. No significant deposits of debris were found during the inspection effort that included a ~360 degree scan of the near bottom region of inside of the vessel. In addition, the internals of the reactor vessel were observed to be mostly clear of surface deposits with most metallic surfaces appearing unsoiled and effulgent. Item two above, is believed to be a reasonable assumption since a sample from the reactor vessel retained similar isotopic concentrations as a sample from the safety injection system, and internal surfaces appear to be relatively clear.

Activated Concrete and Structures

Eight (total) concrete core bore samples were obtained from wall surfaces above and below the reactor compartment flood level. These samples were obtained by penetrating the five (5) foot wall separating the reactor compartment from the steam generator compartment and from the one and one-half (1.5) foot thick CV wall. Concrete core bores were also obtained from the reactor shield plugs above the RV, which form the operating floor on elevation 812', and from below the reactor (control rod room floor) on elevation 765'. The analyses results from these activated concrete core bores were compared, and benchmarked to the predicted activation analysis results for concrete. Review of this data indicates that there is little or no activation of

concrete below the operational water line. The concrete above the operational water line (~791' El.), is neutron activated.

The following core bore profiles have been assembled from samples from this region. However, as discussed in section 4.1.17, the removal of the majority of these concrete walls above the water line (around the vessel) is expected, making this information important to the waste packager and shipper during dismantlement.

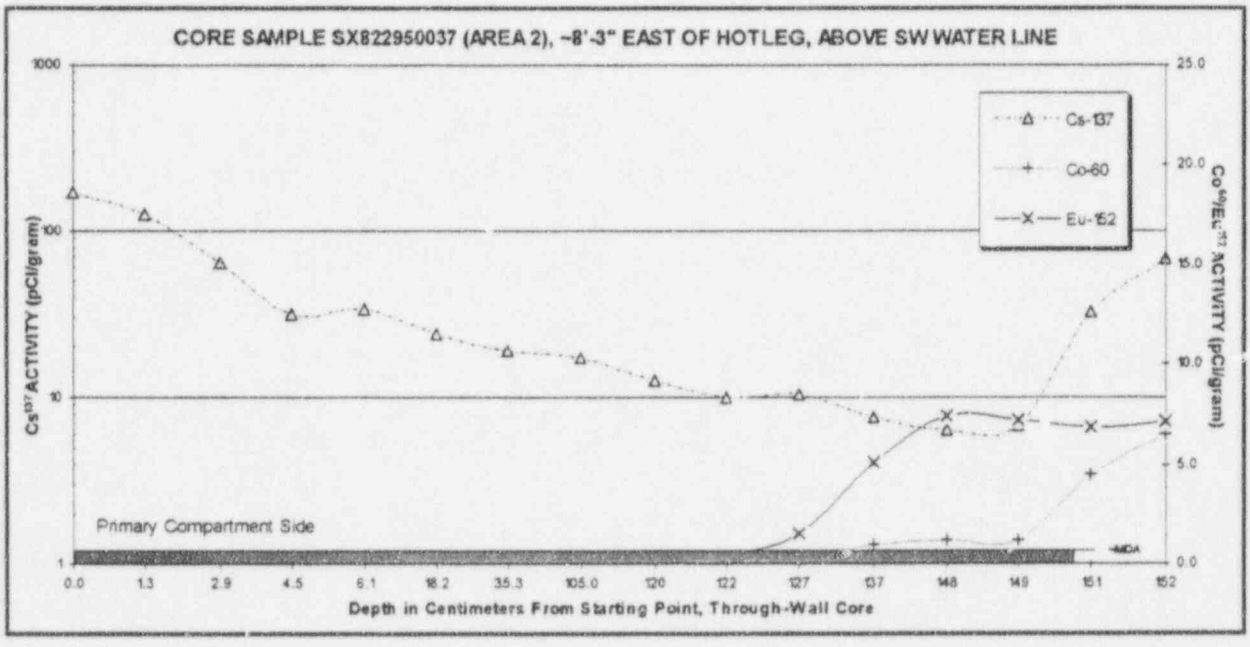


Figure 4-9

The above chart demonstrates increased activation product concentrations (Co-60 and Eu-152), from <MDA values (on left), to greater than MDA values nearer the reactor vessel. The coring operation started from the primary compartment (on left).

The following chart shows concrete activation in what is believed to be the high flux area of the containment vessel adjacent to the reactor vessel. The core bore results suggest that near complete removal of the CV interior concrete containment wall in this location may be necessary.

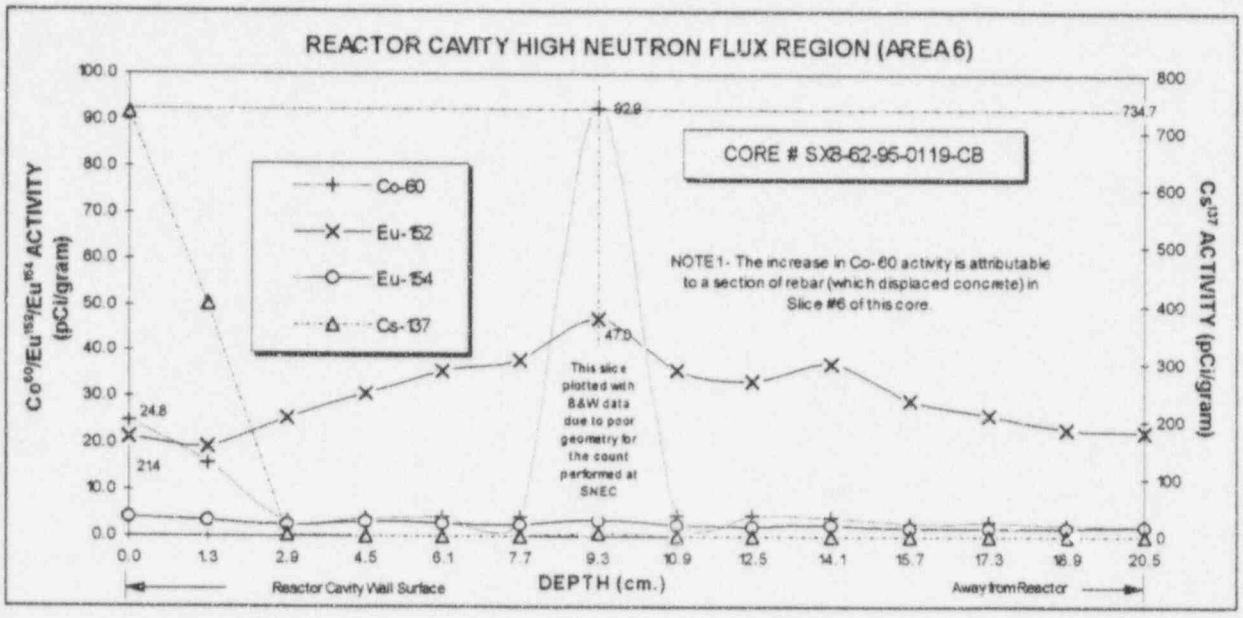


Figure 4-10

An analysis by B&W of SNEC concrete core bore sample SX862950119, taken from the suspected high flux area of the CV containment wall, has provided the information presented in Table 4-21. This is a composite result for slice numbers 1, 2, 6, 9 & 13. Slice number 6 contained a 57.74 gram sample of steel reinforcement material (rebar). Note that when taken together, the largest percentage of activity is provided by H-3 and Ni-63.

Table 4-21, Composite Results - Concrete Core Bore Sample SX862950119.

Isotope	As % Of Total Activity
Ag-108m	0.0260
Am-241	0.0464
Ce-144	0.0924
Co-60	**2.4443**
Cs-134	0.0213
Cs-137	**7.5581**
C-14	2.3263
Eu-152	**3.5327**
Eu-154	**0.1996**
Eu-155	0.0489
H-3	**63.5044**
I-129	0.4071
Nb-94	0.0204
Ni-59	**0.7042**
Ni-63	**18.6422**
Ru-106	0.15[illegible]
Sb-125	0.0506
Tc-99	0.2206

Note: Isotopes listed above in bold text were positively identified. All other results are "Less Than" values. All radionuclide concentrations (in pCi/g) for concrete core bore samples have been presented in Section 4.5 (Data Tables).

TLG Services believes that up to 15 inches of concrete materials will need to be removed from the walls around the reactor vessel above the operating level water line. This is reasonably consistent with SNEC sampling results. Additional samples will be needed during decommissioning to minimize the amount of LLRW generated. The following is a listing of core bore samples taken to determine the presence of activation products. All sample results are presented in Sections 4.1 and 4.6.

Table 4-22, Core Bore Samples Taken To Determine Neutron Activation

SNEC Sample Number	Location	Length (cm)
SX811950025	CV Basement Floor, Below RV In Rod Room	36
SX822950031	Through Primary Compt. Wall (S), Below Ops. Water Level	152.4
SX822950036	Through Primary Compt. Wall (S), Below Ops. Water Level	152.4
SX822950037	Through Primary Compt. Wall (S), Above Ops. Water Level	152.4
SX862950062	5' Thick South Wall, RV Head Area (SW), Above Water Level	13.8
SX862950063	5' Thick South Wall, RV Head Area (SE), Above Water Level	8.8
SX862950064	1.5' Thick CV Wall (NW), ~Core Centerline, Below Water Level	15.2
SX862950065	1.5' Thick CV Wall (N), ~Core Centerline, Below Water Level	14.1
SX861950066	Floor At Base Of RV Support Structure ~779'-8"El. (NE)	11.5
SX841950120	Shield Block 1, Above RV	137.3
SX841950121	Shield Block 2, Above RV	134.3
SX841950122	Shield Block 3, Above RV	135.3
SX841950123	Shield Block 4, Above RV	124
SX841950124	Shield Block 5, Above RV	131.4
SX841950125	Shield Block 6, Above RV	152.4

Steel Structures

Steel samples from the reactor vessel area were taken to aid in benchmarking the activation analysis. The results for these samples indicate the following specific activities for Co-60.

Table 4-23, Metal activation Samples From SNEC RV Region

Item Description	SNEC Sample No	B&W Reported uCi/g-Co-60	TLG Calculated uCi/g-Co-60
SI Pipe Section (SW) (Above Water Level)	SX865950053	1.43E-04	7.9E-05
SI Pipe Section (East) (Above Water Level)	SX865950069	1.82E-04	2.7E-05
RV steel Support (Below Water Level)	SX866950116	6.08E-04	1.17E-03

Activation analysis results of materials from below the water line by the vessel, appear to be reasonably close to calculated values for selected isotopes. Above the operational water line the activation of materials is higher than expected. These higher than calculated values are believed to be caused by neutron streaming. This is a reasonable explanation for the disparity.

4.3.5 Activation Analysis Results Summary

The analysis indicates that approximately 1,452 curies of neutron activation products, mainly Fe-55 (37.06 Ci), Co-60 (594.5 Ci) and Ni-63 (810.9 Ci), will be present in the reactor vessel wall and clad, internals, insulation can and support can, 24 years after shutdown (July 1, 1996). This estimate does not include the activity from internal and external surface contamination, which is a small percentage of the total activity for this component. The following table presents the curie estimate for the SNEC reactor vessel and internals. Based on the analysis report the SNEC facility reactor vessel may be shipped as a Class C waste material. Materials such as lead, structural steel and concrete materials outside the vessel will be Class A radioactive waste. The activation analysis report provides specific details about selected radionuclide distributions and components within the vessel or exterior structural materials (calculated results), and will be used to assess alternate handling methods.

Table 4-24, Reactor Vessel Curie Estimate-Calculated Values

Components	Weight in lbs.	Curies 24 Year After Shutdown
Core Baffle	1,210	642.6
Thermal Shield	10,491	132.7
Reactor Vessel Clad	2,043	4.185
Reactor Vessel Wall	87,313	4.737
RV Insulation Can (1)	4,994	1.078
RV Support Can (1)	5,442	3.034
Lower Core Guide Blocks	152	182.9
Lower Core Plate	500	226.7
Lower Support Shroud Tubes (2)	338	8.323
Lower Support Tie Rods (2)	54	2.113
Balance of Lower Support Assembly (3)	706	0.0744
Lower Core Barrel (4)	1,067	58.46
Upper Core Plate	264	165
Upper Core Barrel (4)	454	19.71
Balance of Lower Core Barrel Assembly (5)	1,823	0.2593
Balance of Upper Core Barrel Assembly (6)	832	0.1183

Notes: (1) Includes weight of component between 3' above and 3' below the active core.

(2) Includes weight of component down to 3' below the active core.

(3) Weight of lower support shroud tubes, lower support tie rods and associated components more that 3' below the active core.

(4) Includes weight of component up to 3' above the active core.

(5) Weight of lower core barrel and associated components more than 3' above the active core.

(6) Weight of upper core barrel and associated components more than 3' above the active core.

4.3.6 Reactor Vessel Internal Surface Materials Sampling Results

A sample of the internal surface deposited materials was collected on a swab. The swab sample was taken of surface materials present in the RV interior, at the bottom of the vessel. The swab was attached to a long segmented rod and inserted into the vessel from instrument access port (N-3), located at the top of the vessel head, approximately 9" from the center of the vessel horizontally (see Figure 4-8). An additional sample was taken from a section of the safety injection piping system between the vessel and installed check valve. Both of these materials are of similar

composition. The safety injection materials are similar in relative radionuclide composition, but have a higher specific activity, making their inclusion a more conservative choice. The combined materials from both samples (as % of total) were used to aid in determining the RV waste classification. The complete sample results for these two samples are presented in Appendix D. The following table contains the positive values from both B&W analysis results for these two sample materials, except where marked with an asterisk ("less than values"). The internal surface area of the reactor vessel was determined from examining SNEC RV drawings. As stated earlier, an estimate of the curie content for internal surface contamination in the reactor vessel is approximated from SI & RV sample results and calculated RV internal surface areas.

Table 4-25, Radionuclide Composition Of SI And RV Sample Materials

	RV SAMPLE	SI SAMPLE
RADIONUCLIDE	% OF TOTAL	% OF TOTAL
H-3	**0.0858**	0.0040*
Fe-55	**0.1328**	**2.5318**
Ni-59	**0.5477**	**0.5477**
Ni-63	**45.0849**	**43.8136**
Sr-90	**4.1387**	**0.2839**
Nb-94	0.0145*	**0.0079**
Tc-99	**0.0033**	0.0003*
Pu-238	**0.5548**	**1.0905**
Pu-239/240	**1.2733**	**2.3973**
Pu-241	**22.5424**	**27.4796**
Am-241	**3.9449**	**3.7232**
Cm-242	**0.0236**	0.0390*
Cm-243/244	**0.0682**	0.0462*
U-234	**0.0002**	0.0113*
Co-60	**16.8892**	**17.1988**
Cs-137	**4.1739**	**0.3987**
Eu-154	**0.1407**	**0.0319**
Eu-154	**0.0386**	**0.0082**

Note: Bold text indicates positively identified nuclides

4.3.7 Conclusions

The TLG Services supplied reactor vessel activation analysis was reviewed by GPU Nuclear personnel familiar with analysis of these type. GPU Nuclear believes the analysis assumptions and approach used were appropriate and correctly applied. Field data largely support the calculated results from the activation analysis. For structural materials above the operational water line (~791' El.), by the reactor vessel, calculated results differ from field measurements. This can be explained by neutron streaming which is difficult to model with one dimensional neutron transport analysis techniques. Additional field measurements during decommissioning will be used to monitor removal and classify structural materials.

Activation of lead materials from near the RV is calculated to be about ~50 uCi/Kg. Neutron irradiated lead will be Class A waste materials.

4.4 ENVIRONMENTAL & HAZARDOUS MATERIALS CHARACTERIZATION

Environmental characterization activities have determined the radiological characteristics of potential contamination in soil and other materials around and within the SNEC site, not covered previously. The scope of these characterization activities are in addition to the work performed in accordance with the SNEC Soil Characterization Plan (Reference 9). This section of this report also provides information on principal hazardous materials concerns and includes the methodology for sampling for the presence of materials which would affect the health and safety requirements of the work force during decommissioning (i.e. asbestos, lead, or other hazardous materials).

4.4.1 Data Needs

The following information is addressed within in this section:

- Determinations of the contaminant activity levels in the soil.
- Determinations of the isotopic identity and concentration ratio of the radionuclides that comprise any radioactive contamination.
- Data for and estimates of the total radionuclide inventory in the soil.
- Comparison of characterization data with applicable release criteria to determine decommissioning work scope.
- The location and type of asbestos used as thermal system insulation
- The location and type of asbestos used in surfacing material (e.g. coatings or coverings)
- A Total Metals Analysis to determine the presence and concentration ratio of Lead, Chromium, and Cadmium metal contaminants in painted surfaces
- Complete TCLP, inorganic analysis on sediment and sludge samples.

4.4.2 Selection Of Sampling Locations

For the initial soil characterization work conducted in 1993 and 1994 the SNEC site was divided into two areas as follows: 1) Affected Area (biased) - The 1.1 acre area comprising the area surrounding the CV, yard area and the Westinghouse area: 2) Unaffected Area (unbiased) - The 9.6 acre area which is fenced in around the electrical switchyard and building still in use by Pennsylvania Electric Company. Based upon the methods in NUREG/CR-5849 (Reference 13) the affected area was surveyed into 10 x 10 meter grid systems where systematic scanning surveys (radiological) and grab sampling were conducted. Random surveys were conducted in the unaffected area.

Locations of well monitoring, air and sediment sampling were determined based on past demolition work, soil remediation work, direction of groundwater flow, liquid offsite release points and environmental sampling program requirements.

Hazardous materials sample locations within the SNEC CV, have been selected for characterization based on experience that the item or location may be contaminated with asbestos or hazardous metal contaminants (TCLP, Inorganic Analysis). These areas include:

- Insulation on piping, heat exchangers, and other process components (asbestos)

- Coatings on installed equipment and structural surfaces (metal contaminants, composite samples etc.)

- Internal surfaces of selected systems known to have contained metal contaminants (composite samples)

- Coatings on pools or liners (asbestos)

- Components likely to contain PCB contaminants (e.g., liquid filled electrical transformer, or lighting ballast's).

4.4.3 Soil Characterization Reports

Saxton Nuclear Experimental Corporation conducted soil characterization and installed ground water monitoring wells at the SNEC Facility as part of the decontamination and decommissioning efforts associated with the Control and Auxiliary (C&A) Building, the Radioactive Waste Disposal Facility (RWDF), and Drum Storage Bunker, Underground Spent Resin Storage Tank, and interconnecting tunnels. Documents which report on soil characterization include:

- SNEC Soil Characterization Plan, Document 6575-PLN-4724.05.
- "Report on Drilling and Radiometric Analysis of Samples Collected at Sites of Spent Resin and Liquid Waste Tanks", SNEC Facility, Saxton, PA, prepared by Pennsylvania State University, January 16, 1989.
- "Geologic, Chemical, Radiometric and Geotechnical Studies of Samples from Eleven Drill Holes in Surficial Materials", Saxton Nuclear Facility, Saxton, Pennsylvania, prepared by Pennsylvania State University, December 20, 1988.
- "An Aerial Radiological Survey of the Saxton Nuclear Experimental Corporation Facility and Surrounding Area", Saxton, Pennsylvania, prepared by EG&G Energy Measurements, July 1989.

4.4.4 Environmental Characterization Of SNEC Soils

In November 1993, soil characterization was performed at the SNEC site to determine the contaminant activity levels in the soil. Subsequent analyses were performed during soil remediation work between July and October 1994. Survey procedures and methods to assess soil radioactivity and hazardous material content were based upon NUREG/CR-5849 (Reference 13) and 40 CFR 261 (Reference 17). Soil characterization and disposal work are described respectively in procedures 6575-PLN-4742.05, "SNEC Soil Characterization Plan" (Reference 38) and 6575-PLN-4542.07, "SNEC Soil Disposal Plan" (Reference 50). Results of all the analytical

data are described in the "1994 Saxton Soil Remediation Project Report" (Reference 9) dated May 11, 1995.

On average, as a result of the soil remediation work, the predominant nuclides remaining in the SNEC soil are Cs-137 and Co-60 at concentrations less than 1.0 pCi/g and 0.1 pCi/g respectively. Although 56,266 ft^3 (11 millicuries) of the soil was disposed of at Envirocare and Barnwell, some residual Cs-137 still remains in areas described in the soil remediation report. Most of these are confined to grids (G-9 and F-9), located outside and immediately north and northeast of the containment vessel. These grids contain localized hotspots near or in remnants of old structures and piping buried underground. Appendix 1 and Figure 3 of the soil remediation report provides the pre and post Cs-137 concentrations in the SNEC Facility soil. It is estimated for soil that approximately 352 ft^3 containing 5.4 millicuries of Cs-137 and 27 ft^3 containing 0.026 millicuries of Co-60 will need to be removed from these grid locations to meet the currently proposed NRC cleanup standards. Attainment of average soil concentrations of <2 pCi/g Cs-137 and <0.5 pCi/g Co-60 will meet the residential scenario ALARA dose of 3 mrem guideline per year in accordance with NUREG 1500.

4.4.5 Applicable Contaminants and Sampling Media in Soil

A hazardous material analyses was performed on SNEC soil. The soil was found to be nonhazardous. Although most of the affected soil has been removed from the site, these analyses are also representative of the soil remaining. Chemical compounds such as cyanides, sulfides, copper, zinc, and tetrachloroethene (TCE) were found per the Mountain States Laboratory analysis results. Since the SNEC site was adjacent to a former coal fired power plant, the discovery of these compounds, which are products common in fossil fuel combustion waste (i.e., flyash and bottomash) is expected. Sulfides were also present in past mine operation drainage that took place in the area of Saxton. Several EPRI reports such as EA-5321 (1987) (Reference 18) and CS-5355 (1987) (Reference 19), describe the

chemical characteristics and TCLP analyses of utility waste. The characteristics of Pennsylvania coal generally contain approximately 10-15 mg/kg, Cu; >50 mg/kg, Zn; 1000 mg/l, sulfide and trace quantities of cyanide. In addition, common Pennsylvania soil contains quantities of zinc and copper in the 10-300 ppm and 10-100 ppm ranges respectively.

The presence of TCE was found in a few of the samples of soil prior to sending this soil to Envirocare. Based on interviews with former SNEC employees it is possible, but cannot be verified, that chemicals containing TCE may have been used as part of the site's operation. The nonhazardous determination of the SNEC soil was based on the TCE limit of 0.7 mg/l. For soil containing TCE to be considered a hazardous waste, it would have to be derived from a spill of spent solvent containing greater than 10% TCE, a spill of unused commercial grade TCE or TCLP leachate containing >0.7 mg/L TCE. The exact source of the TCE in the SNEC soil is not known. However, to the best of our knowledge, no spills of either spent or unused solvents or chemical mixtures containing TCE occurred at the site. The soil samples all contained less than 0.7 mg/l TCE in the TCLP analyses. Therefore, based on the appropriate determination protocol, the SNEC soil does not constitute a hazardous waste.

4.4.6 Air, Sediment And Ground/Potable Water

Air, sediment and ground/potable water sampling have been and continue to be conducted on the site. Table 4-52 (Section 4.5), provides the analytical results from the past year (1994/1995), for air particulate monitoring. The following summary table shows the type of contaminants detected in various sample media external to the SNEC CV.

Table 4-26, Summary Table Of Contaminants Detected In SNEC Sample Media

SAMPLE MEDIA	CONTAMINANT	COMMENTS
Soil	Cs-137	
Ground Water	Non-detectable	Well GEO5 shows periodic levels of H3 (200-600 pCi/L)
Potable Water	Non-detectable	
Air Particulate	Non-detectable	
Sediment	Cs-137	

Reference the "1994 Saxton Soil Remediation Project Report" (Reference 9), for contaminants in soil, and the following tables for radiological data related to ground water, potable water, and sediment.

Table 4-27, Ground Water Stations Results (Activity in pCi/liter)

GPU ID	Station	Date	Co-60	Cs-134	Cs-137	H-3
077163	SX-GW-GEO-1	07/13/94	< 5	< 4	< 4	< 170
078537	SX-GW-GEO-1	10/06/94	< 3	< 3	< 3	< 180
079885	SX-GW-GEO-1	01/12/95	< 4	< 3	< 3	< 190
081186	SX-GW-GEO-1	04/05/95	< 4	< 3	< 3	< 180
081958	SX-GW-GEO-1	05/30/95	< 5	< 4	< 4	< 180
082223	SX-GW-GEO-1	06/13/95	< 4	< 3	< 3	< 190
082744	SX-GW-GEO-1	07/13/95	< 7	< 6	< 6	< 160
083323	SX-GW-GEO-1	08/17/95	< 3	< 3	< 3	< 180
083816	SX-GW-GEO-1	09/15/95	< 20	< 20	< 20	< 190
077164	SX-GW-GEO-2	07/13/94	< 3	< 3	< 3	< 170
078538	SX-GW-GEO-2	10/06/94	< 4	< 3	< 4	< 180
079886	SX-GW-GEO-2	01/12/95	< 3	< 3	< 3	< 190
081187	SX-GW-GEO-2	04/05/95	< 6	< 4	< 6	< 180
081959	SX-GW-GEO-2	05/30/95	< 3	< 3	< 3	< 180
082224	SX-GW-GEO-2	06/13/95	< 3	< 3	< 3	< 180
082745	SX-GW-GEO-2	07/13/95	< 6	< 4	< 4	< 160
083324	SX-GW-GEO-2	08/17/95	< 3	< 3	< 3	< 180
083817	SX-GW-GEO-2	09/15/95	< 15	< 14	< 13	< 190
077165	SX-GW-GEO-3	07/13/94	< 9	< 6	< 7	< 170
078539	SX-GW-GEO-3	10/06/94	< 2	< 2	< 2	< 180
079887	SX-GW-GEO-3	01/12/95	< 6	< 4	< 5	< 190
081188	SX-GW-GEO-3	04/05/95	< 7	< 6	< 6	< 180
081960	SX-GW-GEO-3	05/30/95	< 6	< 5	< 5	< 180
082225	SX-GW-GEO-3	06/13/95	< 7	< 5	< 5	< 190
082746	SX-GW-GEO-3	07/13/95	< 4	< 3	· 3	< 160
083325	SX-GW-GEO-3	08/17/95	< 6	< 5	< 5	< 180
075682	SX-GW-GEO-4	04/06/94	< 4	< 3	< 3	< 180
077166	SX-GW-GEO-4	07/13/94	< 6	< 6	< 7	< 170
078540	SX-GW-GEO-4	10/06/94	< 3	< 3	< 3	< 180
081189	SX-GW-GEO-4	04/05/95	< 3	< 2	< 2	< 180
081962	SX-GW-GEO-4	05/30/95	< 4	< 3	< 3	< 180
082226	SX-GW-GEO-4	06/13/95	< 6	< 6	< 6	< 190
082747	SX-GW-GEO-4	07/13/95	< 3	< 3	< 3	< 160
083326	SX-GW-GEO-4	08/17/95	< 7	< 6	< 6	< 180
083818	SX-GW-GEO-4	09/15/95	< 3	< 3	< 3	< 190
077167	SX-GW-GEO-5	07/13/94	< 2	< 2	< 2	< 170
078542	SX-GW-GEO-5	10/06/94	< 3	< 3	< 3	560 ± 130
079888	SX-GW-GEO-5	01/12/95	< 8	< 6	< 7	< 190
081190	SX-GW-GEO-5	04/05/95	< 3	< 3	< 3	< 180

GPU ID	Station	Date	Co-60	Cs-134	Cs-137	H-3
081963	SX-GW-GEO-5	05/30/95	< 6	< 5	< 5	270 ± 120
082227	SX-GW-GEO-5	06/13/95	< 2	< 2	< 2	370 ± 130
082746	SX-GW-GEO-5	07/13/95	< 6	< 5	< 5	370 ± 110
083327	SX-GW-GEO-5	08/17/95	< 3	< 2	< 2	390 ± 130
083819	SX-GW-GEO-5	09/15/95	< 3	< 3	< 3	410 ± 130
077168	SX-GW-GEO-6	07/13/94	< 3	< 3	< 3	< 170
078543	SX-GW-GEO-6	10/06/94	< 8	< 6	< 6	< 180
079889	SX-GW-GEO-6	01/12/95	< 6	< 6	< 6	< 190
081190	SX-GW-GEO-6	04/05/95	< 2	< 2	< 2	< 180
081964	SX-GW-GEO-6	05/30/95	< 7	< 6	< 6	< 180
082228	SX-GW-GEO-6	06/13/95	< 2	< 2	< 2	< 190
082749	SX-GW-GEO-6	07/13/95	< 6	< 6	< 6	< 160
083328	SX-GW-GEO-6	08/17/95	< 4	< 4	< 4	< 180
083820	SX-GW-GEO-6	09/15/95	< 16	< 15	< 14	< 190
077169	SX-GW-GEO-7	07/13/94	< 2	< 2	< 2	< 170
078544	SX-GW-GEO-7	10/06/94	< 3	< 3	< 3	< 180
079890	SX-GW-GEO-7	01/12/95	< 3	< 3	< 3	< 190
081192	SX-GW-GEO-7	04/05/95	< 3	< 3	< 3	< 180
081965	SX-GW-GEO-7	05/30/95	< 2	< 2	< 2	< 180
082229	SX-GW-GEO-7	06/13/95	< 3	< 2	< 3	< 190
082750	SX-GW-GEO-7	07/13/95	< 3	< 3	< 3	< 160
083329	SX-GW-GEO-7	08/17/95	< 3	< 2	< 2	< 180
083822	SX-GW-GEO-7	09/15/95	< 3	< 3	< 3	< 190
081193	SX-GW-GEO-8	04/05/95	< 6	< 4	< 4	< 180
081966	SX-GW-GEO-8	05/30/95	< 3	< 3	< 3	< 180
082230	SX-GW-GEO-8	06/13/95	< 3	< 3	< 3	< 190
082751	SX-GW-GEO-8	07/13/95	< 8	< 6	< 6	< 160

Table 4-28, Ground Water Stations Results (Activity in pCi/liter).

GPU ID	Station	Date	Co-60	Cs-134	Cs-137	H-3	Sr-90
075685	SX-GW-MW-1	04/06/94	<7	<6	<7	<180	<1.0
077170	SX-GW-MW-1	07/13/94	<1.6	<1.4	<1.6	<170	<1.0
078545	SX-GW-MW-1	10/06/94	<3	<2	<2	<180	<1.0
079330	SX-GW-MW-1	11/29/94	<1.8	<1.5	<1.6	<170	<1.0
079891	SX-GW-MW-1	01/12/95	<2	<2	<2	<190	<0.7
081194	SX-GW-MW-1	04/05/95	<2	<1.6	<1.8	<180	<0.8
081967	SX-GW-MW-1	05/30/95	<1.3	<1.1	<1.1	<180	<1.0
082231	SX-GW-MW-1	06/13/95	<3	<3	<3	<190	<1.0
082752	SX-GW-MW-1	07/13/95	<1.3	<1.1	<1.2	<160	<1.0
083330	SX-GW-MW-1	08/17/95	<3	<2	<2	<180	<1.0
083823	SX-GW-MW-1	09/15/95	<4	<3	<3	<190	<1.0
075686	SX-GW-MW-2	04/06/94	<1.2	<1.1	<1.2	<180	<1.0
077171	SX-GW-MW-2	07/13/94	<1.3	<1.1	<1.2	<170	<1.0
078546	SX-GW-MW-2	10/06/94	<1.5	<1.5	<1.4	<180	<1.0
079892	SX-GW-MW-2	01/12/95	<1.4	<1.4	<1.6	<190	<0.9
081195	SX-GW-MW-2	04/05/95	<4	<3	<3	<180	<0.8
081968	SX-GW-MW-2	05/30/95	<1.4	<1.4	<1.4	<180	<1.0
082232	SX-GW-MW-2	06/13/95	<2	<2	<2	<190	<1.0
082753	SX-GW-MW-2	07/13/95	< 1.6	<1.3	<1.5	<160	<0.6
083331	SX-GW-MW-2	08/17/95	<1.1	<1.1	<1.3	<180	<1.0
083824	SX-GW-MW-2	09/15/95	<3	<2	<3	<190	<1.0

Table 4-29, Aquatic Sediment Stations (Activity in pCi/g - dry).

GPU ID	Station	Date	Co-60	Cs-134	Cs-137	K-40	Ra-226	Th-232	U-235
074596	SX-SD-A1-1	01/13/94	< 0.05	< 0.04	2.1 ± 0.2	4.8 ± 0.7	2.1 ± 0.8	1.1 ± 0.2	< 0.2
075689	SX-SD-A1-1	04/06/94	< 0.06	< 0.04	2.1 ± 0.2	5.8 ± 0.7	2.6 ± 0.6	1.2 ± 0.2	< 0.2
077158	SX-SD-A1-1	07/13/94	< 0.03	< 0.02	2.3 ± 0.2	5 ± 0.5	2.3 ± 0.6	0.8 ± 0.11	< 0.16
078533	SX-SD-A1-1	10/06/94	< 0.04	< 0.04	0.2 ± 0.04	6.4 ± 0.8	2.7 ± 0.8	1.3 ± 0.2	< 0.2
079895	SX-SD-A1-1	01/12/95	0.071 ± 0.031	< 0.02	3.3 ± 0.3	5.6 ± 0.6	2.2 ± 0.6	1.1 ± 0.1	< 0.15
081198	SX-SD-A1-1	04/05/95	0.027 ± 0.023	< 0.02	2.6 ± 0.3	5.8 ± 0.6	2.4 ± 0.7	1 ± 0.1	< 0.16
082739	SX-SD-A1-1	07/13/95	< 0.04	< 0.03	1.8 ± 0.2	8 ± 0.8	2.9 ± 0.8	1.3 ± 0.2	< 0.2
074597	SX-SD-A1-4	01/13/94	< 0.02	< 0.02	0.74 ± 0.07	8.6 ± 0.9	1.4 ± 0.5	0.65 ± 0.1	< 0.14
075690	SX-SD-A1-4	04/06/94	< 0.03	< 0.03	0.39 ± 0.04	7.4 ± 0.7	1.3 ± 0.5	0.58 ± 0.13	< 0.15
077159	SX-SD-A1-4	07/13/94	< 0.015	< 0.014	0.21 ± 0.02	8.8 ± 0.9	2.1 ± 0.4	0.8 ± 0.09	< 0.11
078534	SX-SD-A1-4	10/06/94	0.022 ± 0.012	< 0.01	0.28 ± 0.03	7.6 ± 0.8	1 ± 0.2	0.65 ± 0.07	< 0.08
079896	SX-SD-A1-4	01/12/95	< 0.013	< 0.011	0.22 ± 0.02	6.9 ± 0.7	1.3 ± 0.3	0.64 ± 0.06	< 0.09
081199	SX-SD-A1-4	04/05/95	< 0.011	< 0.01	0.15 ± 0.02	7.8 ± 0.8	1.3 ± 0.3	0.66 ± 0.07	< 0.08
082740	SX-SD-A1-4	07/13/95	< 0.015	< 0.013	0.16 ± 0.02	7.1 ± 0.7	1.1 ± 0.3	0.57 ± 0.07	< 0.11
074598	SX-SD-C1-6	01/13/94	< 0.05	< 0.04	1.5 ± 0.1	8.5 ± 0.9	2.8 ± 0.8	1.2 ± 0.2	< 0.2
075692	SX-SD-A1-6	04/06/94	< 0.02	< 0.02	1.5 ± 0.1	9.3 ± 0.9	2.6 ± 0.5	1 ± 0.1	< 0.15
077162	SX-SD-A1-6	07/13/94	< 0.03	< 0.02	1.9 ± 0.2	9.7 ± 1	3.2 ± 0.6	1.2 ± 0.1	< 0.18
078535	SX-SD-A1-6	10/06/94	0.064 ± 0.027	< 0.02	2.1 ± 0.2	10 ± 1	2.7 ± 0.6	1.1 ± 0.1	< 0.14
079897	SX-SD-A1-6	01/12/95	< 0.02	< 0.017	1.2 ± 0.1	11 ± 1	2.8 ± 0.4	1.2 ± 0.1	< 0.12
081200	SX-SD-A1-6	04/05/95	< 0.03	< 0.02	1.5 ± 0.1	11 ± 1	2.9 ± 0.6	1.2 ± 0.1	< 0.16
082742	SX-SD-A1-6	07/13/95	< 0.08	< 0.05	2 ± 0.2	9.1 ± 1.2	3.3 ± 1	1.3 ± 0.2	< 0.3
075691	SX-SD-Q1-2	04/06/94	< 0.015	< 0.012	0.099 ± 0.017	6.2 ± 0.6	1.4 ± 0.3	0.64 ± 0.07	< 0.09
077160	SX-SD-Q1-2	07/13/94	< 0.013	< 0.011	0.26 ± 0.03	7.5 ± 0.8	1.1 ± 0.2	0.59 ± 0.07	< 0.1
078536	SX-SD-Q1-2	10/06/94	< 0.015	< 0.013	0.18 ± 0.02	8 ± 0.8	1.5 ± 0.4	0.72 ± 0.07	< 0.12
079898	SX-SD-Q1-2	01/12/95	< 0.011	< 0.01	0.086 ± 0.014	7.6 ± 0.8	1.2 ± 0.2	0.7 ± 0.07	< 0.09
081202	SX-SD-Q1-2	04/05/95	< 0.014	< 0.012	0.049 ± 0.016	7.4 ± 0.7	1.2 ± 0.3	0.72 ± 0.07	< 0.11
082743	SX-SD-Q1-2	07/13/95	< 0.018	< 0.016	0.073 ± 0.022	7.5 ± 0.7	1.7 ± 0.4	0.74 ± 0.1	< 0.13

Table 4-30, Potable Ground Water Stations (Activity in pCi/liter).

GPU ID	Station	Date	Co-60	Cs-134	Cs-137	H-3
074599	SX-GW-E1-1	01/13/94	< 1.8	< 1.7	< 1.7	< 150
075687	SX-GW-E1-1	04/06/94	< 1.5	< 1.4	< 1.5	< 180
077173	SX-GW-E1-1	07/13/94	< 1.3	< 1.4	< 1.4	< 170
078531	SX-GW-E1-1	10/06/94	< 3	< 3	< 3	< 180
079893	SX-GW-E1-1	01/12/95	< 3	< 2	< 2	< 190
081196	SX-GW-E1-1	04/05/95	< 1.7	< 1.6	< 1.6	< 180
08[illegible]	SX-GW-E1-1	07/13/95	< 3	< 2	< [illegible]	< 160
075688	SX-GW-G1-1	04/06/94	< 1.3	< 1.2	< [illegible]	< 180
077172	SX-GW-G1-1	07/13/94	< 1.6	< 1.3	< 1.4	< 170
078532	SX-GW-G1-1	10/06/94	< 1.2	< 1.1	< 1.1	< 180
079894	SX-GW-G1-1	01/12/95	< 1.6	< 1.4	< 1.5	< 190
081197	SX-GW-G1-1	04/05/95	< 3	< 2	< 3	< 130
082754	SX-GW-G1-1	07/13/95	< 1.3	< 1.2	< 1.3	< 160

Table 4-31, CV Pipe Tunnel Results (Activity in pCi/liter)

GPU ID	Station	Date	Co-60	Cs-134	Cs-137	H-3
075362	SX-GW-G1-6	03/16/94	< 1.5	< 1.4	7.6 ± 1.8	< 180
076959	SX-GW-G1-6	06/15/94	< 3	< 3	12 ± 3	< 130
078354	SX-GW-G1-6	09/20/94	< 4	< 3	< 4	< 180
079731	SX-GW-G1-6	12/15/94	< 3	< 2	16 ± 3	< 190
081185	SX-GW-G1-6	03/24/95	< 1.8	< 1.5	5.1 ± 1.6	< 180
082212	SX-GW-G1-6	06/06/95	< 3	< 2	8.1 ± 2.6	< 190

4.4.7 Analytical Methods

Bulk soil and water samples were collected and analyzed using methods described by the SNEC Radiological and Environmental Monitoring Program (Reference 31). Typically one liter (water) or 1 kilogram (soil and/or sediment) were obtained to meet minimum sensitivity requirements related to gamma/alpha spectroscopy (gamma emitting nuclides and transuranics), liquid scintillation counting (tritium) and proportional counting (strontium). Air particulate samples were run to achieve a volume of approximately 500 cubic meters and analyzed for gamma emitting nuclides.

4.4.8 Sample And Analysis Summary Listing For Samples External To SNEC CV

The total number of samples obtained external to the CV, and the type of analyses that were reported are listed in the following table.

Table 4-32, General Sampling Analysis Information

Sample Type	Number of Samples	Analysis Type
Site Characterization (soil)	538 22	Gamma Spec/Transuranics/ Strontium/Gamma Spec
Soil Remediation (soil)	381	Gamma Spec
Hazardous Material Profile	15	TCLP
Soil Density Profile	1	Compactiblity/ Moisture Content
Air Particulates	96	Gamma Spec/Gross Alpha/Gross Beta
Potable Water	19	Gamma Spec/Tritium/Gross Beta
Groundwater	87	Gamma Spec/Tritium
Sediment	27	Gamma Spec
Total Samples	1186	

The minimum sensitivities for typical analysis procedures are listed in the following tables.

Table 4-33, ERL Source/Sample Activity Tracking Sheet - Typical ERL Detection Limits.

Isotope	Method	Water LLDs pCi/L	MDLs	Method	Air LLDs pCi/m^3	MDLs	Method	Aquatic Biota LLDs pCi/KG (wet)	MDLs
Mn-54	A	1.9	1.2				J	9	5
Fe-59	A	4	2.4				J	20	12
Co-58	A	2	1.2				J	9	5
Co-60	A	2	1.2				J	11	7
Zn-65	A	4	2.4				J	20	12
Zr-95	A	4	2.4				J	16	10
Nb-95	A	2	1.2				J	10	6
Cs-134	A	1.8	1.1	F	0.0019	0.0012	J	8	5
Cs-137	A	2	1.2	F	0.002	0.0012	J	10	6
Ba-140	A	9	5.5						
La-140	A	4	2.4						
Gr-Alpha	B	0.9	0.5	G	0.0009	0.0005			
Gr-Beta	C	1.6	1.0	H	0.003	0.0018			
I-131	D	0.3	0.2	I	0.016	0.0097			
H-3	E	130	79				K	0.0001	0.00006

Table 4-33, Continued

Isotope	Method	Milk LLDs pCi/L	MDLs	Method	Terrestrial Vegetation/ Meat LLDs pCi/KG(wet)	MDLs	Method	Sediment & Soil LLDs pCi/KG (dry)	MDLs
Mn-54	A	1.9	1.2				L	15	9
Fe-59	A	4	2.4				L	40	24
Co-58	A	2	1.2				L	15	9
Co-60	A	2	1.2				L	17	10
Zn-65	A	4	2.4				L	40	24
Zr-95	A	4	2.4				L	30	18
Nb-95	A	2	1.2				L	20	12
Cs-134	A	1.8	1.1	L	10	6	L	13	8
Cs-137	A	2	1.2	L	12	7	L	20	12
Ba-140	A	9	5.5						
La-140	A	4	2.4						
Gr-Alpha									
Gr-Beta									
I-131	M	0.3	0.18	L	18	11			
H-3									

Methods Legend

A 3.5 Liters for 50K Seconds
B 0.4 Liters for 100 Minutes with 0.2 cpm bkgnd and 25% Efficiency.
C 0.4 Liters for 100 Minutes with 1.3 cpm bkgnd and 40% Efficiency.
D 3.5 Liters for 60K Seconds
E 7mls for 220 Minutes with 4 cpm bkgnd and 27% Efficiency.
F 2700 Cubic Meters for 4K Seconds
G 680 Cubic Meters for 100 Minutes with 0.5 cpm bkgnd and 27% Efficiency.
H 680 Cubic Meters for 20 Minutes with 3.5 cpm bkgnd and 47% Efficiency.
I 680 Cubic Meters for 1K Seconds
J 1 KG for 10K Seconds
K 7g for 240 Minutes with 4 cpm bkgnd and 27% Efficiency.
L 1 KG for 14K Seconds
M 3.5 Liters for 60K Seconds with 95% recovery

4.4.9 Summary Of Environmental Results External To SNEC CV

The results of soil sampling and analyses are discussed in Sections 4.4.4 - 4.4.5 and in related and referenced documents.

Air particulate stations are put into service whenever any site radiological operations are being performed. The particulate filter is analyzed for gross alpha, gross beta and gamma scanned, and only the positive activities detected are listed in this report. Three environmental air sampling stations are located around the site and

one control station is located 10 miles from the site. In general, the weekly trends of gross alpha and gross beta activity at all stations are similar. Gamma-emitting radionuclides related to the SNEC Facility operation were not detected on any of the samples. As expected, all of the samples contained naturally occurring Be-7. Concentrations detected are similar on both indicator and control filters.

Ten environmental monitoring well stations plus two potable ground water stations are sampled at least quarterly. Periodically, low levels of tritium (200-600 pCi/L) have been detected in one of the environmental groundwater monitoring wells (GEO-5). Beneath this area is the former site of the Radiological Waste Disposal Facility tunnel. It is likely that this positive result is due to residual tritium from activity in this area arising from plant operation. Nevertheless, tritium concentrations from this station are well below the United States Environmental Protection Agency Primary Drinking Water Standard of 20,000 pCi/l. Gamma scans from this station, as well as all other groundwater well stations, have always resulted in less than detectable limits.

Low levels of Cs-137, and at times Co-60, have been detected in aquatic sediment samples collected near the SNEC facility (SX-SD-A1-1 and SX-SD-C1-1) and at the discharge to the river (SX-SD-A1-4). Cs-137 was also detected in the control station (SX-SD-Q1-4), which is secured upstream from the discharge. The results are not surprising since these radionuclides have a propensity to attach to sediment. Levels have been much lower since the completion of the soil remediation project. K-40, Ra-226 and Th-232 are naturally occurring isotopes and present in all sediment. The discharge to the river was plugged in 1993.

The CV Pipe Tunnel (SX-GW-G1-6) station is deemed a radiological as opposed to an environmental station. This sample is monitored for trending purposes. Positive Cs-137 results are typical for this station due to its close proximity to the containment vessel.

4.4.10 Data Reporting and Analysis For Hazardous Materials Within The CV

A. Asbestos Containing Material

The results of the asbestos analysis include: (1) the sample identification number and location; (2) the asbestos type and approximate amount; (3) the presence of non-asbestos fibers and approximate amount; and (4) the presence of non-fibrous materials (listed in source data files).

B. Full TCLP, Inorganic Analysis

The results of the contaminant analysis include: (1) the sample identification number and location; (2) the materials tested; (3) the result in mg/liter or ug/gm (or similar units); and (4) the detection method and limit.

C. Total Metals Analysis

Total Metal Analysis was used as a screening test. The metals selected represent typical metals found in paints. The results are reported in mg/kg. When the Total Metals Analysis exceed any of the below listed action levels for the target metals, full TCLP, inorganic analysis were performed.

Action Levels

100 mg/kg for Lead

20 mg/kg for Cadmium

100 mg/kg for Chromium

D. PCB Containing Material

The results of the PCB analysis include: 1) the sample identification number and location; 2) the material tested; and, 3) the results in ppm (or similar units).

4.4.11 SNEC Site Characterization Plan Reporting

The following are the suggested data collection requirements as presented within the SNEC SCP.

Asbestos

- Location of sample
- Type and % of asbestos fibers present
- Type and % of non-asbestos fibers present
- Presence of non-fibrous materials

Total Metals Analyses

- Location of sample
- Test/parameter (metal tested) - Results (mg/kg)

TCLP, Inorganic Analysis: (Metal Contaminants)

- Location of sample
- Test/Parameter (metal tested)
- Results (mg/l)
- Detection limit

PCB's

- Location
- Results (ppm)

4.4.12 PCB Sampling Results

A review of components inside the SNEC facility CV, indicates that the only polychlorinated biphenyl's (PCB's) present are the lamp ballast's for the mercury lamps in the overhead of the CV. There are eight lamps with ballast's manufactured by the Jefferson Electric Company, of Bellwood, Illinois. These items are catalog number 232-441.

Research indicates these definitely contain PCB laden materials and that sampling to confirm this is more expensive than disposal as PCB bearing material. Ballast units are totally sealed and are surface contaminated only. A sample ballast has been decontaminated to current free release criteria suggesting that all ballast units may be successfully free released and disposed of as simple hazardous waste and not as mixed waste.

4.4.13 Bulk Lead Inventory

A bulk lead inventory of the SNEC facility was conducted during the characterization program. The results of the lead inventory have been documented within SNEC Technical Evaluation 6575-95-001 (Reference 100). A summary of the results indicate that there is approximately 14,000 pounds of lead within the SNEC CV. This material is largely lead bricks and sheet lead. Additionally, there are some lead blankets of various sizes and some instrument shields of solid lead casting that comprise the remainder of the inventory. Some of the lead materials (bricks) have been laying in water within the Storage Well. The result is that some leaching of lead compounds has occurred into water and resin material present within this area.

4.4.14 Lead in Paint And Other Sample Materials

Since the Saxton Nuclear Experimental Corporation facility was built in the early 1960's, it was presumed that a majority, if not all paint used during the construction of the facility contained a certain percentage of lead. A sample of paint taken from the exterior of the building has show some lead content (~1.67% lead). Several composite samples of paint and surface coating materials were obtained and sent to B&W for a total lead content analysis and a Toxicity Characteristics Leaching Procedure (TCLP). The results showed that lead materials are present in surface coating from within the SNEC CV. Lead is also present in resin materials that cover the Storage Well floor area within the CV. The reason for this is probably due to leaching of lead compounds from lead shielding remaining within the CV. Additional testing for lead in paint materials will be performed during or prior to decommissioning. All paint will be assumed to contain lead until determined otherwise. TCLP results are reported in section 4.4.16.

When piping or other components have to be burned into sections for removal purposes, the suspected lead based paint will be removed at the burn location to reduce the airborne concentration of lead. Removing the lead based paint would eliminate the need to comply with the OSHA lead standard. Removal of the lead based paint can be accomplished by the use of paint strippers. If paint strippers cannot be used, then the OSHA lead standard would be applicable due to potentially elevated airborne concentrations of lead produced during the burning process. The table below presents total lead analysis results for several SNEC waste materials.

Table 4-34, Total Lead Content Of Surface Coatings And Resin Materials

SNEC Sample No.	Sample Materials	Analytical Method	Results
SX8C6950083	Paint Chips, AREAS 1,2,3 & 4	SW846 6010	34,200 mg/Kg
SX8C6950084	Paint Chips, AREA 6 (SW)	SW846 6010	16.4 mg/Kg
SX866950115 (Liquid)	Storage Well Resin Water	SW846 6010	29.7 mg/L
SX866950115 (Solids)	Storage Well Resin Solids	SW846 6010	1880 mg/Kg

4.4.15 Asbestos Sampling Results

Since the Saxton Nuclear Experimental Facility was built in the early 1960's, it was presumed prior to sampling, that a majority if not all insulation used during the construction of the facility contained a certain percentage of asbestos.

During May 8 through the 10 of 1995, bulk insulation samples were taken of various components, piping systems and vessels throughout the SNEC containment building. The location of the samples taken were identified by a specific number for that sampling point (example BAsb-001-95). This sampling point number was attached to the exact location (when practicable), where the core insulation sample was taken. The sample point locations and sample numbers were entered into the computer data tracking system developed by GPUN called NREX. The piping and component system analysis results are identified within table 4-35 following this section.

The bulk samples collected were analyzed on-site by Polarized Light Microscopy (PLM). The analysis was conducted by a lab technician from the GPUN System Laboratory in

Reading, PA. The System Lab is certified by the National Voluntary Laboratories Accreditation Program (NVLAP) for bulk insulation identification for asbestos. The analyst is certified by McCrone Research Institute for PLM.

During this sampling period, a total of 61 bulk insulation samples were taken. In previous studies, nine additional bulk insulation samples were also taken. Out of these 72 total samples, it appears that the only insulation that does not contain any asbestos is the insulation on the straight pipe runs for the HVAC system. These straight pipe runs contain fiberglass. However, the elbows, valves and tees for the HVAC systems contain troweled-on insulation containing asbestos. All bulk insulation samples that were identified to contain asbestos consist of either chrysotile or amosite asbestos fibers. Any piping system that needs to have the insulation removed, and has not been sampled, will be presumed asbestos containing material (PACM) and treated accordingly until determined otherwise.

The following standard practices are possible ways to handle the asbestos insulation without increasing the potential for airborne release to unprotected workers during demolition.

1. Using Pennsylvania certified asbestos workers, remove all asbestos insulation before any other demolition activities commence. This would remove the concerns of asbestos exposure by accidental contact with the asbestos insulation during pipe, component and vessel removal.

2. Commission a consulting firm that has experience in safety and industrial hygiene and is able to do analysis for PLM and Phase Contrast Microscopy (PCM) on site. The safety and industrial hygiene experience should be in demolition and asbestos abatement, confined space entry requirements, and scaffolding use.

3. Commission an asbestos abatement firm and contractor that has Pennsylvania certified workers and has experience in large scale asbestos abatement projects.

4. Remove the non-asbestos insulation prior to removing the asbestos insulation.

Table 4-35, Asbestos Sampling Requirements Listed In SCP And Assigned Results

SYSTEM	LOCATION	MATERIAL
Main Coolant System	Steam Generator	ACM
	Main Coolant Pump	ACM
	Main Coolant Piping	ACM
	Fitting	ACM
	Pipe	ACM
Pressure Control & Relief System	Pressurizer	ACM
	Piping	ACM
	Fitting	ACM
	Pipe	ACM
Purification System	Regenerative Heat Exchanger	ACM
	Non-Regenerative Heat Exchanger	ACM
	Piping	ACM
	Fitting	ACM
	Pipe	ACM
Component Cooling System	Component Cooling Heat Exchanger	ACM
	Piping	ACM
	Fitting	ACM
	Pipe	ACM
Sampling & Leak Detection System	Piping	PACM
	Fitting	PACM
	Pipe	PACM
Shutdown Cooling System	Shutdown Cooling Heat Exchanger	ACM
	Piping	ACM
	Fitting	ACM
	Pipe	ACM
Safety Injection System	Piping	PACM
	Fitting	PACM
	Pipe	PACM
Storage Well System	Storage Well Heat Exchanger	ACM
	Piping	ACM
	Fitting	ACM
	Pipe	ACM
Cooling Heating & Ventilation	Air Handlers - Auxiliary Compartment	PACM
	- Primary Compartment	PACM
	- Rod Room	PACM
	- Operating Floor	PACM
	- Piping - Steam Supply & Returns - Water Supply & Returns	Elbows, Tees, Valves & Y's Contain Asbestos. Straight Runs Of Pipe Are Fiberglass
Secondary Side Systems	Main Feedwater Piping	PACM
	Fitting	PACM
	Pipe	PACM
	Main Steam Piping	PACM
	Fitting	PACM
	Pipe	PACM
	Blowdown Pipe	PACM
	Fitting	PACM
	Pipe	PACM

ACM - Asbestos Containing Material
PACM - Presumed Asbestos Containing Material

The following table presents the analytical results from the asbestos sampling program.

Table 4-36, Asbestos - Bulk Sample Results

Sample Number	Location	Asbestos Type & % Of Total	Non-Asbestos Materials & % Of Total
BASB 0001 95	CC Hx Exchanger - 795' El.	Chrysotile 3%	Mineral Wool 50%
BASB 0002 95	Valve Elbow V-1552, 795' El.	Chrysotile 5%	Mineral Wool 10%
BASB 0003 95	CC Hx Exchanger - 795' El.	Chrysotile 3%	Mineral Wool 30%
BASB 0004 95	Valve Body V-1572, 795' El.	Chrysotile 5%	Cellulose 2%, Mineral Wool 5%
BASB 0005 95	V-167, By Hx Exchanger, 795' El.	Not Identified	Cellulose 65%, Mineral Wool 20%
BASB 0006 95	Linkage Transmitter, V-1549, 795' El..	Chrysotile 5%	Mineral Wool 12%
BASB 0007 95	White Cloth V-167, 795' El.	Chrysotile 5%	Mineral Wool 12%
BASB 0008 95	V-1549, 795' El.	Amosite 10%	Not Identified
BASB 0009 95	Auxiliary Steam Line, By CC Pump 1	Amosite 10%	Not Identified
BASB 0010 95	Under Steps, 795' El.	Amosite 8%	Mineral Wool 2%
BASB 0011 95	3' Above Valve V-1602, 795' El.	Chrysotile 5%	Mineral Wool 7%
BASB 0012 95	Condensate Return By Pump 1	Amosite 10%	Not Identified
BASB 0013 95	Above Valve V-2170, 781' El.	Chrysotile 3%	Mineral Wool 15%
BASB 0014 95	Below Valve, V-1586	Chrysotile 10%	Mineral Wool 5%
BASB 0015 95	By Transmitter, 781' El.	Chrysotile 5%	Mineral Wool 10%
BASB 0016 95	Storage Well Hx Exchanger, 781' El.	Chrysotile 2%	Mineral Wool 25%
BASB 0017 95	Storage Well Hx Exchanger, 781' El.	Chrysotile 3%	Mineral Wool 10%
BASB 0018 95	Elbow Of V-1553, 781' El.	Chrysotile 3%	Mineral Wool 12%
BASB 0019 95	Valve Body Of V-1585, 781' El.	Chrysotile 15%	Mineral Wool 2%
BASB 0020 95	90° Cooling Water Lines, 765' El.	Chrysotile 5%	Cellulose 15%, Mineral Wool 30%
BASB 0021 95	Upstream Of Valve V-1559, 765' El.	Amosite 12%	Not Identified
BASB 0022 95	Body Of Valve V-1140, 765' El.	Chrysotile 5%	Mineral Wool 10%
BASB 0023 95	Discharge Of Pump, 765' El.	Amosite 15%	Not Identified
BASB 0024 95	Between V-1139 & V-1140, 765' El.	Amosite 15%	Not Identified
BASB 0025 95	Pipe Elbow Off Pump, 765' El..	Chrysotile 3%	Cellulose 25%, Mineral Wool 10%
BASB 0026 95	Shutdown Cooling "T", 765' El.	Chrysotile 5%	Mineral Wool 10%
BASB 0027 95	Equipment Drain Tank, 765' El.	Chrysotile 5%	Mineral Wool 10%
BASB 0028 95	Equipment Drain Tank, 765' El.	Amosite 15%	Not Identified
BASB 0029 95	Discharge Tank Pump 2, LIC 21V Top	Amosite 20%	Not Identified
BASB 0030 95	LRC 21V, 781' El.	Chrysotile 3%	Mineral Wool 20%
BASB 0031 95	TIC 21V, 781' El.	Amosite 20%	Not Identified
BASB 0032 95	HVAC Unit Piping Elbow, 781' El.	Chrysotile 5%	Cellulose 25%, Mineral Wool 10%
BASB 0033 95	From LRC 21V To V-400, 781' El.	Amosite 60%	Not Identified
BASB 0034 95	Green Hx Exchanger, 781' El.	Amosite 15%	Cellulose 20%
BASB 0035 95	To LRC 21V Below V-401, 781' El.	Amosite 60%	Cellulose 5%
BASB 0036 95	Shutdown Cooling Line, 781' El.	Amosite 30%	Not Identified
BASB 0037 95	RV-60, Left Of Door ~6' Up, 781' El.	Amosite 60%	Not Identified
BASB 0038 95	Under V-57, ~4' Up, 781' El.	Chrysotile 7%	Mineral Wool 12%
BASB 0039 95	HIC-31V Shutdown Cooling, 781' El.	Chrysotile 3%	Mineral Wool 25%
BASB 0040 95	PZR Relief & Safeties, 795' El.	Amosite 60%	Not Identified
BASB 0041 95	RC Pump, 795' El.	Amosite 10%, Chrysotile 3%	Cellulose 20%, Mineral Wool 2%
BASB 0042 95	PZR Spray Line, 795' El.	Amosite 60%	Not Identified

Sample Number	Location	Asbestos Type & % Of Total	Non-Asbestos Materials & % Of Total
BASB 0043 95	RC Line Pump, 795' El.	Amosite 60%	Not Identified
BASB 0044 95	HTC-27V Inlet Valve, 795' El.	Chrysotile 7%	Mineral Wool 10%
BASB 0045 95	PZR Relief & Safety Valves, 795' El.	Amosite 60%	Not Identified
BASB 0046 95	Line Off Pump, `6" Up, 795' El.	Amosite 60%	Not Identified
BASB 0047 95	Charging Pump Return Line , 796' El.	Amosite 60%	Not Identified
BASB 0048 95	Side Of PZR , 795' El.	Amosite 40%	Not Identified
BASB 0049 95	Steam Generator , 800' El.	Amosite 60%	Cellulose 15%
BASB 0050 95	Line From PZR, 795' El.	Amosite 35%	Not Identified
BASB 0051 95	LIC 2 Tank By PZR , 795' El.	Amosite 60%	Not Identified
BASB 0052 95	Steam Generator White Cloth, 800' El.	Chrysotile 60%	Synthetic 40%
BASB 0053 95	Line By V-305 Top Of PZR, 795' El.	Chrysotile 5%	Mineral Wool 15%
BASB 0054 95	V-21U Above S/G, 800' El.	Amosite 60%	Not Identified
BASB 0055 95	Line From S/G To RCP, 795' El.	Chrysotile 7%	Mineral Wool 15%
BASB 0056 95	V-2456 By PZR Top, 800' El.	Amosite 25%	Cellulose 20%
BASB 0057 95	Line From RV To S/G, 795' El.	Amosite 60%	Not Identified
BASB 0058 95	Bottom Of PZR, 795' El.	Amosite 60%	Not Identified
BASB 0059 95	V-409 Top Of PZR, 800' El.	Amosite 60%	Not Identified
BASB 0060 95	Top Of PZR, Cloth Covered , 800' El.	Amosite 60%	Not Identified
BASB 0061 95	By Storage Wall, Cloth , 800' El.	Not Identified	Cellulose 50%
BAsb-194-91	Flange On CC Hx Exchanger	Chrysotile 30%	Not Identified
BAsb-195-91	River Water Pipe Elbow	Chrysotile 5%	Glass Fibers 15%
BAsb-196-91	River Water For HVAC	Chrysotile 35%	Not Identified
BAsb-197-91	Regenerative Heat Exchanger	Chrysotile 8%	Glass Fibers 15%
BAsb-198-91	Storage Well Heat Exchanger	Amosite 40%	Not Identified
BAsb-199-91	Storage Well Heat Exchanger	Not Identified	Cellulose 10%, Glass Fibers 10%
BAsb-200-91	Chiller Piping Metal Jacket	Amosite 15%	Glass Fibers 5%
BAsb-202-91	Main Feedwater Piping	Not Identified	Glass Fibers 20%
BAsb-203-91	Heat Exchanger	Amosite 25%	Not Identified

In addition to the asbestos insulation samples listed above, composite paint chips and surface coatings were analyzed for the presence of asbestos materials. The following table lists these analysis results. No asbestos materials have been found in this material.

Table 4-37, Composite Surface Samples From SNEC CV (CV AREAS 1, 2, 3, 4 & 6)

Sample Numbers	Weight (g)	Asbestos Fibers ?	Total % Asbestos	% Other Materials
SX8C69500083 AREAS 1,2,3 & 4 9509066-02AA*	35.973	No	0%	Cellulose 1-2%
SX8C69500084 AREA 6 9509066-03AA*	19.94	No	0%	Cellulose <1%

*B & W Sample Number

4.4.16 TCLP, Inorganics Sampling Results

Toxicity Characteristics Leaching Procedure (TCLP) criteria for inorganics were tested on samples from the SNEC facility Discharge Tank, composite surface coating samples from various locations, and resin from the Storage Well. Based on the analysis, paint/coating materials contain no toxic metals above the TCLP limits. Sediment removed from the Discharge Tank also contained no metals above TCLP levels. Therefore, paint/coatings removed from within the reactor building and sediment removed from the Discharge Tank do not incur any additional hazard from toxic metals. However, the Storage Well resins contain lead (7.2 mg/L) above the TCLP limit and would be considered mixed low-level hazardous waste if disposed of without additional treatment.

Treatment of resins to remove the EPA hazardous waste characteristic includes several options. Since the original sample contained both resins and water from the Storage Well, and the lead is contained principally in the water phase, the resins can be separated or washed to remove the hazardous properties prior to disposal. The water can be processed with other aqueous radiological wastes. If the lead is actually attached on the resin, regeneration may remove the lead. The resin or resin/water mixture may also be solidified to prevent lead from leaching from the waste. This will render the waste nonhazardous. Additional TCLP sampling will be needed to further define SNEC facility waste prior to disposal, and to develop options for the Storage Well resins.

Table 4-38, TCLP Extraction/Metals Analysis Results

Analyte	DischargeTank Sediment SX815950068	AREAS 1, 2, 3 & 4 Paint/Coating SX8C6950083	AREA 6 Paint/Coatings SX8C6950084	AREA 6 Resin SX866950115	Limit (mg/L)
Arsenic	<0.5 mg/L	<0.5 mg/L	<0.5 mg/L	<0.5 mg/L	5.0
Barium	<10.0 mg/L	<10.0 mg/L	<10.0 mg/L	<10.0 mg/L	100.0
Cadmium	0.40 mg/L	<0.1 mg/L	<0.1 mg/L	0.12 mg/L	1.0
Chromium	<0.5 mg/L	<0.5 mg/L	<0.5 mg/L	<0.5 mg/L	5.0
Lead	<0.5 mg/L	<0.5 mg/L	<0.5 mg/L	**7.2 mg/L**	**5.0**
Mercury	<0.021 mg/L	0.055 mg/L	<0.021 mg/L	<0.021 mg/L	0.2
Selenium	<0.16 mg/L	<0.16 mg/L	<0.16 mg/L	<0.16 mg/L	1.0
Silver	<0.5 mg/L	<0.5 mg/L	<0.5 mg/L	<0.5 mg/L	5.0

4.4.17 Bulk Cadmium & Mercury

Cadmium:

During the lead inventory, a sheet of cadmium was uncovered which had been employed in a failed fuel detector experiment. This sheet, measuring approximately 20 inches by 18 inches by 0.028 inches thick, is a surface contaminated object which will be decontaminated and free released for recycle or disposed of as a hazardous waste.

Mercury:

During interviews with Northern States Power Corporation, personnel who had been involved in the decommissioning of the Pathfinder Nuclear facility, it was uncovered that some of the instrument transmitters in the SNEC facility CV may contain small amounts of elemental mercury. This mercury, if present, would need to be removed prior to disposal of these instruments. Contacts made with some of the transmitter manufacturers confirmed that they are likely to contain small quantities of mercury in sealed bellows and or bulbs. Devices which are suspected of containing mercury will be disassembled to confirm its presence. Any mercury is likely to be contained within sealed components and hence should not be radiologically contaminated. This will be verified prior to disposal and or recycle. There are approximately 55 devices in this category.

4.5 DATA TABLES

Table 4-39, AREA 1, (~5 mR/h General Area)
* Denotes Average Contact Exposure Rate Values Unless Otherwise Noted

COMPONENTS & LOCATIONS	MEAN SMEAR DPM/100CM2	RANGE OF SMEAR DPM/100CM2	*CONTACT mR/h	DIRECT FRISK CPM
765' 8" El. CONCRETE FLOOR	~33,100	~2,100 to ~120,000	Not Taken	~24,000
768' 3" El. Concrete Ledge	~15,000	~2,300 to ~45,000	Not Taken	~10,000
765' 2" El. Sump	~107,000	~50,000 to ~160,000	~2.5 Inside	N/A
775' 2" El. Concrete Ceiling	~ 1,100	1,000 to ~2,000	Not Taken	~770
Concrete Walls	~6,700	~250 to ~67,000	Not Taken	~2,300
781' 4" El. Steel Platform	~1,400	1,000 to ~2,000	Not Taken	~5,400
Other Surfaces	~41,000	~360 to ~480,000	Not Taken	~12,000
Instrument Racks 1 & 2	~64,000	~50,000 to ~75,000	~16	Not Taken
Shutdown Cooling Heat Exchanger	Not Taken	Not Taken	~18.4	Not Taken
Shutdown Cooling Pumps	~654,000	~500,000 to ~796,000	~12	Not Taken
Cond. Return Pump	~500	MDA to ~880	0.2	Not Taken
Cond. Return Tank	~2,600	MDA to ~11,600	0.2	Not Taken
PZR Discharge Tank	~7,000 One Smear	Not Taken	~63.4	Not Taken
Discharge Tank Pumps	~10,600 One Smear	Not Taken	~5.9	~10,800
Sump Pumps	Not Taken	Not Taken	~2.5 In Sump by Pumps	Not Taken
SW Demin. Suction Filter	Not Taken	Not Taken	~3.2	Not Taken
Purification Filter	~130,000 One Smear	Not Taken	~2.6	Not Taken
SW Demin. Discharge Filter	Not Taken	Not Taken	~6.5	Not Taken
Rod Room Air Handler	~880	~360 to ~1,400	< 0.2	~750
Rod Room Vent Fan	~2,100	~750 to ~3,500	Not Taken	~700
CRDM's	~3,000 One Smear	~1,000 to 6,600	Not Taken	~4,000
Fuel Storage Rack	~8,300	~8,100 to ~8,400	Not Taken	Not Taken

Table 4-40, AREA 2, (~11 mR/h General Area)

COMPONENTS & LOCATIONS	MEAN SMEAR DPM/100CM2	RANGE OF SMEAR DPM/100CM2	*CONTACT mR/h	DIRECT FRISK CPM
779' 8" El. Concrete Floor	~55,000	~1,800 to ~1.1E6	Not Taken	~21,000
814' 6" El. Concrete Ceiling	~800	~240 to ~1,000	Not Taken	~800
Concrete Walls	~1,800	~110 to ~24,000	Not Taken	~10,600
789' 4" El. Steel Platform	~107,000	~1,500 to ~300,000	Not Taken	Not Taken
795' 2" El. Steel Platform	~8,700	~6,200 to ~11,000	Not Taken	~7,700
807' El. Steel Platform	~3,500	~2,000 to ~6,000	Not Taken	Not Taken
Other Surfaces	~75,000	~1,150 to ~570,000	Not Taken	~7,800
Steam Generator	~5,300	~2,000 to ~13,500	~23.2	Not Taken
Pressurizer	~9,100	~980 to ~33,400	~2.7	Not Taken
Reactor Coolant Pump	~55,210	~4,500 to ~180,000	~2.6	Not Taken
Regenerative Heat Exchanger	~22,200	~1,100 to ~100,000	~101	Not Taken
Non-Regenerative Heat Exchanger	~4,000	~1,300 to ~9,100	~6.3	~12,000
Instrument Rack	~571,000	~32,000 to ~750,000	~6.6	Not Taken
Over Head Air Handler	Not Taken	Not Taken	<1.0	Not Taken
Primary Air Handler	~15,100	~2,700 to ~27,000	~4	~25,000

Table 4-41, AREA 3, (~3 mR/h General Area)

COMPONENTS & LOCATIONS	MEAN SMEAR DPM/100CM2	RANGE OF SMEAR DPM/100CM2	*CONTACT mR/h	DIRECT FRISK CPM
781' 4" El. Steel Platform	~8,100	~1,200 to ~47,500	Not Taken	~7,800
795' 2" El. Steel Platform	~2,000	~860 to ~4,400	Not Taken	~3,000
Concrete Ceiling	~790	~230 to ~1,000	Not Taken	Not Taken
Concrete Walls	~610	~230 to ~4,900	Not Taken	~6,600
Other Surfaces	~6,100	~460 to ~59,000	Not Taken	~5,900
Storage Well Heat Exchanger	Not Taken	Not Taken	1.4	Not Taken
Storage Well Pumps	Not Taken	Not Taken	0.9	Not Taken
Component Cooling Heat Exchanger	~3,800	~1,700 to ~8,600	0.2	~500
Component Cooling Storage Tank	< 1,000	< 1,000	Not Taken	950
Component Cooling Pumps	~16,500	~6,900 to ~38,400	0.2	~2,100
Auxiliary Air Handler	~7,000	~1,900 to ~12,000	1.0	~12,000
Operating Area Air Handler	~13,500	~1,000 to ~26,000	Not Taken	~21,000

Table 4-42, AREA 4, (~0.2 mR/h General Area)

COMPONENTS & LOCATIONS	MEAN SMEAR DPM/100CM2	RANGE OF SMEAR DPM/100CM2	*CONTACT mR/h	DIRECT FRISK CPM
812' El. Ops. Floor Concrete	~360	~250 to ~1,500	Not Taken	~1,700
818' El. Ops. Floor Concrete	~1,030	~1,000 to ~1,500	Not Taken	~450
818' El. Steel Platform	~1,000	≤1,000	Not Taken	~3,500
Concrete Walls	~270	~270 to ~1,000	Not Taken	~380
812' to 818' El. Steel Walls	~270	~250 to ~370	Not Taken	~100
818' to 845' El. Steel Walls	~280	~260 to ~520	Not Taken	Not Taken
Movable Bridge	~870	~270 to ~2,000	Not Taken	~800
Polar Crane	~1,300	~280 to ~3,500	Not Taken	~2,900
CV Upper Dome	1,000	≤1,000	Not Taken	~60
Equipment Access Hatch	~290	~250 t0 ~370	Not Taken	~1,200
Personnel Access Hatch	~530	~260 to ~9,100	Not Taken	~200
Escape Hatch	~1,700	~790 to ~8,900	< 0.2	Not Taken
Other Surfaces	~1,200	~250 to ~5,400	Not Taken	~1,400
Ventilation Cavity Eq. Rails	~870	~270 to ~2,200	Not Taken	Not Taken
Contaminated Pumps (3 ea)	~294,000	~1000 to ~4.8e6	~0.3	Not Taken
Electrical Distribution Box	~3,500	~1,040 to ~5,300	Not Taken	Not Taken
Tool Rack	~1,500 One Smear	Not Taken	Not Taken	~2,800
Fuel Handling Tools	Not Taken	Not Taken	Not Taken	Not Taken
Teleflex Shield	~330	~260 to ~1,100	Not Taken	Not Taken
Fuel Transfer Cask Skid	~400	~250 to ~520	Not Taken	~600
Head Stand	~290	~270 to ~350	Not Taken	~600
Lights	Not Taken	Not Taken	Not Taken	Not Taken
Air Circulation Fan	~6,400	~1,000 to ~12,000	Not Taken	~16,800

Table 4-43, AREA 5, (~0.01 mR/h General Area)

COMPONENTS & LOCATIONS	MEAN SMEAR DPM/100CM2	RANGE OF SMEAR DPM/100CM2	*CONTACT mR/h	DIRECT FRISK CPM
803' El. Concrete Floor	Water Covered	Water Covered	Water Covered	Water Covered
803' to 811' El. Concrete Walls	< 220	≤ 220	Not Taken	~30
Concrete Ceiling	< 220	≤ 220	Not Taken	~10
Exposed Steel	Not Taken	Not Taken	Not Taken	Not Taken

Table 4-44, AREA 6, (~200 mR/h General Area)

COMPONENTS & LOCATIONS	MEAN SMEAR DPM/100CM2	RANGE OF SMEAR DPM/100CM2	*CONTACT mR/h	DIRECT FRISK CPM
765' 8" El. Concrete Floor	~2.7E6	~2.4E6 to ~3E6	Not Taken	N/A
807' El. Concrete Ceiling	Not Taken	Not Taken	Not Taken	Not Taken
Concrete Walls Reactor Side	~31,600	~2,000 to ~100,000	Not Taken	N/A
Concrete Walls Storage Well Side	~470,000	~20,000 to ~4.8E6	Not Taken	N/A
793' 2" El. Steel Platform	~138,000	~55,000 to ~323,000	Not Taken	N/A
768' 3" El. Concrete Ledge	~1.74E6	~420,000 to ~2.4E6	Not Taken	N/A
779' 8" El. Concrete Floor	~200,000 One Smear	Not Taken	Not Taken	N/A
800' 6" El. Steel Platform	~240,000	~20,000 to ~1.1E6	Not Taken	N/A
Reactor Vessel	~8.5E5	~60,000 to ~2.4E6	~5,000 (Highest)	N/A
Reactor Vessel Upper Support Casing	~29,600	~2,900 to ~140,000	Not Taken	N/A
Reactor Vessel Piping	Not Taken	Not Taken	~52	N/A
Reactor Vessel Support Structure	8.5E5	~60,000 to ~2.4E6	~5,000 (From RV)	N/A
RV Head Lift Rigging	Not Taken	Not Taken	Not Taken	N/A
Internals Rigging	Not Taken	Not Taken	Not Taken	N/A
Support Stand	Not Taken	Not Taken	Not Taken	N/A
Spent Fuel Pool Elevator	~150,000	~100,000 to ~200,000	Not Taken	N/A
Super Heated Test Equipment	Not Taken	Not Taken	~12	N/A
Tripod	Not Taken	Not Taken	Not Taken	N/A
Spent Fuel Storage Racks	~134,000	~39,000 to ~424,000	Not Taken	N/A
Boric Acid Demineralizer	~1.8E6 One Smear	Not Taken	~8,333	N/A
Storage Well Demineralizer	~4.8E6 One Smear	Not Taken	~282	N/A
Purification Demineralizer	~60,000 One Smear	Not Taken	~242	N/A
Other Surfaces	~150,000	~100,000 to ~200,000	Not Taken	N/A

Table 4-45, AREA 7, (~0.017 mR/h General Area around CV outside)

COMPONENTS & LOCATIONS	MEAN SMEAR DPM/100CM2	RANGE OF SMEAR DPM/100CM2	*CONTACT mR/h	DIRECT FRISK CPM
811' to 817' El. Steel Walls	<1,000	≤1,000	Not Taken	~BKGND
817' to 845' El. Steel Walls	<224	≤ 224	Not Taken	~70
845' to 870' El. Steel Dome	<224	≤ 224	Not Taken	~230
Concrete Wall (Horizontal)	<1,000	≤ 1,000	Not Taken	~BKGND
Concrete Wall (Vertical)	<1,000	≤ 1,000	Not Taken	~BKGND

Table 4-46, AREA 8, (~0.011 mR/h General Area average)

COMPONENTS & LOCATIONS	MEAN SMEAR DPM/100CM2	RANGE OF SMEAR DPM/100CM2	*CONTACT mR/h	DIRECT FRISK CPM
Septic Tank "A"	------	-------	0.023 G.A in Tank	------
Concrete Floor	Sediment Covered	Sediment Covered	Sediment Covered	N/A
Concrete Walls	Not Taken	Not Taken	Not Taken	Not Taken
Concrete Ceiling	Not Taken	Not Taken	Not Taken	Not Taken
Concrete Manway	Not Taken	Not Taken	0.11	~BKGND
Septic Tank "B"	------	-------	0.012 G.A in Tank	------
Concrete Floor	Sediment Covered	Sediment Covered	Sediment Covered	N/A
Concrete Walls	Not Taken	Not Taken	Not Taken	Not Taken
Concrete Ceiling	Not Taken	Not Taken	Not Taken	Not Taken
Concrete Manway	Not Taken	Not Taken	0.065	~BKGND
Pump Well	------	-------	0.010 G.A in well	------
Concrete Floor	Sediment Covered	Sediment Covered	Sediment Covered	N/A
Concrete Walls	Not Taken	Not Taken	Not Taken	Not Taken
Concrete Ceiling	Not Taken	Not Taken	Not Taken	Not Taken
Concrete Manway	Not Taken	Not Taken	0.035	~BKGND
Concrete Block House Floor	Not Taken	Not Taken	Not Taken	Not Taken
Concrete Chlorinator/Weir	------	-------	------	------
Concrete Floor	239	≤ 239	Not Taken	~BKGND
Concrete Walls	239	≤ 239	0.010	~BKGND

Table 4-47 to Table 4-51, Alpha Surface Contamination Results

The following tables present typical AREA by AREA alpha surface contamination smear results (in DPM/100 cm^2), for the SNEC Containment building structural components (AREAS 1, 2, 3, 4 & 6).

Table 4-47, AREA 1

Structural Surface	Mean Smear DPM/100cm2	Range of Smear DPM/100cm2
765' 8" El. Concrete Floor	~30	8 to ~90
768' 3" El. Concrete Ledge	~20	8 to ~30
765' 2" El. CV Sump	~70	~20 to ~130
775' 2" El. Concrete Ceiling	~5 One Smear	Not Taken
Concrete Walls	~10	8 to ~80
781' 4" El. Steel Platform	~5 One smear	Not Taken
Other Misc. Surfaces	~40	8 to ~570

Table 4-48, AREA 2

Structural Surface	Mean Smear DPM/100cm2	Range of Smear DPM/100cm2
779' 8" El. Concrete Floor	~30	8 to ~120
814' 6" El. Concrete Ceiling	~10	5 to ~10
Concrete Walls	~8	~8 to ~10
789' El. Steam Generator Platform	~670	8 to 4700
795' El. Steam Generator Platform	~24	24 to ~24
870' El. Steam Generator Platform	~10	5 to ~25
Other Misc. Surfaces	~10	~0 to ~350

Table 4-49, AREA 3

Structural Surface	Mean Smear DPM/100cm2	Range of Smear DPM/100cm2
781' 4" El. Steel Platform	~10	8 to ~50
795' 2" El. Steel Platform	~10	8 to ~20
Concrete Ceiling	5 One Smear	Not Taken
Concrete walls	~ 8	8 to ~10
Other Misc. Surfaces	~10	8 to ~60

Table 4-50, AREA 4

Structural Surface	Mean Smear DPM/100cm2	Range of Smear DPM/100cm2
812' El. Operating Floor Concrete	8	8
818' El. Concrete Platform	5	5
818' El. Steel Platform	5	5
Concrete walls	5	5
Steel Walls	8	8
Polar Crane	~ 5	8
Other Misc. Surfaces	~8	8 to ~10

Table 4-51, AREA 6

Structural Surface	Mean Smear DPM/100cm2	Range of Smear DPM/100cm2
765' 8" El. Storage Well Concrete Floor	~560	~280 to ~840
Concrete Walls Reactor Side	~130	~6 to ~870
Concrete Walls Storage Well Side	~460	~30 to ~3,500
793' 2" El. Steel Platform	~1,400	~80 to ~4,800
768' 3" El. SW Concrete Ledge	~880	~230 to ~1,500
Reactor Vessel Support Can	~380	~10 to ~2,700
Fuel Storage Rack	~1,100	~700 to ~1,900
800' 6" El. Reactor Side Steel Platform	~110	~60 to ~200

Table 4-52, Air Particulate Station Results (Activity in pCi/M^3)

GPU ID	Sample Description	Stop Date & Time	Nuclide	Positive Result
77618	SX-AP-A1 -2	072894 @ 1335	Be-7	0.1400 ± 0.0500
			Gross Alpha	0.0017 ± 0.0006
			Gross Beta	0.0180 ± 0.0030
77711	SX-AP-A1 -2	080494	Be-7	0.1700 ± 0.0400
			Gross Alpha	0.0014 ± 0.0008
			Gross Beta	0.0210 ± 0.0020
77830	SX-AP-A1 -2	081194	Be-7	0.1200 ± 0.0500
			Gross Alpha	0.0014 ± 0.0008
			Gross Beta	0.0140 ± 0.0030
78073	SX-AP-A1 -2	081894 @ 1000	Be-7	0.1100 ± 0.0600
			Gross Alpha	0.0021 ± 0.0008
			Gross Beta	0.0210 ± 0.0030
78078	SX-AP-A1 -2	082594 @ 1520	Be-7	0.2000 ± 0.0800
			Gross Alpha	0.0020 ± 0.0008
			Gross Beta	0.0140 ± 0.0030
78164	SX-AP-A1 -2	090294 @ 0930	Be-7	0.1600 ± 0.0400
			Gross Alpha	0.0018 ± 0.0007
			Gross Beta	0.0250 ± 0.0040
78355	SX-AP-A1 -2	090994 @ 0845	Be-7	0.1400 ± 0.0600
			Gross Alpha	0.0016 ± 0.0007
			Gross Beta	0.0170 ± 0.0030
78359	SX-AP-A1 -2	091294 @ 1130	Be-7	0.3000 ± 0.1300
			Gross Alpha	0.0040 ± 0.0015
			Gross Beta	0.0560 ± 0.0090
78551	SX-AP-A1 -2	100194 @ 0740	Be-7	0.1000 ± 0.0400
			Gross Alpha	0.0010 ± 0.0005
			Gross Beta	0.0100 ± 0.0030
78900	SX-AP-A1 -2	100794 @ 1440	Be-7	0.1000 ± 0.0600
			Gross Alpha	0.0019 ± 0.0008
			Gross Beta	0.0140 ± 0.0040
78901	SX-AP-A1 -2	100794 @ 1440	Be-7	0.1300 ± 0.0500
			Gross Alpha	0.0014 ± 0.0008
			Gross Beta	0.0180 ± 0.0040
78905	SX-AP-A1 -2	101494 @ 1100	Be-7	0.1200 ± 0.0500
			Gross Alpha	0.0015 ± 0.0007
			Gross Beta	0.0160 ± 0.0030
78909	SX-AP-A1 -2	102194 @ 1250	Be-7	0.1500 ± 0.0500
			Gross Alpha	0.0017 ± 0.0007
			Gross Beta	0.0230 ± 0.0040
81923	SX-AP-A1 -2	051895 @ 1105	Be-7	0.0790 ± 0.0600
			Gross Alpha	0.0005 ± 0.0003
			Gross Beta	0.0100 ± 0.0030
82000	SX-AP-A1 -2	052695 @ 1400	Be-7	0.0860 ± 0.0810
			Gross Beta	0.0079 ± 0.0026
82001	SX-AP-A1 -2	052695 @ 1400	Be-7	0.1400 ± 0.0400
			Gross Beta	0.0120 ± 0.0030
82826	SX-AP-A1 -2	061695 @ 0930	Be-7	0.0130 ± 0.0800
			Gross Alpha	0.0022 ± 0.0011

GPU ID	Sample Description	Stop Date & Time	Nuclide	Positive Result
			Gross Beta	0.0093 ± 0.0023
82829	SX-AP-A1 -2	062295 @ 1215	Be-7	0.1700 ± 0.0900
			Gross Alpha	0.0052 ± 0.0015
			Gross Beta	0.0260 ± 0.0040
82832	SX-AP-A1 -2	062995 @ 1115	Be-7	0.0860 ± 0.0390
			Gross Beta	0.0066 ± 0.0024
82835	SX-AP-A1 -2	070695 @ 1000	Be-7	0.1700 ± 0.0500
			Gross Alpha	0.0029 ± 0.0012
			Gross Beta	0.0140 ± 0.0030
82871	SX-AP-A1 -2	071395 @ 1200	Be-7	0.0530 ± 0.0340
			Gross Alpha	0.0024 ± 0.0011
			Gross Beta	0.0090 ± 0.0025
78549	SX-AP-A1 -2	092394 @ 0810	Gross Alpha	0.0022 ± 0.0008
			Gross Beta	0.0120 ± 0.0030
82214	SX-AP-A1 -2	060195 @ 1120	Be-7	0.0750 ± 0.0430
			Gross Beta	0.0059 ± 0.0032
82218	SX-AP-A1 -2	060895 @ 1545	Be-7	0.1000 ± 0.0400
			Gross Alpha	0.0008 ± 0.0005
			Gross Beta	0.0140 ± 0.0030
77622	SX-AP-D1	072194 @ 2340	Gross Alpha	0.0040 ± 0.0025
			Gross Beta	0.0130 ± 0.0070
77708	SX-AP-D1 -1	072[illegible]94 @ 0906	Gross Beta	0.0250 ± 0.0100
77832	SX-AP-D1 -1	0811[illegible]4 @ 1435	Be-7	0.1200 ± 0.0700
			Gross Alpha	0.0019 ± 0.0009
			Gross Beta	0.0130 ± 0.0030
78074	SX-AP-D1 -1	081[illegible]94 @ 0911	Be-7	0.1300 ± 0.0900
			Gross Alpha	0.0044 ± 0.0019
			Gross Beta	0.0360 ± 0.0070
78079	SX-AP-D1 -1	082594 @ 1530	Be-7	0.1300 ± 0.0600
			Gross Alpha	0.0017 ± 0.0008
			Gross Beta	0.0160 ± 0.0030
78165	SX-AP-D1 -1	090294 @ 0950	Be-7	0.1100 ± 0.0500
			Gross Alpha	0.0022 ± 0.0008
			Gross Beta	0.0250 ± 0.0040
78358	SX-AP-D1 -1	090994 @ 1000	Be-7	0.1300 ± 0.0700
			Gross Alpha	0.0018 ± 0.0007
			Gross Beta	0.0160 ± 0.0030
78362	SX-AP-D1 -1	091694 @ 1410	Be-7	0.0910 ± 0.0570
			Gross Alpha	0.0015 ± 0.0006
			Gross Beta	0.0260 ± 0.0040
78553	SX-AP-D1 -1	100194 @ 1040	Be-7	0.0790 ± 0.0570
			Gross Alpha	0.0009 ± 0.0005
			Gross Beta	0.0095 ± 0.0026
78903	SX-AP-D1 -1	100794 @ 1510	Be-7	0.1300 ± 0.0700
			Gross Alpha	0.0014 ± 0.0008
			Gross Beta	0.0120 ± 0.0030
78908	SX-AP-D1 -1	101494 @ 1400	Be-7	0.1300 ± 0.0700
			Gross Alpha	0.0021 ± 0.0008
			Gross Beta	0.0160 ± 0.0030
78910	SX-AP-D1 -1	102194 @ 1140	Be-7	0.1500 ± 0.0600

GPU ID	Sample Description	Stop Date & Time	Nuclide	Positive Result
			Gross Alpha	0.0015 ± 0.0007
			Gross Beta	0.0220 ± 0.0040
81924	SX-AP-D1 -1	051895 @ 1100	Be-7	0.1900 ± 0.0900
			Gross Alpha	0.0016 ± 0.0011
			Gross Beta	0.0170 ± 0.0080
82003	SX-AP-D1 -1	052695 @ 1345	Be-7	0.1300 ± 0.0300
			Gross Alpha	0.0008 ± 0.0006
			Gross Beta	0.0120 ± 0.0030
82827	SX-AP-D1 -1	061695 @ 0835	Be-7	0.1500 ± 0.0700
			Gross Alpha	0.0027 ± 0.0011
			Gross Beta	0.0120 ± 0.0020
82830	SX-AP-D1 -1	062295 @ 1200	Be-7	0.2500 ± 0.1100
			Gross Alpha	0.0057 ± 0.0015
			Gross Beta	0.0270 ± 0.0040
82833	SX-AP-D1 -1	062995 @ 1110	Be-7	0.0630 ± 0.0440
			Gross Alpha	0.0022 ± 0.0011
			Gross Beta	0.0057 ± 0.0024
82836	SX-AP-D1 -1	070695 @ 1010	Be-7	0.0930 ± 0.0570
			Gross Alpha	0.0020 ± 0.0011
			Gross Beta	0.0130 ± 0.0030
82872	SX-AP-D1 -1	071395 @ 1550	Be-7	0.1300 ± 0.0600
			Gross Alpha	0.0032 ± 0.0011
82872	SX-AP-D1 -1	071395 @ 1550	Gross Beta	0.0160 ± 0.0030
83145	SX-AP-D1 -1	072095 @ 0940	Be-7	0.1600 ± 0.0500
			Gross Alpha	0.0031 ± 0.0013
			Gross Beta	0.0310 ± 0.0030
83148	SX-AP-D1 -1	072795 @ 0930	Be-7	0.1400 ± 0.0700
			Gross Alpha	0.0023 ± 0.0011
			Gross Beta	0.0250 ± 0.0030
78548	SX-AP-D1 -1	092394 @ 0830	Be-7	0.1100 ± 0.0400
			Gross Alpha	0.0015 ± 0.0007
			Gross Beta	0.0160 ± 0.0030
82215	SX-AP-D1 -1	060195 @ 1115	Gross Beta	0.0100 ± 0.0040
82219	SX-AP-D1 -1	060895 @ 1535	Be-7	0.1100 ± 0.0600
			Gross Alpha	0.0008 ± 0.0005
			Gross Beta	0.0150 ± 0.0030
77620	SX-AP-G10-1	072894 @ 0915	Be-7	0.1500 ± 0.0500
			Gross Alpha	0.0009 ± 0.0004
			Gross Beta	0.0160 ± 0.0030
77621	SX-AP-G10-1	072894 @ 0915	Be-7	0.1100 ± 0.0800
			Gross Alpha	0.0014 ± 0.0005
			Gross Beta	0.0140 ± 0.0030
77710	SX-AP-G10-1	080494 @ 0900	Be-7	0.1400 ± 0.0400
			Gross Beta	0.0210 ± 0.0020
77831	SX-AP-G10-1	081194 @ 1530	Be-7	0.1400 ± 0.0800
			Gross Alpha	0.0015 ± 0.0008
			Gross Beta	0.0130 ± 0.0030
78076	SX-AP-G10-1	081894 @ 1610	Be-7	0.1000 ± 0.0700
			Gross Alpha	0.0022 ± 0.0008
			Gross Beta	0.0190 ± 0.0030

GPU ID	Sample Description	Stop Date & Time	Nuclide	Positive Result
78077	SX-AP-G10-1	082[illegible] @ 1445	Be-7	0.1300 ± 0.0600
			Gross Alpha	0.0018 ± 0.0008
			Gross Beta	0.0190 ± 0.0030
78167	SX-AP-G10-1	090294 @ 1505	Be-7	0.1100 ± 0.0400
			Gross Alpha	0.0018 ± 0.0007
			Gross Beta	0.0230 ± 0.0030
78357	SX-AP-G10-1	090994 @ 0900	Be-7	0.1500 ± 0.0600
			Gross Alpha	0.0021 ± 0.0007
			Gross Beta	0.0130 ± 0.0030
78363	SX-AP-G10-1	091694 @ 1320	Be-7	0.1900 ± 0.0600
			Gross Alpha	0.0016 ± 0.0007
			Gross Beta	0.0230 ± 0.0040
78550	SX-AP-G10-1	092394 @ 0940	Be-7	0.0960 ± 0.0670
			Gross Alpha	0.0013 ± 0.0006
			Gross Beta	0.0160 ± 0.0030
78554	SX-AP-G10-1	100194 @ 1500	Be-7	0.0950 ± 0.0350
			Gross Alpha	0.0014 ± 0.0006
			Gross Beta	0.0120 ± 0.0030
78904	SX-AP-G10-1	100794 @ 1615	Be-7	0.1600 ± 0.0500
			Gross Alpha	0.0011 ± 0.0007
			Gross Beta	0.0099 ± 0.0034
78907	SX-AP-G10-1	101494 @ 1340	Be-7	0.1100 ± 0.0500
			Gross Alpha	0.0015 ± 0.0007
			Gross Beta	0.0130 ± 0.0030
78911	SX-AP-G10-1	102194 @ 1040	Be-7	0.2400 ± 0.0700
			Gross Alpha	0.0013 ± 0.0007
			Gross Beta	0.0200 ± 0.0040
81922	SX-AP-G10-1	051195 @ 1400	Be-7	0.1400 ± 0.0500
			Gross Alpha	0.0014 ± 0.0005
			Gross Beta	0.0130 ± 0.0030
81925	SX-AP-G10-1	051895 @ 0840	Be-7	0.1400 ± 0.0700
			Gross Beta	0.0072 ± 0.0025
82004	SX-AP-G10-1	052695 @ 1345	Be-7	0.1300 ± 0.0500
			Gross Beta	0.0077 ± 0.0026
82216	SX-AP-G10-1	060195 @ 0845	Be-7	0.1000 ± 0.0600
			Gross Beta	0.0100 ± 0.0040
82220	SX-AP-G10-1	060895 @ 1430	Be-7	0.1300 ± 0.0800
			Gross Beta	0.0130 ± 0.0030
82221	SX-AP-G10-1	060895 @ 1430	Be-7	0.1200 ± 0.0500
			Gross Alpha	0.0013 ± 0.0006
			Gross Beta	0.0150 ± 0.0030
82828	SX-AP-G10-1	061595 @ 1015	Be-7	0.1100 ± 0.0600
			Gross Alpha	0.0031 ± 0.0013
			Gross Beta	0.0140 ± 0.0030
82831	SX-AP-G10-1	062295 @ 1045	Be-7	0.2200 ± 0.0500
			Gross Alpha	0.0041 ± 0.0012
			Gross Beta	0.0210 ± 0.0030
82834	SX-AP-G10-1	062995 @ 1320	Gross Beta	0.0050 ± 0.0023
82837	SX-AP-G10-1	070695 @ 0900	Be-7	0.0890 ± 0.0560
			Gross Alpha	0.0020 ± 0.0012

GPU ID	Sample Description	Stop Date & Time	Nuclide	Positive Result
			Gross Beta	0.0140 ± 0.0030
82873	SX-AP-G10-1	071395 @ 1120	Gross Beta	0.0130 ± 0.0050
83146	SX-AP-G10-1	072095 @ 0800	Be-7	0.1300 ± 0.0400
			Gross Alpha	0.0023 ± 0.0012
			Gross Beta	0.0250 ± 0.0030
83149	SX-AP-G10-1	072795 @ 0900	Be-7	0.1200 ± 0.0400
			Gross Alpha	0.0019 ± 0.0011
			Gross Beta	0.0220 ± 0.0030
77619	SX-AP-J1 -2	072894 @ 1047	Be-7	0.2700 ± 0.1000
			Gross Beta	0.0150 ± 0.0090
77709	SX-AP-J1 -2	072994 @ 1454	Gross Beta	0.0340 ± 0.0080
77833	SX-AP-J1 -2	081194 @ 1420	Be-7	0.1800 ± 700
			Gross Alpha	0.0014 ± 0.0008
			Gross Beta	0.0130 ± 0.0030
78075	SX-AP-J1 -2	081894 @ 1030	Be-7	0.1100 ± 0.0600
			Gross Alpha	0.0023 ± 0.0008
			Gross Beta	0.0230 ± 0.0040
78080	SX-AP-J1 -2	082594 @ 1540	Be-7	0.0980 ± 0.0570
			Gross Alpha	0.0019 ± 0.0008
			Gross Beta	0.0170 ± 0.0030
78081	SX-AP-J1 -2	082594 @ 1540	Be-7	0.1600 ± 0.0400
			Gross Alpha	0.0014 ± 0.0007
			Gross Beta	0.0180 ± 0.0030
78166	SX-AP-J1 -2	090294 @ 1000	Be-7	0.1300 ± 0.0800
			Gross Alpha	0.0020 ± 0.0008
			Gross Beta	0.0220 ± 0.0030
78356	SX-AP-J1 -2	090994 @ 0905	Gross Alpha	0.0011 ± 0.0006
			Gross Beta	0.0047 ± 0.0026
78360	SX-AP-J1 -2	091694 @ 1415	Gross Alpha	0.0016 ± 0.0010
			Gross Beta	0.0260 ± 0.0060
78361	SX-AP-J1 -2	091694 @ 1415	Be-7	0.1300 ± 700
			Gross Alpha	0.0021 ± 011
			Gross Beta	0.0260 ± 060
78547	SX-AP-J1 -2	092394 @ 0840	Gross Alpha	0.0011 ± 0.0006
			Gross Beta	0.0140 ± 0.0030
78552	SX-AP-J1 -2	100194 @ 0800	Be-7	0.1000 ± 0.0600
			Gross Alpha	0.0009 ± 0.0005
			Gross Beta	0.0085 ± 0.0026
			K-40	0.0970 ± 0.0500
78902	SX-AP-J1 -2	100794 @ 1525	Be-7	0.1200 ± 0.0500
			Gross Alpha	0.0018 ± 0.0008
78902	SX-AP-J1 -2	100794 @ 1525	Gross Beta	0.0140 ± 0.0040
78906	SX-AP-J1 -2	101494 @ 1410	Be-7	0.1600 ± 0.0400
			Gross Alpha	0.0024 ± 0.0008
			Gross Beta	0.0180 ± 0.0030
78912	SX-AP-J1 -2	102194 @ 1145	Be-7	0.0830 ± 0.0570
			Gross Alpha	0.0018 ± 0.0007
			Gross Beta	0.0230 ± 0.0040
81926	SX-AP-J1 -3	051895 @ 1045	Gross Alpha	0.0006 ± 0.0003
			Gross Beta	0.0110 ± 0.0030

GPU ID	Sample Description	Stop Date & Time	Nuclide	Positive Result
82002	SX-AP-J1 -3	052695 @ 1330	Be-7	0.1300 ± 0.0500
			Gross Beta	0.0100 ± 0.0030
83147	SX-AP-J1 -3	072095 @ 0930	Be-7	0.1900 ± 0.0500
			Gross Alpha	0.0025 ± 0.0012
			Gross Beta	0.0290 ± 0.0030
83150	SX-AP-J1 -3	072795 @ 1315	Be-7	0.1300 ± 0.0600
			Gross Alpha	0.0021 ± 0.0011
			Gross Beta	0.0270 ± 0.0030
82217	SX-AP-J1 -3	060195 @ 1100	Be-7	0.0960 ± 0.0640
			Gross Beta	0.0064 ± 0.0033
82222	SX-AP-J1 -3	060895 @ 1530	Be-7	0.1200 ± 0.0500
			Gross Alpha	0.0008 ± 0.0005
			Gross Beta	0.0150 ± 0.0030

Table 4-53, Counting Results, On-Site Core Bore Locations Inside CV

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
410008	1	<0.50	28.45 ± 3.69	1.87	< MDA (See Note 2)	1.3
410008	2	<0.26	<0.32	N/A	< MDA	2.9
410008	3	<0.33	<0.32	N/A	< MDA	4.5
410009	1	<0.56	10.12 ± 1.58	2.09	< MDA	1.3
410009	2	<0.25	<0.24	N/A	< MDA	2.9
410009	3	<0.34	<0.27	N/A	< MDA	4.5
410012	1	<0.89	13.07 ± 2.19	1.90	< MDA	1.3
410012	2	<0.35	<0.34	N/A	< MDA	2.9
420013	1	<0.82	3.70 ± 0.92	2.52	< MDA	1.3
420013	2	<0.29	<0.24	N/A	< MDA	2.9
420014	1	<0.66	5.03 ± 1.08	2.34	< MDA	1.3
420014	2	<0.33	<0.29	N/A	< MDA	2.9
420015	1	<0.62	2.19 ± 0.65	1.89	< MDA	1.3
420015	2	<0.29	<0.23	N/A	< MDA	2.9
410016	1	<0.29	12.59 ± 2.11	2.00	< MDA	1.3
410016	2	<0.31	0.22 ± 0.14	1.39	< MDA	2.9
410017	1	<1.08	53.47 ± 7.18	1.62	< MDA	1.3
410017	2	<0.36	0.79 ± 0.24	2.14	< MDA	2.9
410017	3	<0.31	<0.32	N/A	<0.30	4.5
410017	4	<0.26	<0.23	N/A	<0.27	6.1
410017	5	<0.28	<0.29	N/A	<0.26	7.7
410018	1	<0.74	21.76 ± 3.25	1.83	< MDA	1.3
410018	2	<0.34	<0.33	N/A	< MDA	2.9
320019	1	<1.58	80.40 ± 10.66	1.78	< MDA	1.3
320019	2	<0.49	2.56 ± 0.62	1.33	< MDA	2.9
320019	3	<0.34	1.51 ± 0.35	0.78	< MDA	4.5
320019	5	<0.24	2.02 ± 0.34	0.89	< MDA	8.9
320019	7	<0.23	1.75 ± 0.31	0.94	<0.20	26
320019	10	<0.24	1.52 ± 0.28	1.12	<0.52	94.9
320019	12	<0.26	1.96 ± 0.33	0.95	0.97 ± 0.21	101.9
320019	13	<0.29	1.90 ± 0.33	1.13	1.19 ± 0.24	103.5
320019	14	<0.35	2.60 ± 0.41	0.89	1.53 ± 0.27	105.1
320019	16	<0.57	1.45 ± 0.35	1.02	3.61 ± 0.59	114.6
320019	17	<0.63	1.10 ± 0.32	0.87	4.00 ± 0.65	116.2
320019	19	0.72 ± 0.30	<0.43	N/A	3.81 ± 0.63	120.6
320019	20	<0.92	19.02 ± 2.56	1.99	5.49 ± 0.85	122.2
320020	1	<0.39	3.94 ± 0.65	2.05	< MDA	1.3
320020	2	<0.26	0.35 ± 0.17	1.03	< MDA	2.9
320020	3	<0.31	<0.32	N/A	< MDA	4.5
320021	1	<1.40	24.16 ± 3.61	2.20	<1.03	1.3

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
320021	2	<0.31	0.75 ± 0.24	1.03	<0.28	2.9
320021	3	<0.34	<0.53	N/A	<0.34	4.5
320021	4	<0.31	<0.60	N/A	<0.31	6.1
320021	5	<0.33	<0.48	N/A	<0.31	7.7
320021	15	<0.31	0.36 ± 0.17	1.09	<0.29	100
320021	17	<0.30	<0.34	N/A	<0.29	117.1
320021	18	<0.28	<0.39	N/A	<0.30	118.7
320021	19	<0.34	<0.37	N/A	<0.31	120.3
320021	20	3.84 ± 0.75	13.54 ± 1.87	2.05	<0.45	121.9
320022	1	<0.69	313.40 ± 38.75	1.72	< MDA	1.3
320022	2	<0.25	1.30 ± 0.32	0.89	< MDA	2.9
320022	3	<0.28	0.80 ± 0.26	1.03	< MDA	4.5
320022	4	<0.30	0.76 ± 0.23	1.36	< MDA	6.1
320022	5	<0.27	0.53 ± 0.20	0.68	< MDA	7.7
320022	6	<0.26	0.55 ± 0.18	0.90	< MDA	9.3
320023	1	6.50 ± 0.97	1367.0 ± 168.35	1.57	< MDA	1.3
320023	2	<0.29	4.77 ± 0.75	1.64	< MDA	2.9
320023	3	<0.28	0.88 ± 0.25	1.13	< MDA	4.5
320023	4	<0.28	<0.40	N/A	< MDA	6.1
120024	1	<0.94	11.88 ± 1.99	1.39	< MDA	1.3
120024	2	<0.28	8.69 ± 1.16	1.06	< MDA	2.9
120024	3	<0.41	7.03 ± 1.05	1.02	< MDA	4.5
120024	4	<0.47	6.53 ± 0.99	0.98	< MDA	6.1
120024	5	<0.42	7.86 ± 1.15	1.08	< MDA	7.7
120024	6	<0.48	6.56 ± 1.00	1.02	< MDA	9.3
110025	1	3.25 ± 1.14	6074.0 ± 748.0	1.29	< MDA	1.3
110025	2	<0.51	1419.0 ± 174.8	1.09	<3.04	2.9
110025	3	<0.68	227.10 ± 28.30	1.85	< MDA	4.5
110025	4	<0.38	18.34 ± 2.37	1.03	<0.47	6.1
110025	5	<0.85	5.70 ± 1.17	1.29	< MDA	7.7
110025	7	<0.37	2.26 ± 0.44	0.84	< MDA	18.3
110025	9	<0.36	2.82 ± 0.51	1.13	< MDA	36
110026	1	<2.11	6583.0 ± 810.5	1.47	< MDA	1.3
110026	2	<0.39	222.5 ± 27.55	1.11	< MDA	2.9
110026	3	<0.40	46.61 ± 5.91	1.14	< MDA	4.5
110026	4	<0.37	10.87 ± 1.50	1.14	< MDA	6.1
110026	5	<0.33	4.32 ± 0.70	1.08	< MDA	7.7
110026	6	<0.32	3.14 ± 0.57	0.85	< MDA	9.3
110027	1	<1.02	213.25 ± 26.84	1.94	<2.20	1.3
110027	2	<0.35	2.72 ± 0.51	1.01	<0.32	2.9
110027	3	<0.35	1.67 ± 0.37	1.18	< MDA	4.5
110027	4	<0.26	1.26 ± 0.31	1.22	< MDA	6.1

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
110027	5	<0.34	1.56 ± 0.34	1.03	<0.29	7.7
110027	6	<0.36	1.48 ± 0.33	0.91	<0.31	9.3
110028	1	<0.42	121.87 ± 15.18	1.52	< MDA	1.3
110028	2	<0.36	3.50 ± 0.60	1.00	< MDA	2.9
110028	3	<0.29	1.43 ± 0.34	1.01	< MDA	4.5
110028	4	<0.37	1.46 ± 0.35	0.91	< MDA	6.1
110028	5	<0.29	1.27 ± 0.30	1.24	< MDA	7.7
110028	6	<0.26	1.36 ± 0.32	1.13	< MDA	9.3
110028	7	<0.26	1.12 ± 0.29	1.04	< MDA	10.9
120029	1	3.65 ± 0.69	438.95 ± 54.19	1.51	< MDA	1.3
120029	2	<0.30	8.16 ± 1.19	1.13	< MDA	2.9
120029	3	<0.36	3.30 ± 0.59	1.04	< MDA	4.5
120029	4	<0.38	1.88 ± 0.40	1.30	< MDA	6.1
120029	5	<0.28	1.53 ± 0.33	1.23	< MDA	7.7
120029	6	<0.29	0.76 ± 0.23	0.91	< MDA	9.3
120029	7	<0.29	0.71 ± 0.22	1.10	< MDA	10.9
120030	1	<0.84	1136.8 ± 140.5	1.28	< MDA	1.3
120030	2	<0.63	56.4 ± 7.46	1.32	< MDA	2.9
120030	3	<0.30	9.00 ± 1.27	0.87	< MDA	4.5
120030	4	<0.20	4.45 ± 0.70	0.99	< MDA	6.1
120030	5	<0.20	3.36 ± 0.57	0.90	< MDA	7.7
120030	6	<0.29	2.72 ± 0.49	1.00	< MDA	9.3
220031	1	<0.97	189.80 ± 23.95	1.74	<2.06	1.3
220031	2	<0.33	28.91 ± 3.74	1.06	<0.51	2.9
220031	3	<0.36	30.52 ± 3.95	1.00	<0.53	4.5
220031	4	<0.31	31.16 ± 4.03	1.01	<0.53	6.1
220031	5	<0.27	29.02 ± 3.76	0.98	<0.47	7.7
220031	6	<0.31	31.60 ± 4.07	0.89	<0.49	9.3
220031	8	<0.24	38.12 ± 4.87	1.02	<0.55	15.7
220031	10	<0.34	25.37 ± 3.29	0.99	<0.45	32.8
220031	11	<0.40	6.55 ± 0.99	0.95	<0.37	120.1
220031	13	<0.33	4.77 ± 0.76	0.92	<0.32	123.3
220031	15	<0.31	3.83 ± 0.65	1.23	<0.35	135.4
220031	16	<0.29	3.60 ± 0.61	0.97	<0.33	137
220031	17	<0.34	4.20 ± 0.70	0.96	<0.37	138.6
220031	19	7.95 ± 1.15	42.21 ± 5.39	0.91	<0.62	148.4
220031	20	22.08 ± 2.57	358.85 ± 44.35	1.28	<1.56	151
210032	1	32.54 ± 4.44	24435.0 ± 3007.5	1.47	< MDA	1.3
210032	2	<0.33	22.95 ± 2.99	1.04	< MDA	2.9
210032	3	<0.26	17.18 ± 2.29	0.91	< MDA	4.5
210032	4	<0.25	13.98 ± 1.88	1.00	< MDA	6.1
210032	5	<0.28	14.30 ± 1.93	1.02	< MDA	7.7

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
210032	6	<0.34	13.55 ± 1.84	0.93	< MDA	9.3
210033	1	<0.83	201.40 ± 25.39	2.01	< MDA	1.3
210033	2	<0.27	8.73 ± 1.24	1.05	< MDA	2.9
210033	3	<0.29	5.90 ± 0.89	1.09	< MDA	4.5
210033	4	<0.34	5.12 ± 0.79	1.00	< MDA	6.1
210033	5	<0.37	5.74 ± 0.89	1.07	< MDA	7.7
210033	6	<0.30	5.45 ± 0.84	1.17	< MDA	9.3
220034	1	<1.13	705.2 ± 87.36	1.82	< MDA	1.3
220034	2	<0.63	11.18 ± 1.90	0.97	< MDA	2.9
220034	3	<0.40	8.53 ± 1.22	1.08	< MDA	4.5
220034	4	<0.36	8.13 ± 1.18	1.04	< MDA	6.1
220034	5	<0.27	7.07 ± 1.05	0.94	< MDA	7.7
220034	6	<0.31	6.36 ± 0.95	0.90	< MDA	9.3
220034	7	<0.31	7.53 ± 1.10	1.02	< MDA	10.9
220035	1	<0.6	22.03 ± 3.29	1.64	< MDA	1.3
220035	2	<0.29	6.85 ± 1.01	1.01	< MDA	2.9
220035	3	<0.35	4.99 ± 0.79	1.07	< MDA	4.4
220035	4	<0.35	3.63 ± 0.62	0.99	< MDA	6
220035	5	<0.29	3.56 ± 0.61	1.01	< MDA	7.6
220035	6	<0.28	5.25 ± 0.83	1.09	< MDA	9.1
220035	7	<0.31	4.41 ± 0.7	1.08	< MDA	10.7
220036	1	15.96 ± 2.64	371.65 ± 46.35	1.82	< MDA	1.3
220036	2	<0.64	34.83 ± 4.88	1.07	< MDA	2.9
220036	3	<0.28	23.85 ± 3.12	1.08	< MDA	4.5
220036	4	<0.33	19.38 ± 2.56	1.03	< MDA	6.1
220036	6	<0.34	15.04 ± 2.02	1.07	< MDA	15.6
220036	8	<0.30	15.65 ± 2.10	0.92	<0.42	32.7
220036	9B	<0.21	13.13 ± 1.71	0.91	<0.27	54.9
220036	9D	<0.20	11.24 ± 1.47	0.93	<0.26	79.1
220036	10	<0.26	8.32 ± 1.20	1.00	<0.38	106.4
220036	12	<0.26	9.05 ± 1.29	1.05	<0.36	126.1
220036	14	<0.23	5.92 ± 0.90	0.99	<0.28	143.5
220036	15	<0.27	5.10 ± 0.80	1.02	<0.28	145.4
220036	16	<0.30	4.82 ± 0.77	1.01	<0.35	147
220036	17	<0.34	4.01 ± 0.67	1.06	<0.30	148.6
220036	18	<0.27	3.95 ± 0.66	1.08	<0.30	150.2
220036	19	<0.30	4.10 ± 0.68	1.07	<0.31	151.8
220036	20	<1.01	37.24 ± 5.33	1.62	<1.16	153.4
220037	1	<0.89	149.20 ± 18.97	1.36	< MDA	1.3
220037	2	<0.41	64.26 ± 8.09	1.05	< MDA	2.9
220037	3	<0.28	31.20 ± 4.03	1.02	< MDA	4.5
220037	4	<0.37	33.54 ± 4.34	0.97	< MDA	6.1

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
220037	6	<0.32	23.72 ± 3.09	1.00	< MDA	18.16
220037	8	<0.34	18.91 ± 2.51	1.03	<0.42	35.26
220037	12	<0.36	17.28 ± 2.32	1.05	<0.53	108.6
220037	13C	<0.26	12.57 ± 1.64	1.07	<0.73	117.2
220037	13B	<0.26	10.00 ± 1.33	1.02	0.80 ± 0.21	118.8
220037	14	<0.31	10.34 ± 1.36	1.06	1.55 ± 0.29	125.8
220037	16	<0.99	7.63 ± 1.13	1.05	5.10 ± 0.76	137.9
220037	18	1.18 ± 0.37	6.40 ± 0.99	0.92	7.40 ± 1.03	150
220037	19	<1.22	6.84 ± 1.05	1.04	7.20 ± 1.02	151.6
220037	20	5.49 ± 0.89	50.48 ± 6.41	0.48	6.98 ± 1.02	152.2
610056	1	16.14 ± 2.67	18210.0 ± 2241.0	1.61	<4.56	1.3
610056	2	<1.32	874.45 ± 107.75	1.03	<1.70	2.9
610056	3	1.07 ± 0.36	693.20 ± 85.46	0.99	<1.88	4.4
610056	4	1.19 ± 0.39	721.65 ± 88.95	1.00	<1.78	5.9
610056	5	<0.67	729.15 ± 89.84	0.94	<1.30	7.5
610056	6	<0.59	711.65 ± 87.7	0.99	<1.72	9.1
610056	7	0.82 ± 0.29	683.9 ± 84.3	1.01	<1.76	10.6
610056	8	<0.65	723.05 ± 89.12	1.00	<1.60	12.2
610056	9	<0.61	683.25 ± 84.21	0.99	<1.60	13.7
610057	1	81.15 ± 9.34	23305.0 ± 2867.5	1.27	<8.63	1.3
610057	2	5.53 ± 1.42	1161.5 ± 143.6	1.07	<2.66	2.9
610057	3	<3.97	896.4 ± 110.95	0.98	<3.93	4.5
610057	4	<4.16	789.75 ± 97.86	1.01	<4.08	6.1
610057	5	<3.05	658.95 ± 81.74	0.97	<3.58	7.7
610057	6	<4.22	820.15 ± 101.65	1.02	<3.75	9.3
610057	7	<1.70	648.05 ± 80.33	1.03	<3.04	10.9
620058	1	45.09 ± 5.55	345.1 ± 43.1	1.49	< MDA	1.3
620058	2	11.68 ± 2.10	100.5 ± 13.0	1.03	< MDA	2.9
620058	3	<2.09	23.82 ± 3.51	1.04	< MDA	4.5
620058	4	<0.48	3.15 ± 0.54	1.04	< MDA	6.1
620058	5	<0.46	1.43 ± 0.33	0.92	< MDA	7.7
620058	6	<0.33	1.14 ± 0.28	1.09	< MDA	9.3
620059	1	14.88 ± 1.84	50.38 ± 6.41	1.68	<0.70	1.3
620059	2	<0.48	2.00 ± 0.41	1.02	<0.32	2.9
620059	3	<0.48	0.78 ± 0.25	1.08	<0.28	4.5
620059	4	<0.48	1.03 ± 0.28	1.77	<0.32	6.1
620059	5	<0.33	<0.43	N/A	<0.28	7.7
620059	6	<0.36	<0.45	N/A	<0.27	9.3
620059	7	<0.34	1.34 ± 0.31	0.69	<0.27	10.9
620060	1	<0.79	14.85 ± 2.01	1.60	<0.40	1.3
620060	2	<1.09	3.01 ± 0.80	1.25	<0.52	2.9
620060	3	<0.41	1.15 ± 0.29	1.35	<0.25	4.5

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
620060	4	<0.36	0.88 ± 0.26	0.84	<0.30	6.1
620060	5	<0.40	1.01 ± 0.28	0.83	<0.41	7.7
620060	6	<0.29	0.58 ± 0.21	1.00	<0.26	9.3
620060	7	<0.24	0.47 ± 0.18	0.82	<0.28	10.9
620061	1	<0.67	4.38 ± 1.03	1.74	<0.59	1.3
620061	2	<0.37	0.62 ± 0.21	0.91	<0.29	2.9
620061	3	<0.35	<0.42	N/A	<0.31	4.5
620061	4	<0.27	<0.33	N/A	<0.26	6.1
620062	1	23.88 ± 3.65	260.65 ± 32.84	1.68	<3.64	1.3
620062	2	1.20 ± 0.36	21.73 ± 2.86	0.99	7.27 ± 1.01	2.9
620062	3	1.89 ± 0.48	24.05 ± 3.15	0.94	8.28 ± 1.14	4.5
620062	4	1.14 ± 0.38	36.97 ± 4.76	1.06	9.02 ± 1.24	6.1
620062	5	0.96 ± 0.34	25.50 ± 3.33	1.00	6.83 ± 0.98	7.7
620062	6	1.21 ± 0.40	38.15 ± 4.90	1.00	7.22 ± 1.05	9.3
620062	7	0.97 ± 0.31	35.86 ± 4.59	1.01	6.45 ± 0.94	10.9
620063	1	51.81 ± 6.32	430.85 ± 53.70	1.46	<3.96	1.3
620063	2	<0.78	1.18 ± 0.35	1.30	5.83 ± 0.85	2.9
620063	3	1.27 ± 0.29	<0.34	N/A	6.43 ± 0.83	4.5
620063	4	<0.91	<0.44	0.93	6.76 ± 0.93	6.1
620063	5	1.12 ± 0.34	<0.41	0.59	6.80 ± 0.93	7.7
620064	1	<1.94	334.60 ± 41.80	1.20	<2.61	1.3
620064	2	<0.32	22.35 ± 2.92	1.15	<0.41	2.9
620064	3	<0.41	3.26 ± 0.57	1.12	<0.31	4.5
620064	4	<0.40	1.04 ± 0.28	0.93	<0.29	6.1
620064	5	<0.35	0.89 ± 0.25	1.11	<0.29	7.7
620064	6	<0.38	0.58 ± 0.23	0.98	<0.33	9.3
620064	7	<0.41	<0.65	N/A	<0.30	10.9
620065	1	<2.24	74.85 ± 9.86	1.43	<1.32	1.3
620065	2	<0.32	2.32 ± 0.45	1.19	<0.31	2.9
620065	3	<0.39	0.99 ± 0.26	0.73	< MDA	4.5
620065	4	<0.38	1.46 ± 0.32	1.24	< MDA	6.1
620065	5	<0.34	1.04 ± 0.28	0.91	< MDA	7.7
620065	6	<0.38	0.60 ± 0.23	0.89	< MDA	9.3
610066	1	29.83 ± 4.05	984.90 ± 121.80	1.36	< MDA	1.3
610066	2	<0.38	21.32 ± 2.80	1.36	<0.50	2.9
610066	3	<0.35	2.15 ± 0.43	1.07	<0.30	4.5
610066	4	<0.33	1.48 ± 0.34	1.06	< MDA	6.1
610066	5	<0.34	1.35 ± 0.33	0.86	< MDA	7.7
610066	6	<0.32	1.06 ± 0.29	1.01	< MDA	9.3
620119	1	20.30 ± 3.05	568.40 ± 70.51	1.83	20.32 ± 3.39	1.3
620119	2	3.10 ± 0.57	2.78 ± 0.58	1.51	25.55 ± 3.99	2.9
620119	3	3.65 ± 0.68	<0.67	N/A	30.84 ± 3.60	4.5

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
620119	4	4.32 ± 0.75	0.72 ± 0.39	0.78	35.48 ± 4.12	6.1
620119	5	4.21 ± 0.74	<0.74	N/A	37.95 ± 4.39	7.7
620119	6	53.39 ± 5.38	<0.83	N/A	25.89 ± 3.02	9.3
620119	7	4.56 ± 0.79	<0.70	N/A	35.98 ± 4.18	10.9
620119	8	4.46 ± 0.76	<0.68	N/A	33.58 ± 3.90	12.5
620119	9	4.02 ± 0.69	<0.69	N/A	37.37 ± 4.32	14.1
620119	10	2.84 ± 0.64	<0.63	N/A	29.31 ± 3.43	15.7
620119	11	3.14 ± 0.60	<0.67	N/A	26.18 ± 3.09	17.3
620119	12	2.30 ± 0.52	<0.55	N/A	23.21 ± 2.75	18.9
620119	13	2.12 ± 0.51	<0.56	N/A	22.55 ± 2.69	20.5
410120	1	<0.75	20.09 ± 3.06	1.45	< MDA	1.3
410120	2	<0.83	1.24 ± 0.54	0.84	< MDA	2.9
410120	3	<0.23	0.60 ± 0.16	1.31	< MDA	4.5
410120	4	<0.20	0.34 ± 0.13	0.81	< MDA	6.1
410120	5	<0.43	<0.45	N/A	<0.46	7.7
410120	6	<0.27	<0.36	N/A	<0.27	9.3
410120	11	<0.28	0.54 ± 0.15	1.18	<0.36	119.5
410120	13D	<0.28	0.41 ± 0.13	1.22	1.17 ± 0.23	123.9
410120	13B	<0.35	0.50 ± 0.11	See Note 5	2.42 ± 0.37	130.9
410120	13A	<0.38	0.35 ± 0.15	0.75	2.71 ± 0.41	132.5
410120	13	<0.41	0.35 ± 0.15	1.19	2.88 ± 0.43	134.1
410120	14	<0.51	0.56 ± 0.18	0.84	3.54 ± 0.50	135.7
410120	15	0.49 ± 0.18	0.52 ± 0.18	0.89	3.76 ± 0.52	137.3
410121	1	<0.66	48.58 ± 6.60	1.47	< MDA	1.3
410121	2	<0.78	11.75 ± 2.04	1.04	< MDA	2.9
410121	3	<0.25	4.33 ± 0.64	1.15	< MDA	4.5
410121	4	<0.18	1.16 ± 0.24	1.04	< MDA	6.1
410121	5	<0.33	<0.46	N/A	<0.29	7.7
410121	6	<0.31	<0.35	N/A	<0.25	9.3
410121	13	<0.25	<0.20	N/A	<0.29	103.6
410121	14E	<0.25	<0.18	N/A	<0.31	111.4
410121	14D	<0.27	<0.20	N/A	< MDA	113
410121	14B	<0.34	<0.20	N/A	1.27 ± 0.25	117.4
410121	15	<0.33	0.19 ± 0.14	0.68	2.40 ± 0.95	134.3
410122	1	<1.04	14.41 ± 2.37	2.22	< MDA	1.3
410122	2	<0.28	<0.57	N/A	< MDA	2.9
410122	3	<0.35	<0.59	N/A	<0.32	4.5
410122	4	<0.36	0.91 ± 0.27	0.95	<0.31	6.1
410122	5	<0.31	0.57 ± 0.24	1.53	<0.31	7.7
410122	6	<0.35	<0.44	N/A	<0.27	9.3
410122	15	<0.24	<0.23	N/A	<0.31	116.7
410122	16D	<0.31	<0.25	N/A	1.10 ± 0.23	122.1

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
410122	16B	<0.33	<0.22	N/A	1.59 ± 0.27	126.5
410122	16A	<0.32	<0.22	N/A	1.89 ± 0.31	128.1
410122	17	<0.38	<0.23	N/A	2.47 ± 0.38	130.5
410122	18	<0.39	<0.25	N/A	2.80 ± 0.42	132.1
410122	19	2.03 ± 0.38	<0.30	N/A	3.51 ± 0.50	133.7
410122	20	<0.46	<0.24	N/A	3.55 ± 0.51	135.3
410123	1	<0.72	14.81 ± 2.38	1.71	< MDA	1.3
410123	2	<0.85	2.89 ± 0.80	1.01	< MDA	2.9
410123	3	<0.88	2.71 ± 0.76	1.07	< MDA	4.5
410123	4	<0.28	3.28 ± 0.58	1.12	< MDA	6.1
410123	5	<0.35	2.03 ± 0.40	0.83	< MDA	7.7
410123	6	<0.25	2.52 ± 0.48	1.10	< MDA	9.3
410123	7	<0.39	2.33 ± 0.46	1.17	< MDA	10.9
410123	8	<0.31	2.42 ± 0.46	1.04	< MDA	12.5
410123	9	<0.31	2.28 ± 0.44	1.08	< MDA	14.1
410123	10	<0.27	1.88 ± 0.40	1.00	< MDA	15.7
410123	10B	<0.18	0.71 ± 0.44	0.92	< MDA	25.2
410123	10D	<0.20	1.61 ± 0.29	0.99	<0.19	42.3
410123	12	<0.29	<0.48	N/A	<0.43	105.2
410123	14	<0.47	<0.49	N/A	<0.59	122.4
410123	15	<0.25	<0.22	N/A	<0.32	124
410124	1	<0.67	41.91 ± 5.77	1.73	< MDA	1.3
410124	2	<0.75	4.14 ± 0.97	0.99	< MDA	2.9
410124	3	<0.37	2.21 ± 0.44	1.00	< MDA	4.5
410124	4	<0.30	1.74 ± 0.38	0.95	< MDA	6.1
410124	5	<0.36	2.54 ± 0.48	0.97	< MDA	7.7
410124	6	<0.33	2.60 ± 0.49	0.89	< MDA	9.3
410124	7	<0.39	5.19 ± 0.86	0.97	< MDA	10.9
410124	8	<0.41	1.20 ± 0.31	0.91	< MDA	12.5
410124	9	<0.32	1.21 ± 0.31	0.99	< MDA	14.1
410124	10	<0.28	0.87 ± 0.23	0.84	< MDA	15.7
410124	10B	<0.26	<0.42	N/A	<0.25	32.8
410124	12	<0.35	<0.31	N/A	<0.34	107.2
410124	13B	<0.30	<0.25	N/A	<0.30	122.8
410124	14	<0.30	<0.30	N/A	0.74 ± 0.19	129.8
410124	15	<0.34	<0.27	N/A	0.97 ± 0.23	131.4
410125	1	<0.75	12.10 ± 2.05	1.85	< MDA	1.3
410125	2	<0.26	0.62 ± 0.20	1.20	< MDA	2.9
410125	3	<0.32	<0.29	N/A	< MDA	4.5
410125	4	<0.32	<0.32	N/A	<0.27	6.1
410125	5	<0.23	0.23 ± 0.10	0.92	<0.26	107.8
410125	6B	<0.28	<0.15	N/A	<0.47	112.2

Sample Number (Note 6)	Core Slice	Average Of T/B Counting Results Co-60 pCi/g	Average Of T/B Counting Results Cs-137 pCi/g	Top to Bottom Ratio (Cs-137) (Note 1)	Average Of T/B Counting Results Eu-152 pCi/g	Depth (cm) (Note 4)
410125	7	<0.29	0.23 ± 0.11	0.67	1.95 ± 0.78	119.2
410125	8	<0.30	<0.27	N/A	1.58 ± 0.78	120.8
410125	9	<0.33	0.20 ± 0.12	0.39	2.22 ± 0.80	122.4
410125	11	0.51 ± 0.19	<0.24	N/A	4.90 ± 1.27	131.9
410125	13	5.64 ± 0.73	<0.30	N/A	4.63 ± 0.62	149.2
410125	14	<0.68	<0.39	N/A	6.01 ± 0.87	150.8
410125	15	1.40 ± 0.32	3.43 ± 0.55	1.62	5.91 ± 0.78	152.4
		Average pCi/g (Note 3) 1.72 ± 1.22	Average pCi/g (Note 3) 259.72 ± 43.64		Average pCi/g (Note 3) 3.67 ± 1.29	

NOTE 1 - Ratio of TOP Activity to BOTTOM Activity (Cs-137 ONLY). Surface deposition indicated as ratio approaches 2.5.

NOTE 2 - Average MDA values for 1000 sec. counts on "blank" concrete slice is: Co-60 = 0.28 pCi/g., Cs-137 = 0.30 pCi/g., Eu-152 = 0.27 pCi/g. MDA values for Co-60 & Eu-152 increase, as higher positive values for Cs-137 are encountered.

NOTE 3 - Average activity calculated using actual value from gamma scan or (highest) MDA value for isotopes not positively identified.

NOTE 4 - Depth listed is maximum (farthest distance from surface-normally bottom of slice).

NOTE 5 - Due to very low radioactivity levels in this slice (near MDA), the TOP/BOTTOM counting result ratio for this slice is not representative (3.71).

NOTE 6 - Prefix (SX8) and year (95), have been removed from sample numbers to conserve space (SX8-xx -95-xxxx).

5.0 HEALTH PHYSICS SURVEYS SUPPORTING CHARACTERIZATION

5.1 DOCUMENTATION (General)

Proper documentation of every aspect of the program included an accurate mapping of the survey data, with its relationship to the site. In addition, instrument measurements and analytical results were documented to include the following items as applicable:

1. Location of surveys or samples taken (sketch, diagram, map etc.)
2. Date or dates of surveys or samples collected
3. The measured concentration of the nuclides in bulk samples as applicable
4. Measurements of contamination reported as removable alpha, beta/gamma activity levels (dpm/100cm^2, uCi/unit area, etc.)
5. The analytical error reported for error estimates are at the 95% confidence level
6. Name of surveyor(s), sampler and analyst, if applicable
7. Analysis date
8. Instrument Manufacturer, Model No. and reference to calibration data
9. Reviewer's name

5.2 HEALTH PHYSICS SURVEY RESULTS

Survey data is presented such that: (1) the radiological condition of the site is reasonably represented; (2) the radiological condition of the site can be confirmed without further manipulation of the data; and (3) locations of conditions exceeding release guidelines are easily ascertained. Radiologically contaminated areas are portrayed by using survey maps showing measurement locations together with tables of data taken at those locations. More complete information concerning contamination and radiation levels are given in tables so that intermediate data compilation and final conclusions can be checked. Original data is available and filed so as to be readily accessible. Facility general area (GA) radiological information is shown in Figures 5-1 to 5-5 at the end of this section.

5.3 ALARA CONSIDERATIONS

During the SNEC facility Characterization effort, all work evolutions were carried out in accordance with SNEC procedure 6575-PLN-4542.01, "The SNEC Radiation Protection Plan" (Reference 37), and other applicable SNEC Radiological Controls procedures. All work instructions were written and carried out incorporating the concepts of the "As Low As Reasonably Achievable" (ALARA) philosophy. Radiological Controls personnel were consulted and provided valuable input during the preparation of relevant SNEC Work Instructions (SWI's). After preparation, work instructions were reviewed to ensure sound ALARA practices had been incorporated. SNEC facility Radiation Safety Officer concurrence was required for SWI approval.

5.3.1 Worker Exposure Control

To control worker exposures and to minimize radioactive waste generation, specific Radiation Work Permits (RWP's) were written for characterization activities. Worker exposure was controlled using RWP's which were written to provide specific radiological control guidance while working in radiologically controlled areas within the containment vessel. RWP's were required for all entries into contaminated areas, radiation areas, and during the handling of radioactive sample materials. Prior to each day's work activities and before all major work evolutions, the involved work force was briefed. Pre-job briefings were given by the task supervisor and the Group Radiological Controls Supervisor (GRCS). Briefing topics include ALARA, industrial safety, security and self-checking. Performance of this briefing was documented on a pre-job briefing check-off list.

5.3.2 Assessing Risks

A risk assessment of characterization activities that could potentially cause a release of radioactive materials from the CV was performed. The assessment reviewed all scheduled characterization tasks having the potential to generate radioactive

materials inside the CV, and which therefore might also have potential to allow a release of radioactive materials from the CV. Three generic activities were identified which met this criteria:

- Contaminated system pipe cutting operations
- Breaching of other highly contaminated systems
- Core bore sampling in contaminated environments

The assessment addressed each of these activities and provided recommendations to mitigate the spread of contamination. This assessment was under the guidance of GPU Nuclear Memo number TMI-1 6575-95-167, dated April 19, 1995, "Risk Assessment of Characterization Activities At SNEC Which Could Cause A Release Of Radioactive Materials From Containment".

5.3.3 Special Considerations For Airborne Radioactive Material Generation Activities

A continuous air monitor (CAM), was operated during all characterization evolutions as well as during other minor tasks which might have the potential to generate airborne contamination. The air monitor was positioned to monitor ambient airborne radioactivity levels on the observation deck adjacent to the reactor cavity (El. 818' CV, AREA 4). This unit provided an alarm capability to ensure that no unexpected airborne radioactive materials would go unnoticed in the CV and verified that no release to the outside areas occurred during characterization activities. In addition, HEPA air filtration was used during entries into the Storage Well which is a high contamination and high radiation area as defined by the USNRC. This provided negative airflow into the reactor cavity to help ensure that if airborne radioactive materials were generated, they would be confined to the Storage Well (AREA 6). The suction side of a HEPA filtration apparatus was also placed at the Steam Generator platform during manway removal, and near areas of piping cuts and/or highly contaminated system breaching. HEPA filtered vacuum cleaners were also used to help contain localized high contamination work. No airborne radioactive

contamination level increases were noted on the observation deck (812' El.) CAM during the entire characterization project. Only a few breathing zone air (BZA) samples evaluated after work evolutions retained above background counting results, demonstrating that applied radiological work practices and precautions were satisfactory.

5.3.4 Air Sampling Results And Procedures

Breathing zone air sampling was routinely performed during characterization activities. Due to two unanticipated high long-lived alpha air sample results from the reactor cavity, a comprehensive airborne contamination evaluation was performed. While the air samples in question were being evaluated, an extensive test program was implemented which required taking a number of samples from locations throughout the CV. These samples were evaluated for the presence of both short and long-lived gross alpha and beta contamination. As appropriate, the SNEC facility Gamma Spectroscopy system was used to identify the isotopes present in the samples. In each location specified by the SNEC facility RSO, five air samples were taken. Sample volumes were adjusted to ensure sufficiently low LLD values were obtained during counting operations. Results of this comprehensive air sampling evaluation indicate that there is no long-lived alpha activity present in the CV air during static conditions. Evaluation of two samples in question were performed by GPU Nuclear Radiological Engineering personnel. It was determined that the samples had been cross-contaminated and were not an indication of an actual uptake or ingestion by SNEC facility personnel.

Approximately 225 air samples from the SNEC facility have been assayed to date with almost no assigned CEDE values. The following SNEC facility procedures governed air sampling and air sample analysis during characterization work activities:

(1) 6575-ADM-4500.13, "Air Sampling" (reference 25)

(2) 6575-ADM-4500.16, "Air Sample Analysis" (reference 27)

5.3.5 Radon In The SNEC CV

Radon daughter products are routinely detected in the CV during air particulate sample analysis. During sample collection this short-lived activity (radon and it's daughters), is collected on the particulate filters along with the long-lived isotopes of interest. During sample counting, the more prodigious short-lived isotopes can mask the long-lived isotopes. Air samples must be decayed and re-counted to allow for analysis of long-lived radionuclides, thereby some delay is incurred before obtaining final results. Earlier studies have shown that typical radon daughter product concentrations in the CV average about 6.9 pCi/ml. An evaluation of the hazards associated with exposure to radon at the SNEC facility was completed March of 1994 (Reference 20).

5.3.6 Routine Radiological Surveys

Routine and job specific radiological surveys were performed to evaluate radiological conditions at the work sites and to support RWP preparation. Surveys included airborne radioactivity measurements, removable surface contamination surveys and contact General Area (GA) radiation surveys. Performance of routine surveys using standard survey methods is covered in the following SNEC Radiological Controls Procedures.

- 6575-ADM-4500.11, "Radiation Surveys" (reference 23)
- 6575-ADM-4500.10, "Surface Contamination Surveys" (reference 22)

The above procedures outline a methodology for performing routine surveys. Surveillance surveys were performed at specified frequencies. All health physics related surveys were documented as per Section 5.1. These surveys were performed by qualified Radiological Controls technicians and reviewed by a qualified Group Radiological Controls Supervisor (GRCS). Radiological Controls personnel are qualified according to GPU Nuclear Corporation, Radiological Controls Procedures.

Radiological surveys were documented in accordance with SNEC procedure 6575-ADM-4500.12, "Radiological Surveys: Requirements and Documentation" (Reference 24). As specified in this procedure, each survey was given a unique survey number for tracking and identification purposes. Final characterization and routine survey data was obtained from 117 documented radiological survey maps of the CV and surrounding facilities. System and component curie calculations specified by the SCP, were performed using data from these surveys.

5.4 CHARACTERIZATION SURVEY METHODS

In order to provide radiation and contamination survey results specified in the SCP, standard and non-standard survey methods were employed. Survey methodology and other guidance needed for proper completion of required surveys were specified in SNEC procedures and the following SNEC Work Instructions.

(1) SWI-94-001, "Remove Core Bore Samples From SNEC CV structures" (Reference 56)

(2) SWI-94-005, "Special Surface Contamination Measurements" (Reference 60)

(3) SWI-94-007, "Unbiased surveys" (Reference 62)

(4) SWI-94-009, "Estimating Loose Surface contamination" (Reference 63)

(5) SWI-94-010, "Probe The Reactor Vessel internals To Obtain Samples, Place TLD's, & Verify Path For Video Inspection" (Reference 64)

5.5 INSTRUMENTATION, USE AND PERFORMANCE

Typical portable instrumentation used at the SNEC facility include those shown in the following table:

TABLE 5-1, Typical Health Physics Instrumentation

INSTRUMENTATION	RADIATION TYPE	RANGE/SCALE	APPLICATION
Eberline Instrument Corporation (EIC) RO-2 & RO-2A	Beta/Gamma	0 to 5 R/h & 0-50 R/h	Exposure Rate Surveys
ASP-1	Multi-Purpose, Dependent on Probe Used	Various	Portable Survey Meter
EIC E-520	Gamma	0 to 2 R/h	Exposure Rate Surveys
EIC E-530N	Gamma	0 to 20 R/h	Exposure Rate Surveys
Ludlum Model 19	Gamma	0 to 5 mR/h (o to 5000 uR/h)	Low-Level (uR/h) Exposure Rate Surveys
EIC 140N w/HP-210T Probe	Beta/Gamma	0 to 50,000 CPM	Personnel & Area Contamination Monitoring
EIC RM-14 w/HP-210T Probe	Beta/Gamma	0 to 50,000 CPM	Personnel & Area Contamination Monitoring
Ludlum 2000 with HP-210 Probe	Beta/Gamma	Counts Per Unit Time (Scaler)	Count Room Instrumentation
Air Samplers (All Types)	Particulate	N/A	Airborne Sampling
EIC SAC 4	Alpha	Counts Per Unit Time (Scaler)	Count Room Instrumentation
Teletector	Gamma	0 to 1000 R/h	Exposure Rate Surveys

The above instrumentation listing includes most, but not all of the instrumentation used at the SNEC facility. Response of similar instrumentation to that shown above, is presented in Table 2, Appendix C and Table 1 Appendix D of NUREG/CR 5849 (Reference 13). All radiation monitoring equipment used in monitoring personnel exposures were calibrated and maintained by qualified GPU Nuclear personnel in accordance with GPU Nuclear policies and procedures.

5.6 HOT SPOT IDENTIFICATION PROGRAM

A "Hot Spot" identification program was implemented for dose reduction purposes. Since exposure rates inside the CV, but outside the Storage Well are generally low,

a hot spot identification program was implemented as a way to keep exposures ALARA. Hot spot surveys were performed to augment other radiation surveys required by the SNEC SCP. Hot spots outside the Storage Well were logged into a "Hot Spot" log, identified and clearly labeled within the CV using hotspot stickers. This log tracks components or areas outside the reactor cavity which present the most significant radiation exposure hazards at the facility. Hot spot identification criteria was liberally applied to any component outside the Storage Well found to equal or exceed 50 mR/h on contact. Nothing within the Storage Well (a posted High Radiation Area), has been specifically labeled as part of the hot spot identification program. ALARA precautions associated with entry into this area are covered by the appropriate RWP and ALARA Review. Thirteen hot spots were identified within the CV, outside the Reactor cavity. Most of the hot spots identified are located within the primary compartment (AREA 2). The following table lists the hot spots identified in the SNEC hot spot log.

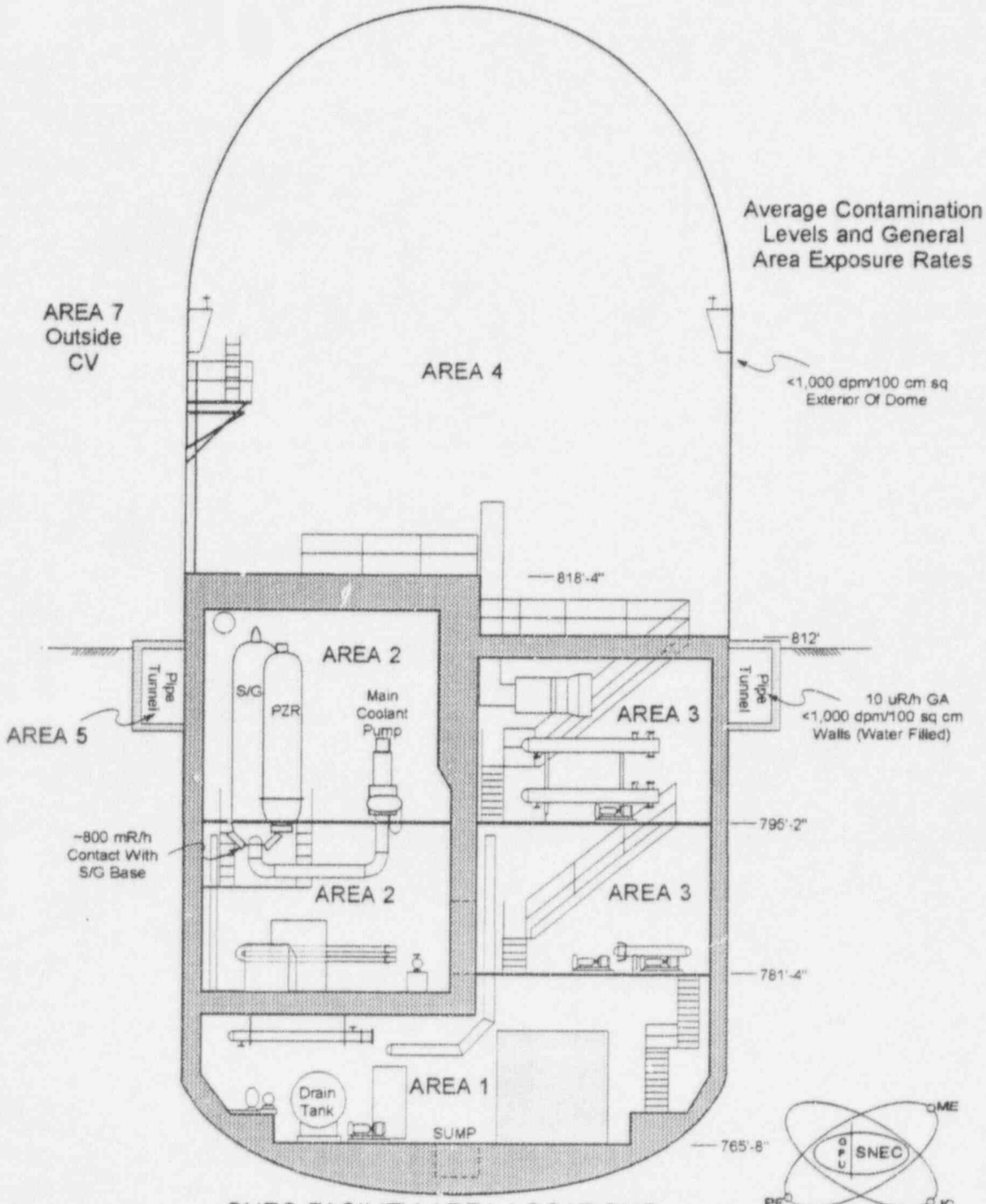
Table 5-2, SNEC Hot Spot Identification Log

NO.	HOT SPOT LOCATION LOG	mR/h
1	Shutdown Cooling Heat Exchanger Flange, 775' El.	100
2	Bottom Of Drain Tank, 765' 8" El.	380
3	Letdown Recirc. Valve V-318, 781' El.	100
4	Regenerative Heat Exchanger Bottom, 781' El.	2800
5	Non-Regenerative Heat Exchanger Flange, 781' El.	280
6	Main Coolant Cold Leg @ RCP Inlet, 795' El.	170
7	RCP Discharge, 795' El.	150
8	Main Coolant Out Of Steam Generator, 791' El.	80
9	Bottom Of Hot Leg Piping @ S/G Inlet, 791' El.	80
10	Bottom Of S/G @ Hot Leg Manway, 793' El.	800
11	S/G Cold Leg Manway Flange, 791' El.	100
12	S/G Cold Leg Manway Cover, 789' El.	100
13	Pressurizer Relief Discharge Line, 779' El.	50

5.7 PERSONNEL RADIATION EXPOSURES

The total radiation exposure estimate for site characterization at the SNEC facility was projected to be about 2 person-rem. The final measured (TLD) dose to SNEC and contractor personnel is reported to be 1.96 Rem. Of this dose, ~73% was

received by Radiological Controls personnel who obtained surveys and samples required by the characterization process, and who performed job coverage during concrete core bore sample extraction work. Approximately 17% of the total exposure was received by contractor workers who performed concrete core boring operations. The remaining 10% was received by GPU Nuclear Project Management and contractor personnel who performed supervisory and specialty tasks such as rigging, asbestos removal and crane repairs.

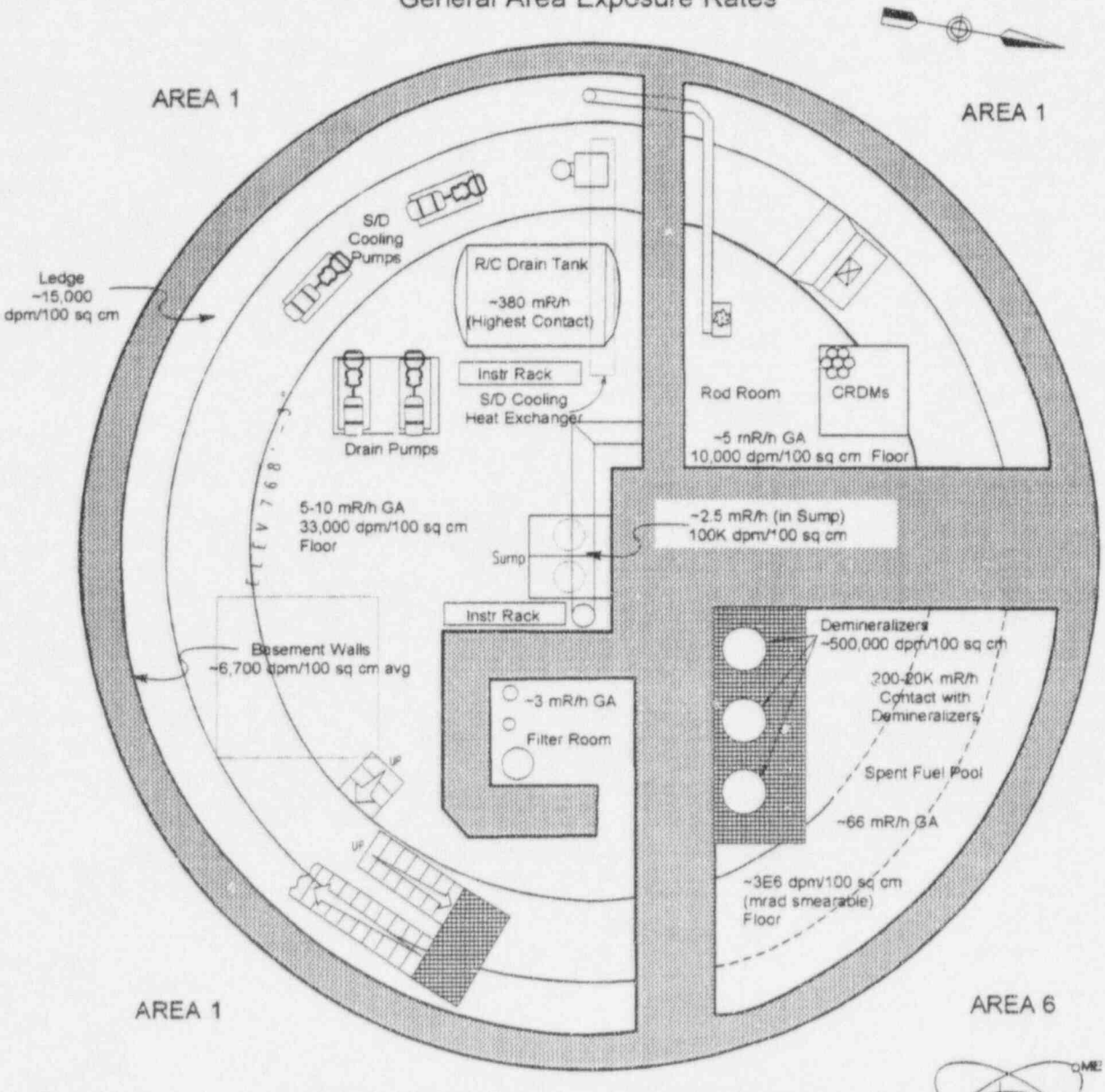


SNEC FACILITY AREA LOCATIONS
Containment Vessel, Sectional View
(Looking North)

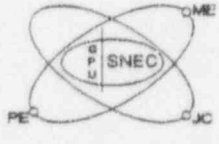
NO SCALE

Figure 5-1

SNEC AREA LOCATIONS
Average Contamination Levels and
General Area Exposure Rates



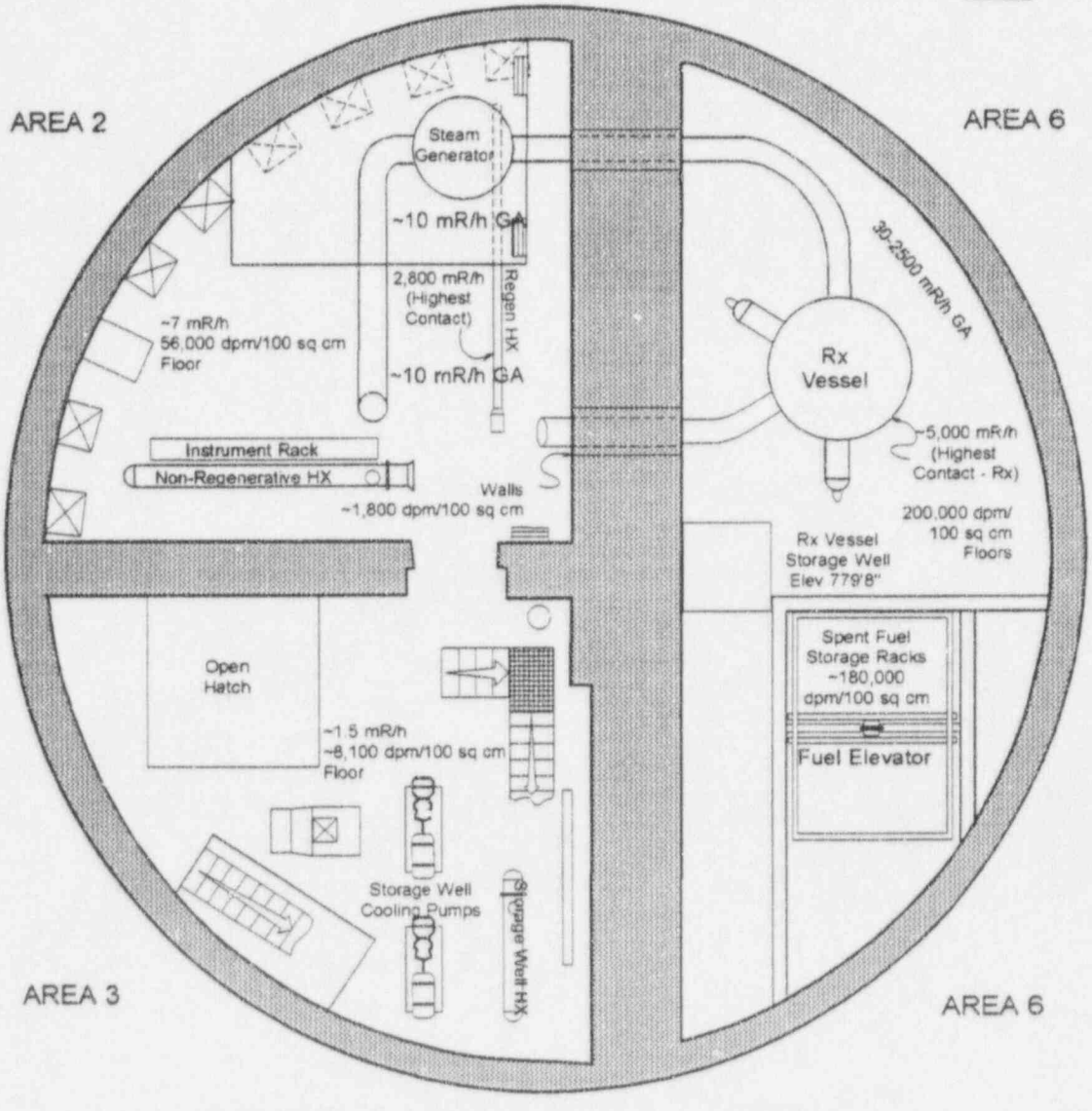
SNEC FACILITY CV -- Areas by Quadrant
Plan Above Operating Floor Elev 765'-8"
Containment Vessel (CV)



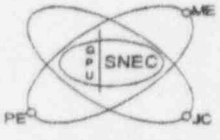
NO SCALE

Figure 5-2

SNEC FACILITY AREA LOCATIONS
Average Contamination Levels and
General Area Exposure Rates

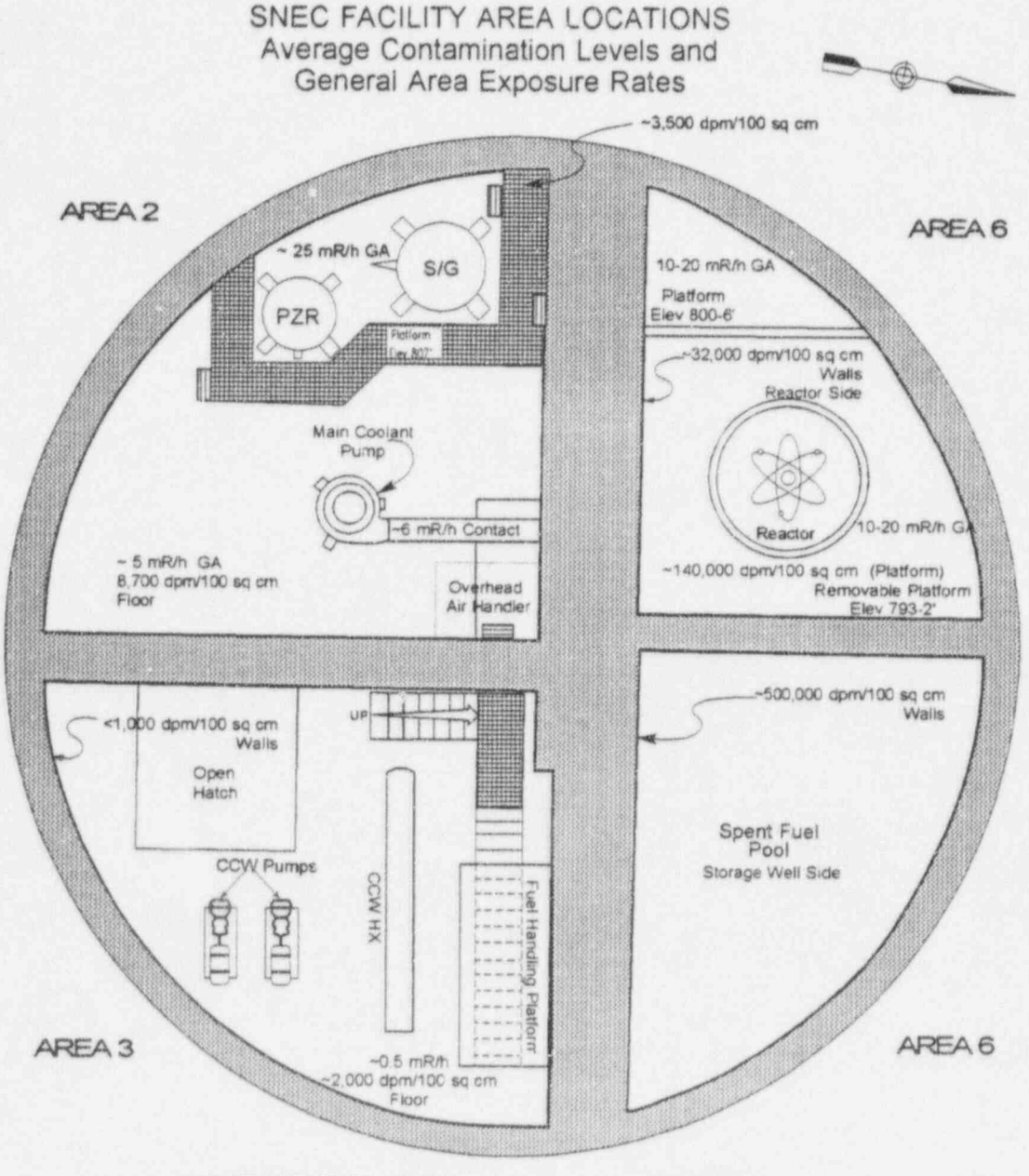


SNEC FACILITY CV -- Areas by Quadrants
Plan Above Operating Floor Elev 781'-4"
Containment Vessel (CV)



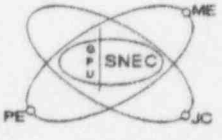
NO SCALE

Figure 5-3



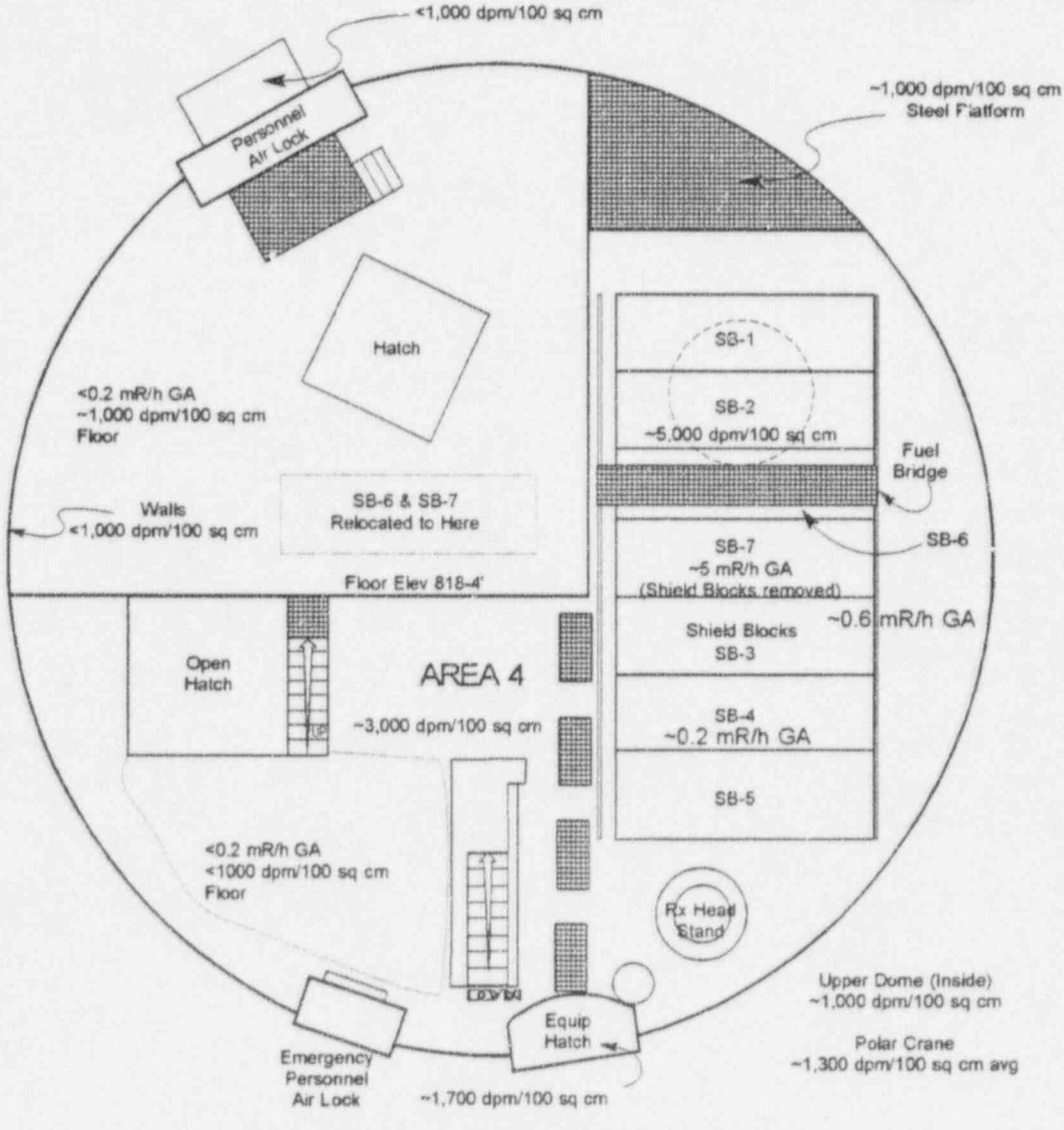
CONTAINMENT VESSEL (CV) -- Areas by Quadrant
Plan Above Operating Floor Elev 795'-2"

Figure 5-4



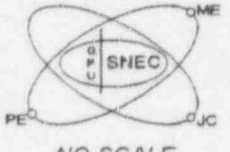
NO SCALE

SNEC FACILITY AREA LOCATIONS
Average Contamination Levels and
General Area Exposure Rates



CONTAINMENT VESSEL (CV) -- Plan View Above
Operating Floor Elev 812'-0"

Figure 5-5



NO SCALE

6.0 QA/QC REQUIREMENTS

6.1 DATA COLLECTION

The SNEC facility Quality Assurance Program (Reference 39), appropriate GPU Nuclear and SNEC procedures, and SNEC Work instructions, were used to direct the performance of all SNEC Site Characterization activities. In addition, laboratory Quality Control (QC) was maintained by using appropriate procedures or Quality Assurance (QA) approved outside laboratories. Data was examined in accordance with existing requirements to ensure a reasonable interpretation of results. Samples and measurements at all locations were collected using accepted procedures or SNEC Work Instructions to ensure well documented and consistent collection techniques.

On-site sampling and measurement instruments were subject to operational checks and periodic calibrations, in accordance with Saxton Nuclear Experimental Corporation facility procedures. This was done to ensure both accuracy and precision. Records and calculations were checked for error and proper use of appropriate recording and calculational techniques. Nuclear Safety Assurance (NSA) provided monitoring in support of site characterization. Laboratories were required to verify selected data analysis results. Chain-of-custody procedures were implemented to maintain the integrity of samples and corresponding analytical results. This program ensured that characterization data collected may be used to accurately evaluate site conditions.

6.2 MEASUREMENT QUALITY CONTROL

To ensure measurement quality, the following controls were implemented:

- Five percent of soil samples were re-analyzed or re-taken and then re-analyzed.
- Five percent of swipes (system & structure) were re-analyzed or re-taken and then re-analyzed.

- Five percent of direct measurements of total surface contamination were rotaken.

Results from repeat measurements and sampling activities were reviewed and compared with previous results from other similiar activities.

6.3 SAMPLE RETENTION

Material samples will be retained by the SNEC facility radiological controls staff in accordance with the following schedule.

Sample Type [1]	Retention Period
Core Bore Samples	*Completion of Decontamination Activities*[2]
Smears	*Acceptance of Decommissioning Plan*[1,4]
Bulk Samples	*Completion of Decontamination Activities*[2]
Soil Samples	*Completion of Decontamination/ Remediation*[3]

1. Not all samples shall be retained. Representative samples for typical locations throughout the facility (as determined by SNEC) will be retained. Samples that were analyzed prior to this retention requirement may not be available.

2. Completion of Decontamination Activities is defined as satisfactory completion of NRC Confirmatory Survey Report which addresses SNEC facility structures.

3. Completion of Decontamination/Remediation is defined as completion of NRC Confirmatory Survey Report which addresses SNEC facility soil.

4. Acceptance of Decommissioning Plan is defined as USNRC authorization to commence Decontamination activities.

7.0 REFERENCES

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4. "Saxton Nuclear Experimental Facility Reactor Vessel, Internals, Ex-Vessel Lead, Structural Steel and Reactor Compartment Concrete Shield Wall Radionuclide Inventory" (Proprietary), Document No. G01-1192-003, Rev. 0, December 1995, prepared by TLG Services, Inc.

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24. SNEC Procedure 6575-ADM-4500.12, "Radiological Surveys: Requirements & Documentation.

25. SNEC Procedure 6575-ADM-4500.13, "Air Sampling" Rev. 0.

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27. SNEC Procedure 6575-ADM-4500.16, "Air Sample Analysis" Rev. 1

28. SNEC Procedure 6575-ADM-4500.19, "Release Surveys" Rev. 0

29. SNEC Procedure 6575-ADM-4500.20, "Radiation Work Permits" Rev.1.

30. SNEC Procedure 6575-ADM-4500.21, "Control and Issue of Respiratory Protection Equipment" Rev. 0

31. SNEC Procedure 6575-ADM-4500.22, "Environmental Monitoring" Rev. 3.

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161. SNEC Radiological Survey 89B-95-0308, "Pb Inventory Containment Vessel 795'," 07/12/95.

162. SNEC Radiological Survey 89B-95-0309, "Pb Inventory Containment Vessel 781'," 07/12/95.

163. SNEC Radiological Survey 821-95-0320, "Containment Vessel 781' Primary (Area 2)," 07/18/95.

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165. SNEC Radiological Survey 811-95-0322, "Containment Vessel 765' (Area 1)," 07/18/95.

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183. SNEC Radiological Survey 899-95-0378, "Containment Vessel 781'-795' Primary Comp. Piping Between Sump Pumps & CV Wall," 08/02/95.

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185. SNEC Radiological Survey 899-95-0380, "Containment Vessel 781' Primary Comp. Vent & Drain Header Discharge Line," 08/02/95.

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188. SNEC Radiological Survey 892-95-0383, "795' Pressurizer Relief Valve Discharge Line," 08/03/95.

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191. SNEC Radiological Survey 88H-95-0388, "Weir," 08/04/95.

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200. SNEC Radiological Survey 869-95-0429, "Containment Vessel Storage Well Boric Acid, SW, Pur. Demin," 08/16/95.

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215. SNEC Radiological Survey 871-95-0593, "Fixed Contamination Outer Containment Vessel Wall & Concrete," 09/28/95.

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219. SNEC Radiological Survey 862-95-0638, "Reactor Cavity & Fuel Pool," 10/12/95.

220. SNEC Radiological Survey 214-95-0648, "Containment Vessel 765' Discharge Tank Pumps & Filter/Cubicle," 10/16/95.

221. SNEC Radiological Survey 89B-95-0651, "Containment Vessel 818' Borated Water Pumps," 10/17/95.

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225. SNEC Radiological Survey 84Z-95-0667, "Fuel Transfer Trolley," 10/24/95.

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229. SNEC Radiological Survey 82Z-95-0672, 781' Containment Vessel Primary Instrument Rack," 10/24/95.

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231. SNEC Radiological Survey 818-95-0742, "Containment Vessel 765' Instrument Racks," 12/5/95.

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234. SNEC Radiological Survey 898-95-0757, "Containment Vessel Ventilation Units," 12/07/95.

List of Appendices

1) Appendix A.....SNEC Site Characterization Plan, Procedure Number 6575-PLN-4520.06, Rev. 0, 3/24/95, Pages 1 to E4-3

2) Appendix B.....SNEC Facility Photographic Section, Pages 1 to 32

3) Appendix C.....Regulatory Guide 1.86, "Termination of Operating Licenses for Nuclear Reactors", June 1974, 5 Pages

4) Appendix D.....Off-Site Radiological Analysis of SNEC Facility Samples.

   a) B&W Report No. 9507002, September 14, 1995, Includes Supplemental Information in Report No. 9507002S, January 10, 1996, 36 Pages. Samples include Pipe Sections, Scrapings, Filter Solids & Sludge Materials.

      Attached to reports are the individual sample percentages of each isotope for each sample. Systems are identified, TRU & U Content is estimated for each sample analyzed. Ratios between various nuclides are calculated. Assumes "Less Than" values are positive results.

   b) B&W Report No. 9509065, November 2, 1995, Includes Supplemental Information-TCLP Metals Analysis, Bulk Asbestos Results and Total Lead Analysis Results, 28 Pages. Samples Include Pipe Sections, Tank Sediment, Paint Chips, SW Resin, S/G Samples and analysis of Reactor Cavity Steel.

      Attached to reports are the individual sample percentages of each isotope for each sample. Systems are identified, TRU & U Content is estimated for each sample analyzed. Ratios between various nuclides are calculated. Assumes "Less Than" values are positive results.

   c) B&W Report No. 9510024, December 6, 1995, Concrete Core Bore Results, 17 Pages.

      Attached to report is the individual sample percentages of each isotope for the Hi-n-Flux (Activated), core bore sample and a composite of other core bore sample results from non-activated

areas (No-n-Flux). Also included is the sample number key relating the original core bore sample numbers with the samples sent to B&W.

d) B&W Report No. 9511048, December 22, 1995, CV Tunnel, RV Sample, Rebar Sample & Condensate Tank Sediment Results, 10 Pages.

Attached to reports are the individual sample percentages of each isotope for each sample. Systems are identified, TRU & U Content is estimated for each sample analyzed. Ratios between various nuclides are calculated. Assumes "Less Than" values are positive results.

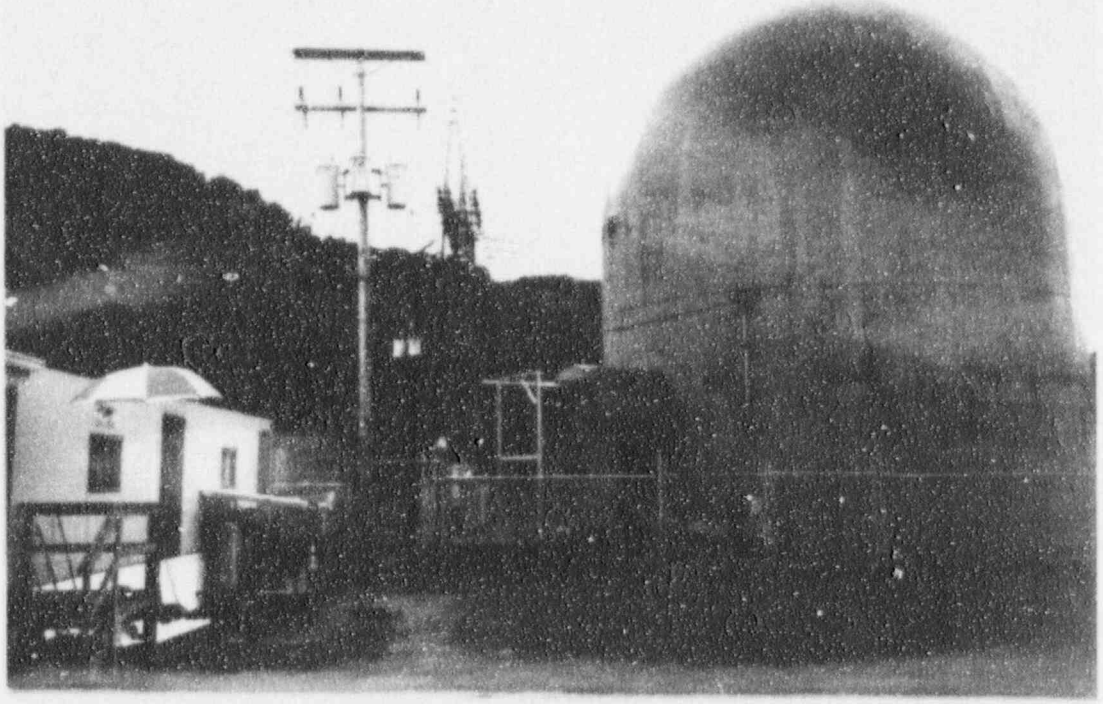
e) Teledyne Brown Engineering Environmental Services Reports on Composite Smears From CV AREA's 1, 2, 3/4 & 6. Dated 1/15/95 and 6/26/95, 7 Pages. Normalized results from these reports are presented in section 4.1.

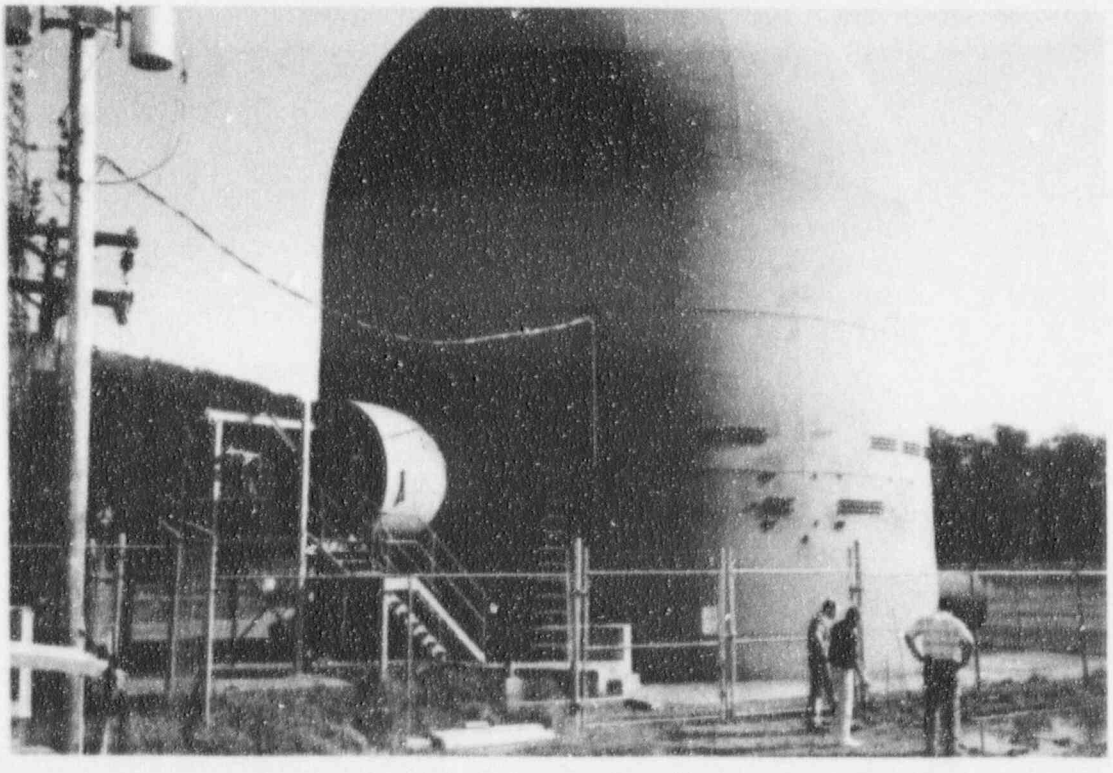
5) Appendix E.....Results of SNEC Facility Piping System Walk-Down, Spring 1995, 2 Pages.

6) Appendix F.....SNEC Facility Chain of Custody Log for SNEC Samples, Pages 1 to 11.

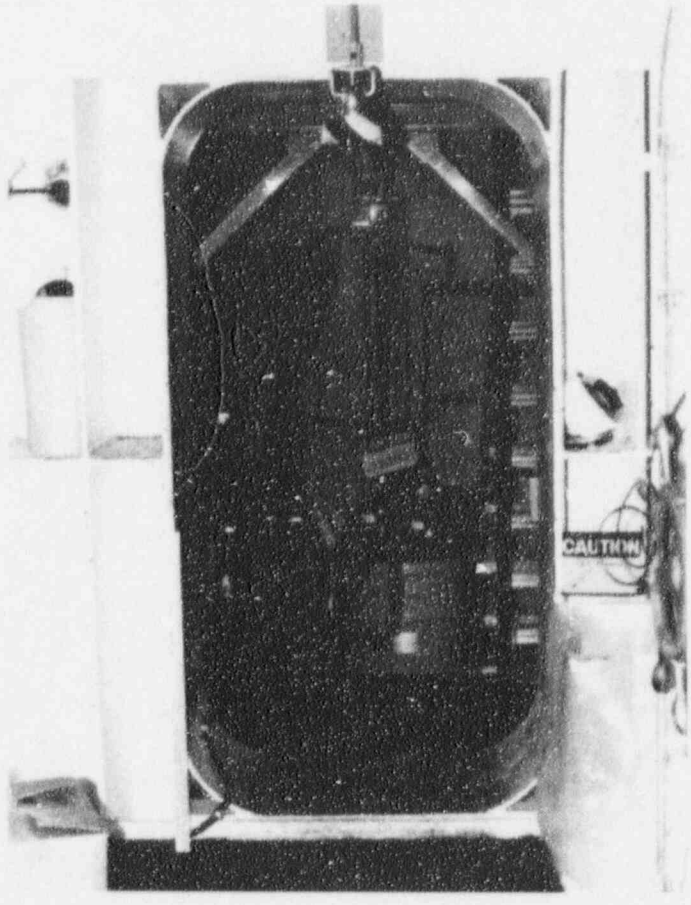
APPENDIX A

APPENDIX B



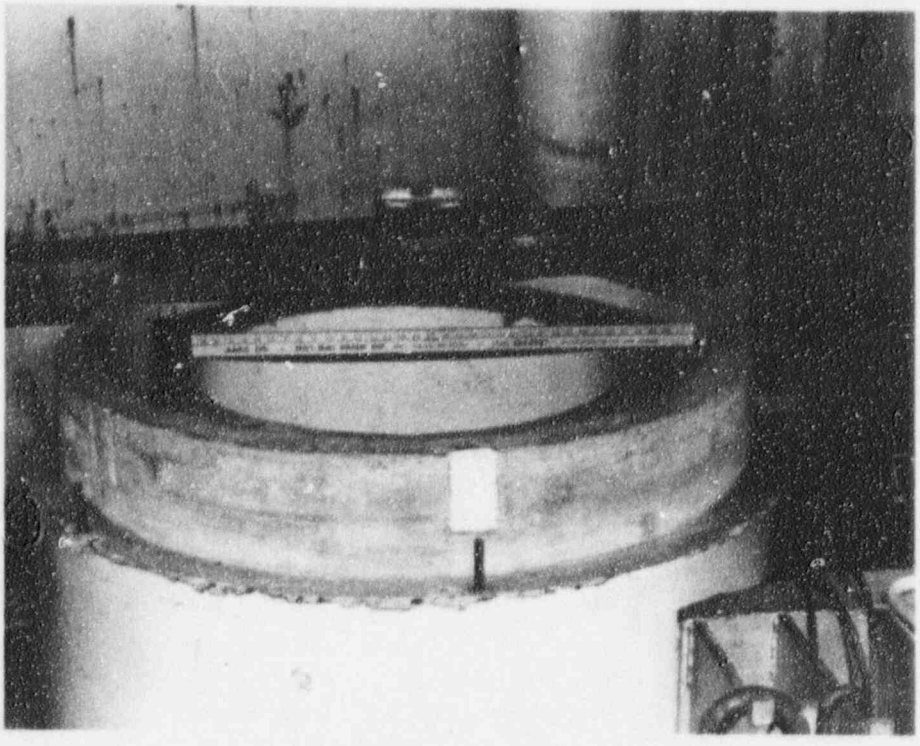


SNEC FACILITY CONTAINMENT VESSEL
LOOKING NORTHEAST

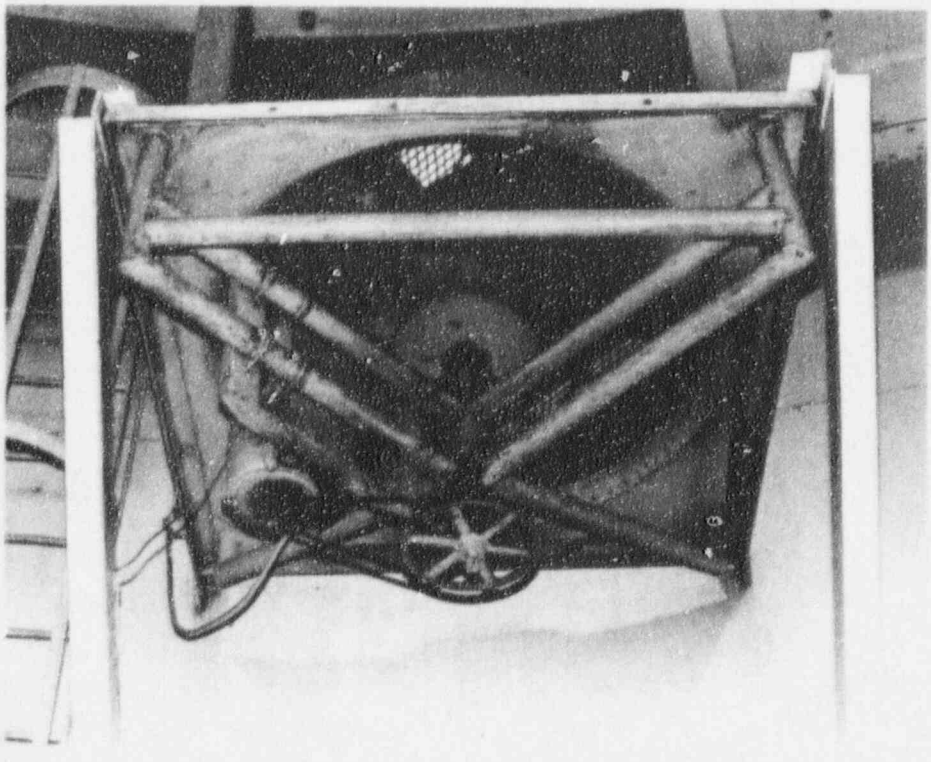


820' elevation looking east through the personnel airlock.

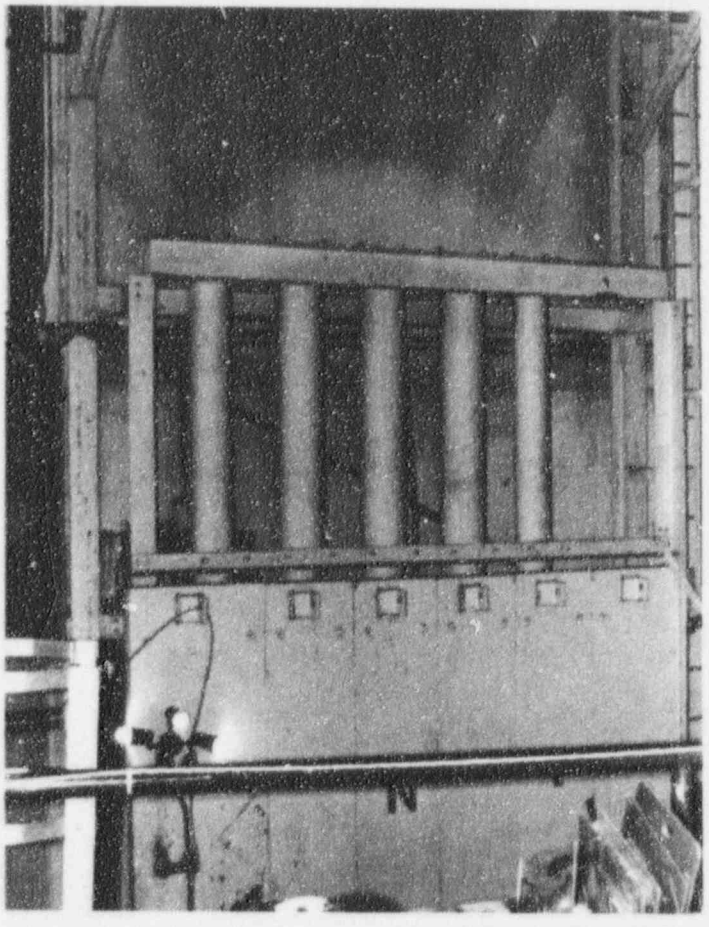
820' elevation looking out from the personnel air lock (looking west).



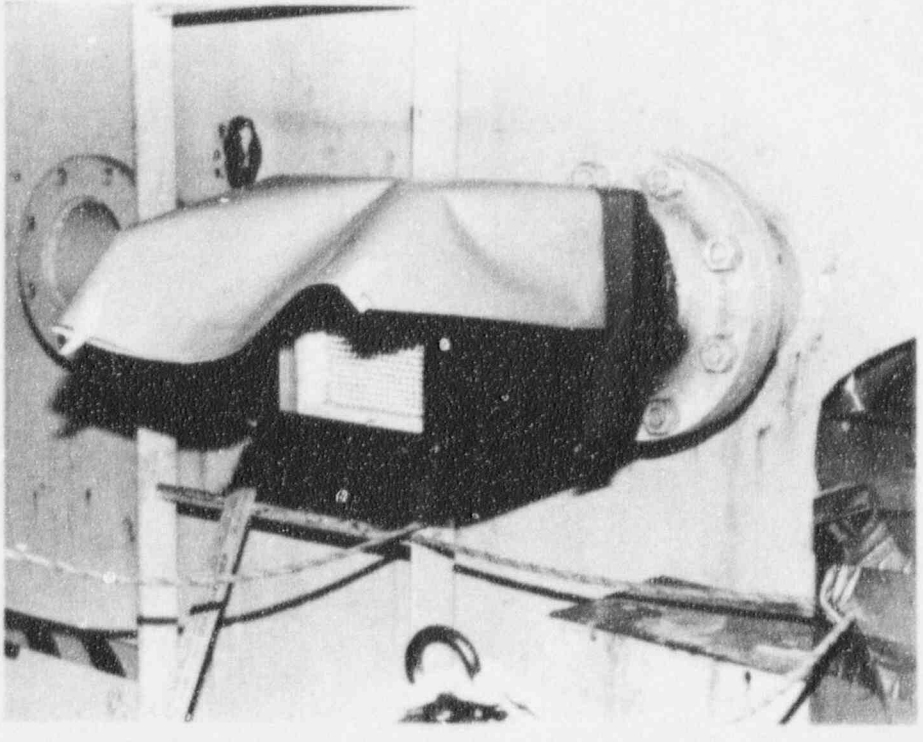
812' elevation reactor head stand looking northeast.



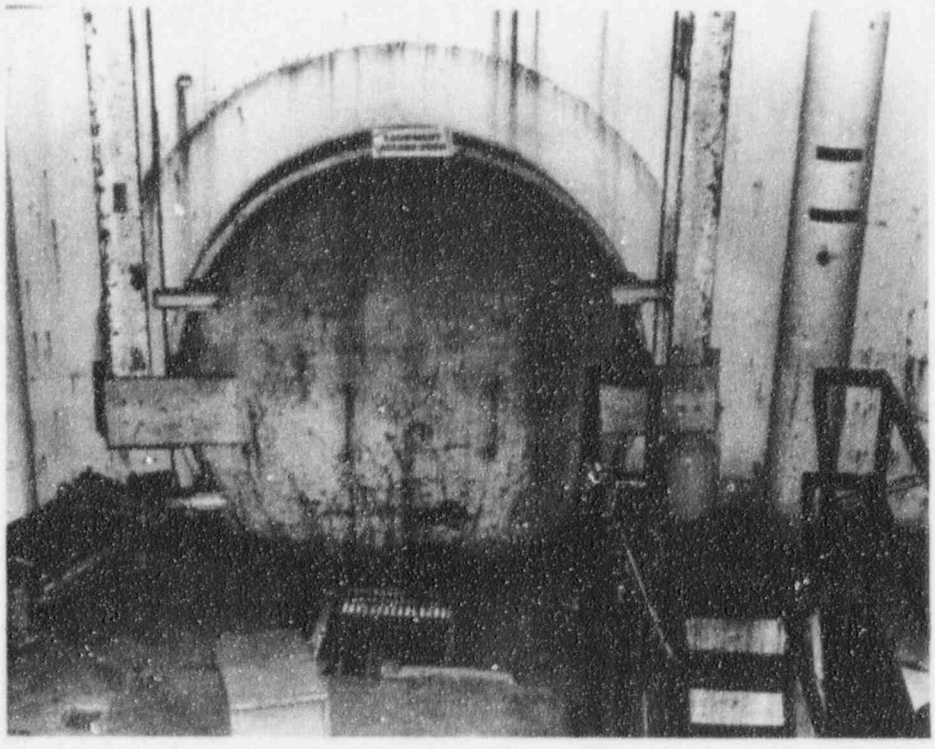
C.V. interior circulating fan. West end of C.V. above 818' elevation.



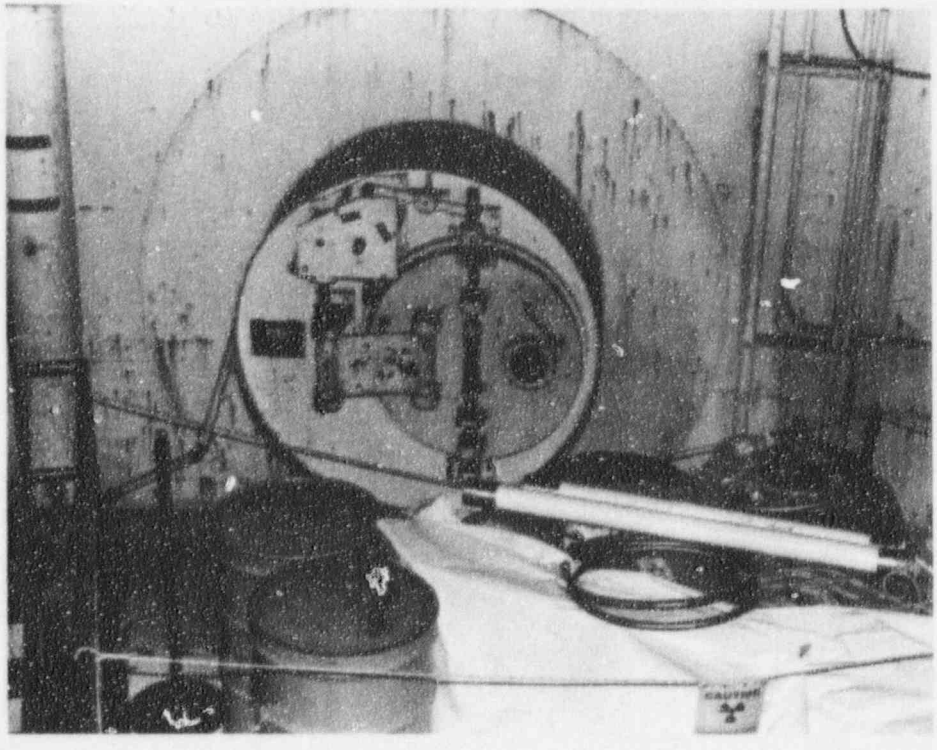
View from 818' elevation looking north. Visible is the NI shield structure on the 812' elevation.



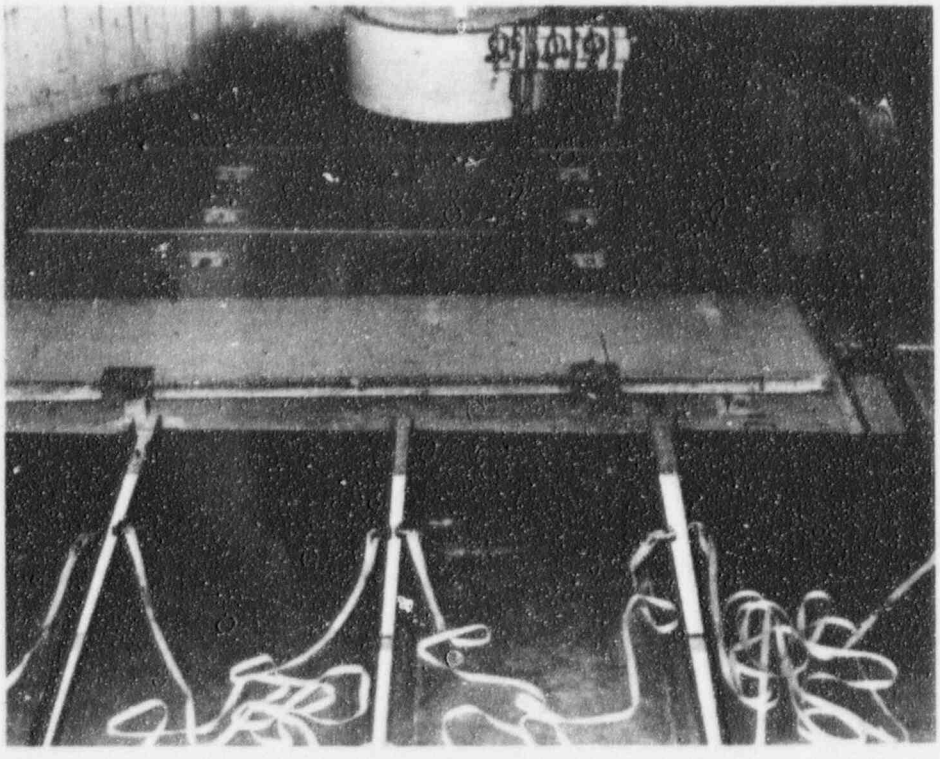
The 818' elevation west end C.V. breather filter.



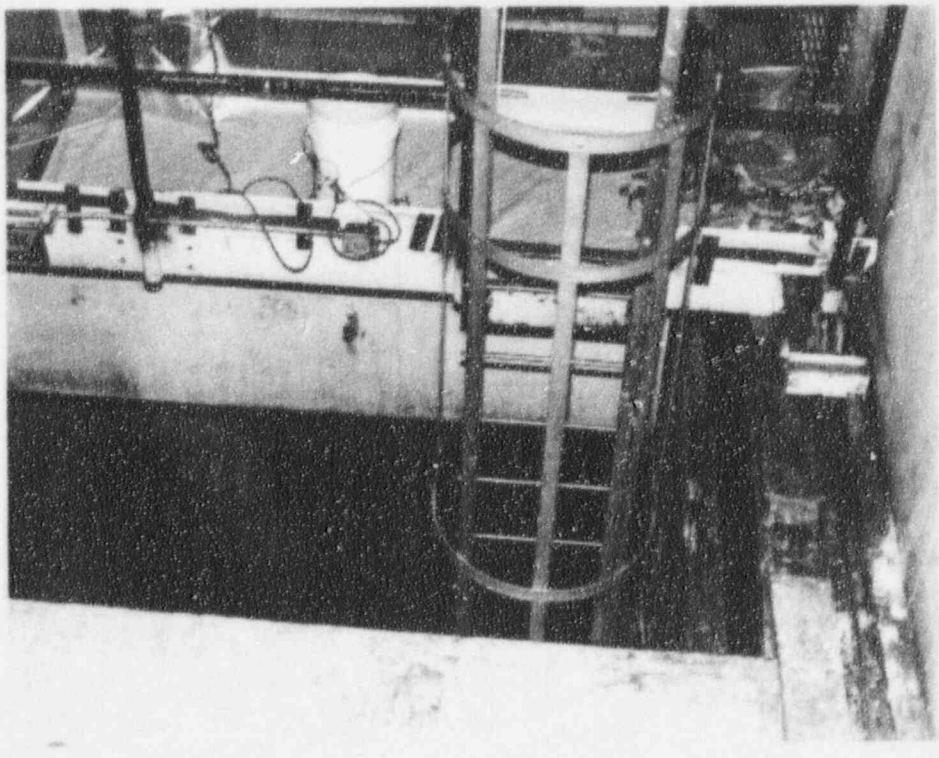
812' elevation looking east. Equipment hatch. Stairwell to lower elevation.



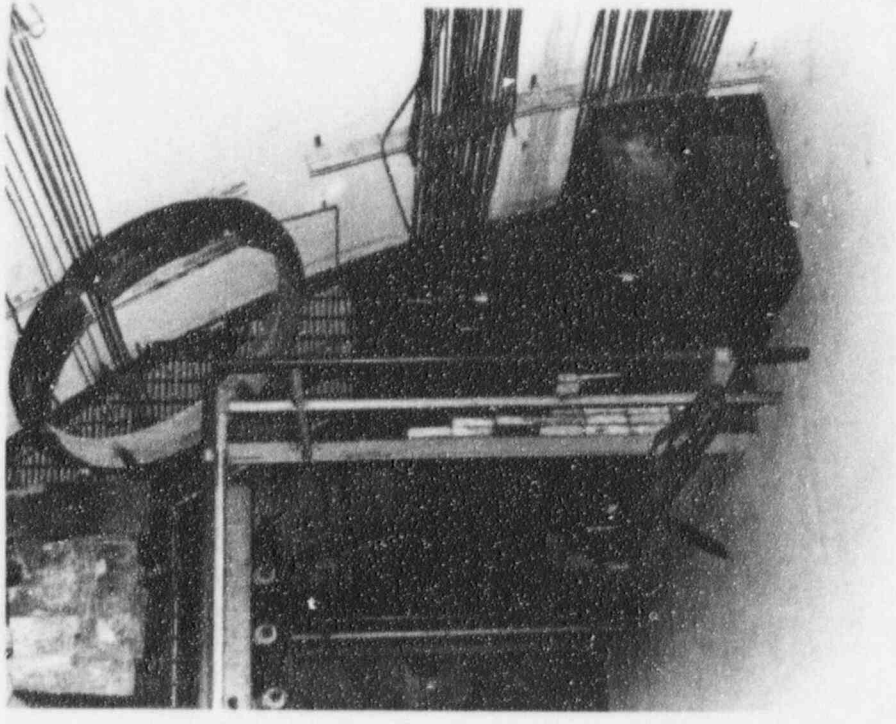
812' elevation looking east, emergency escape airlock.



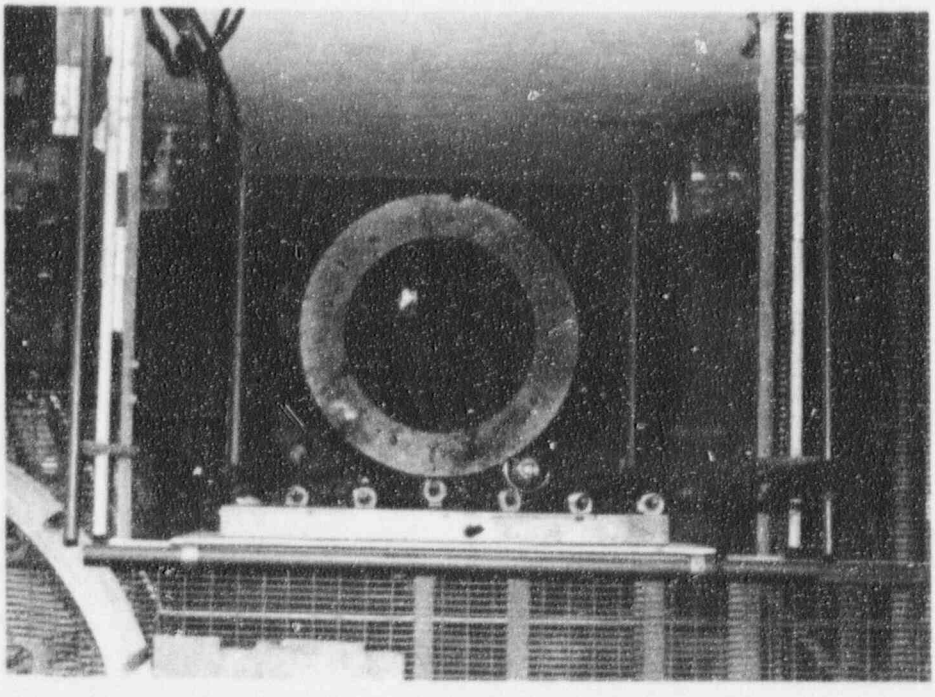
812' elevation looking east over the shield blocks. The "key block" is visible laying down while the temporary covers are visible in the foreground.



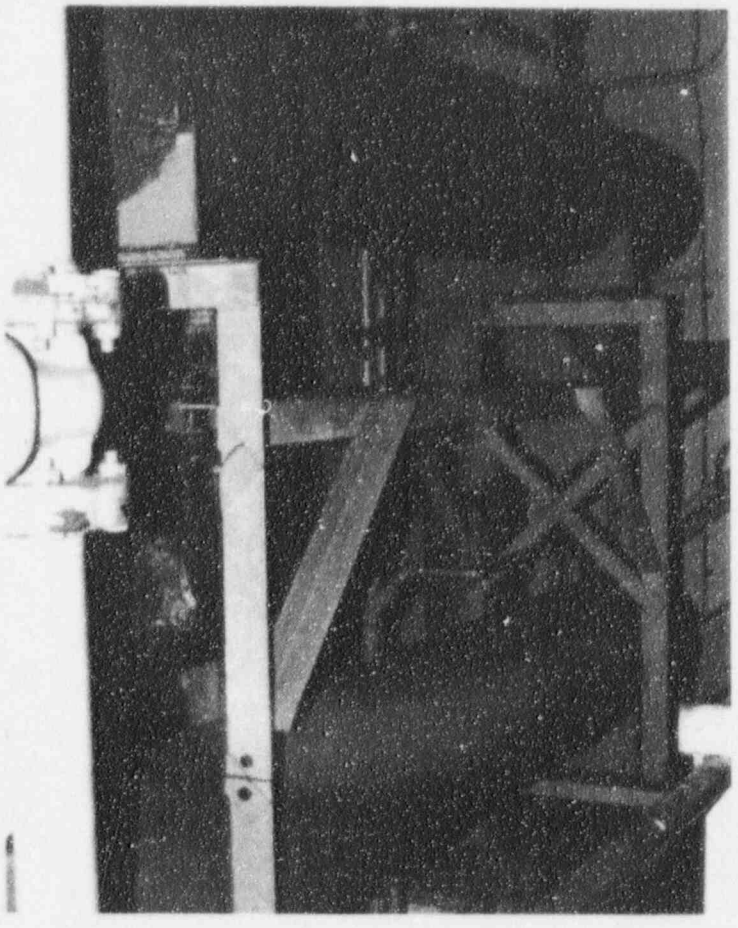
812' elevation fuel handling bridge ladder to storage well.



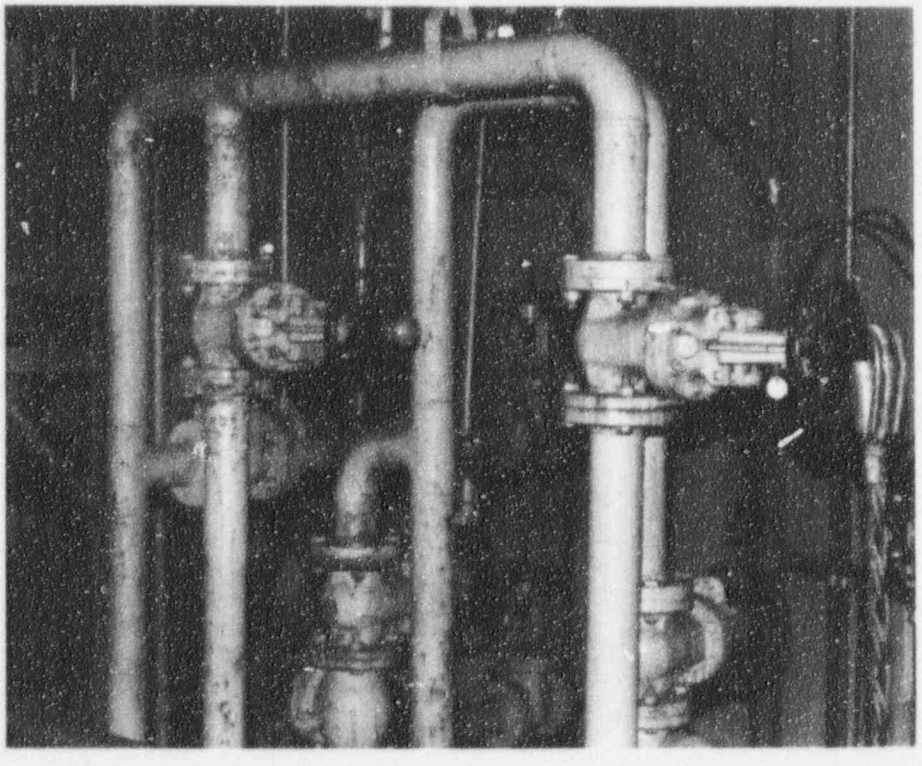
View from 812' elevation open hatch looking down and to the south. Primary compartment is to the right.



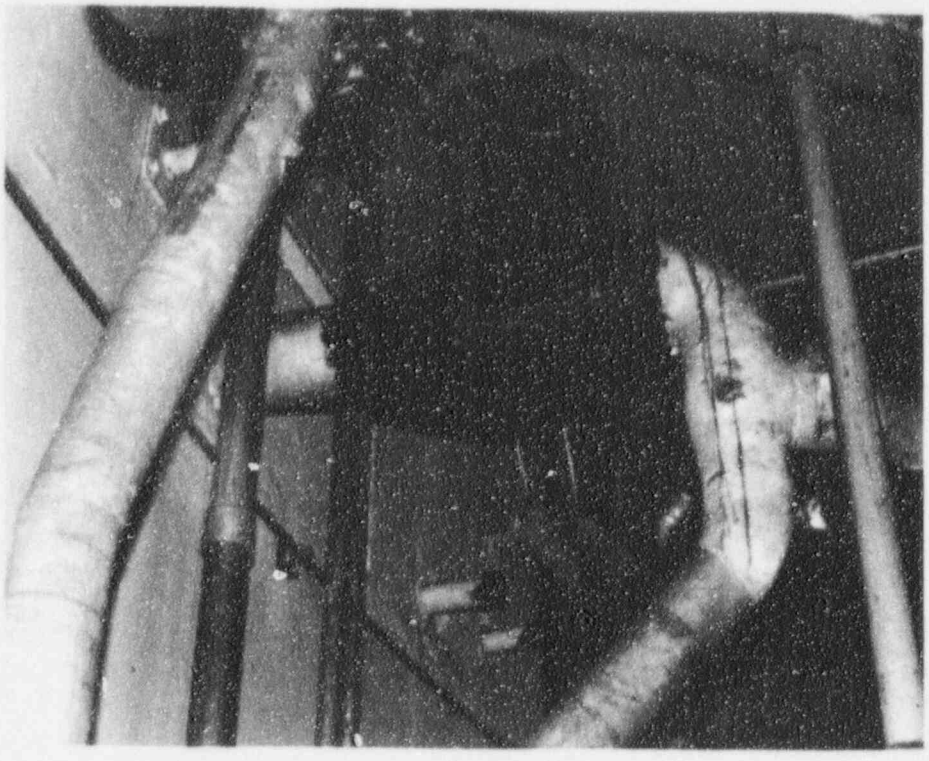
Looking down from 812' elevation to 765' elevation. Primary compartment outer south wall is visible at the top of the picture.



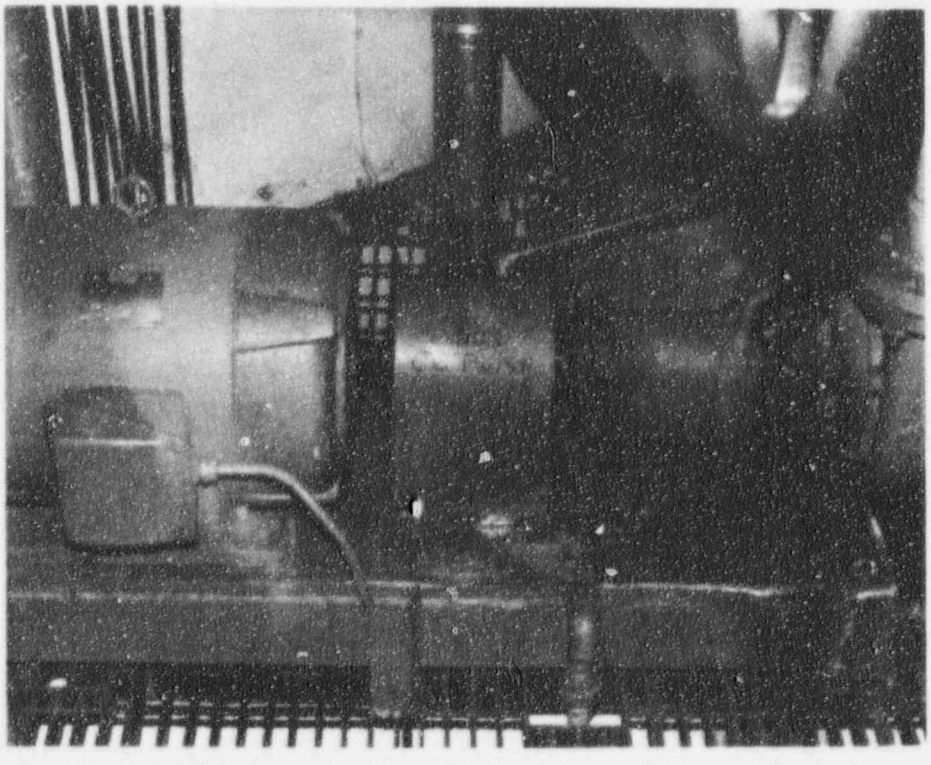
Auxiliary compartment 795' elevation component closed cooling/river water heat exchangers.



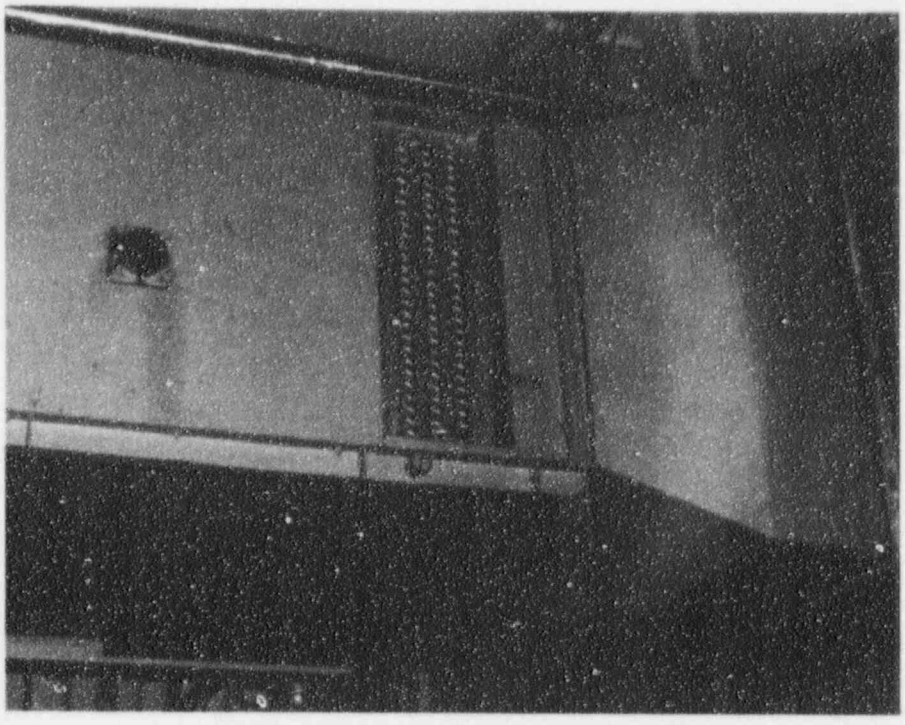
795' elevation Auxiliary compartment looking east, northeast. Visible is the closed cooling water system piping above the two pumps.



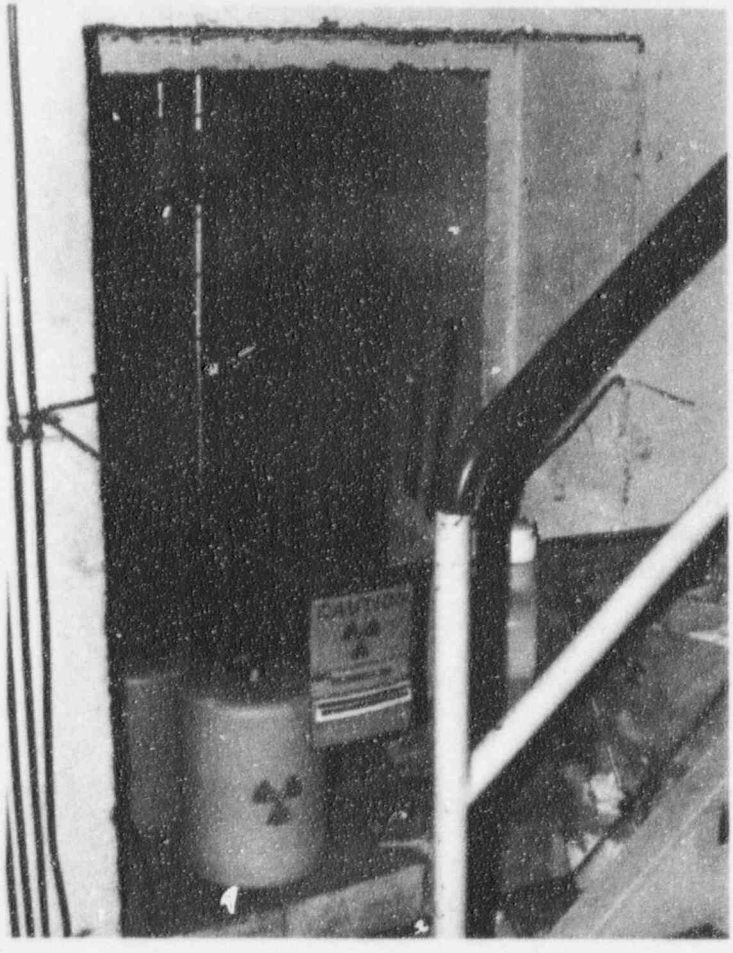
795' elevation Auxiliary compartment east wall, river water check valve.



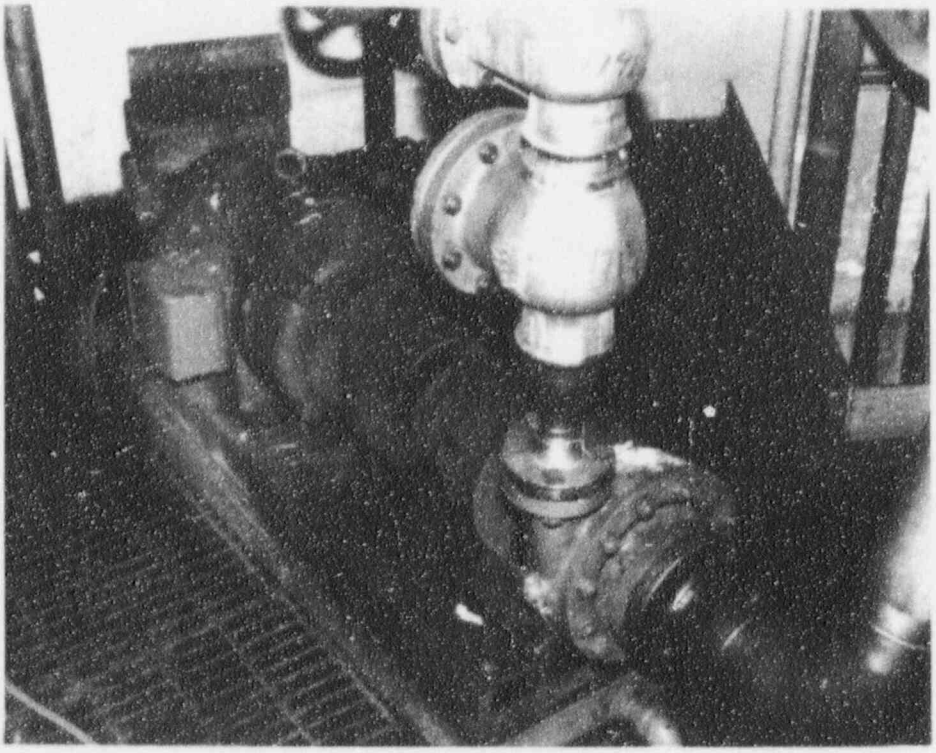
Auxiliary compartment 795' elevation #1 component cooling pump. (1of 2)



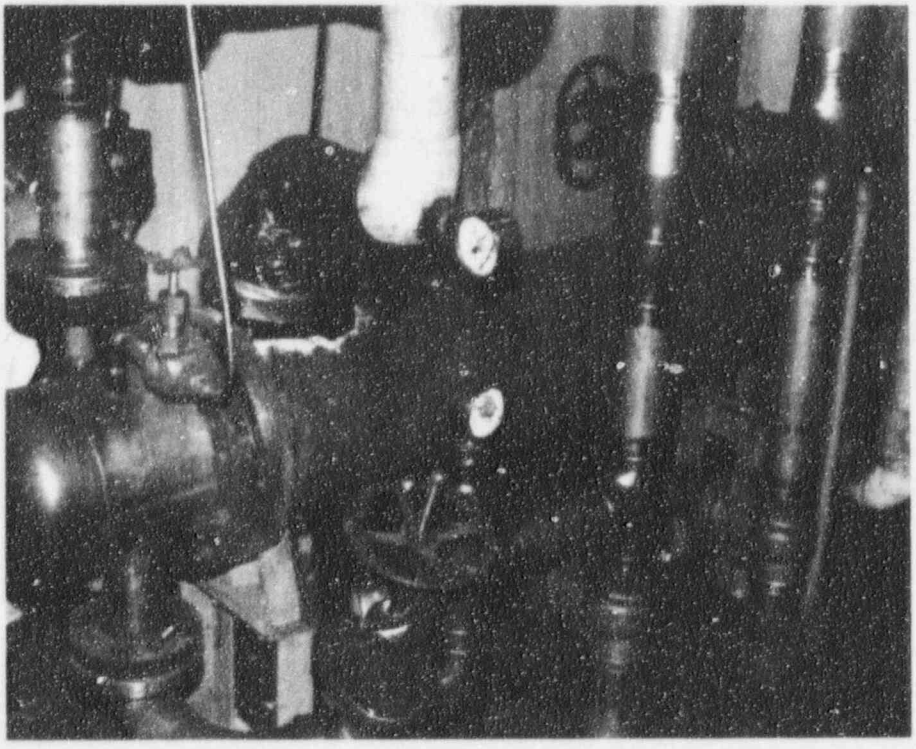
795' elevation Auxiliary compartment air handling unit in the ceiling.



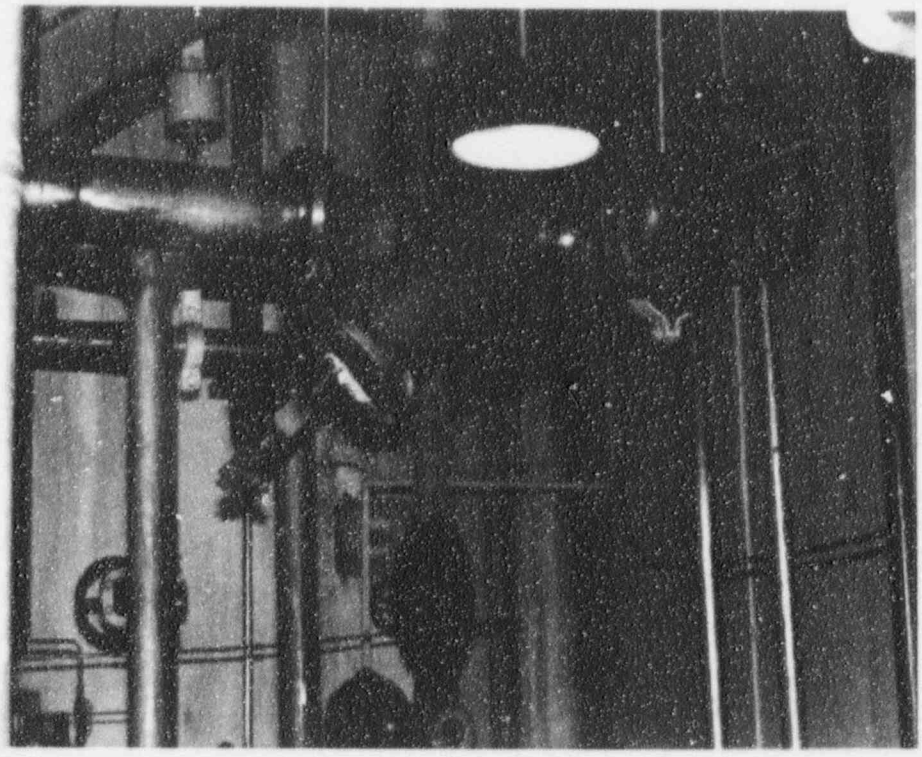
781'elevation Auxiliary compartment view of access into the Primary compartment looking west.



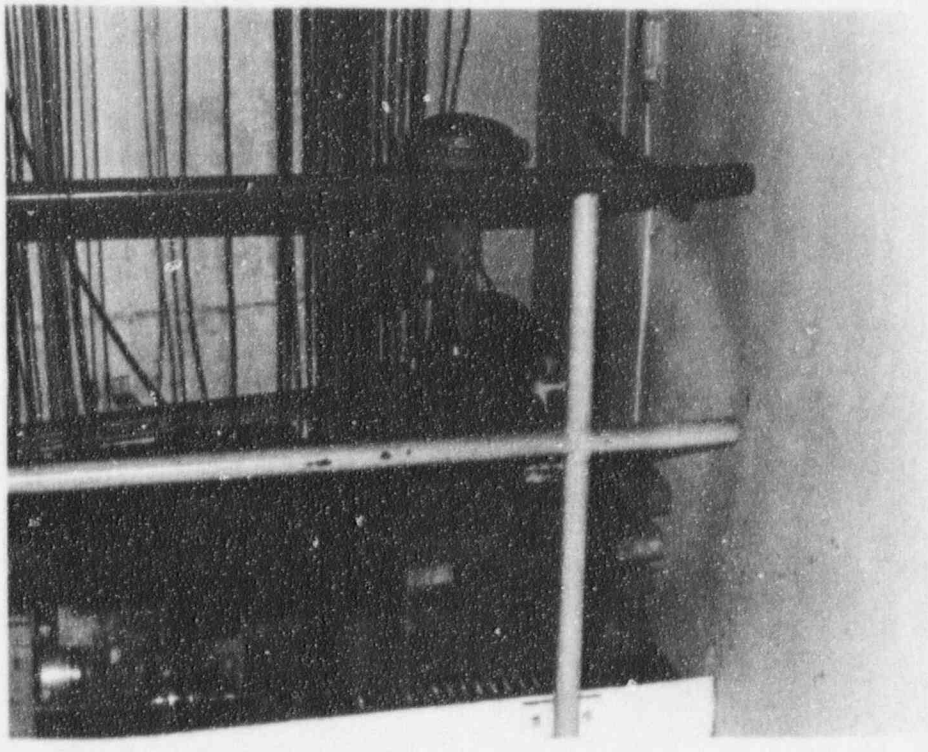
Storage well cooling pump #2 (1 of 2). 781' elevation Auxiliary compartment.



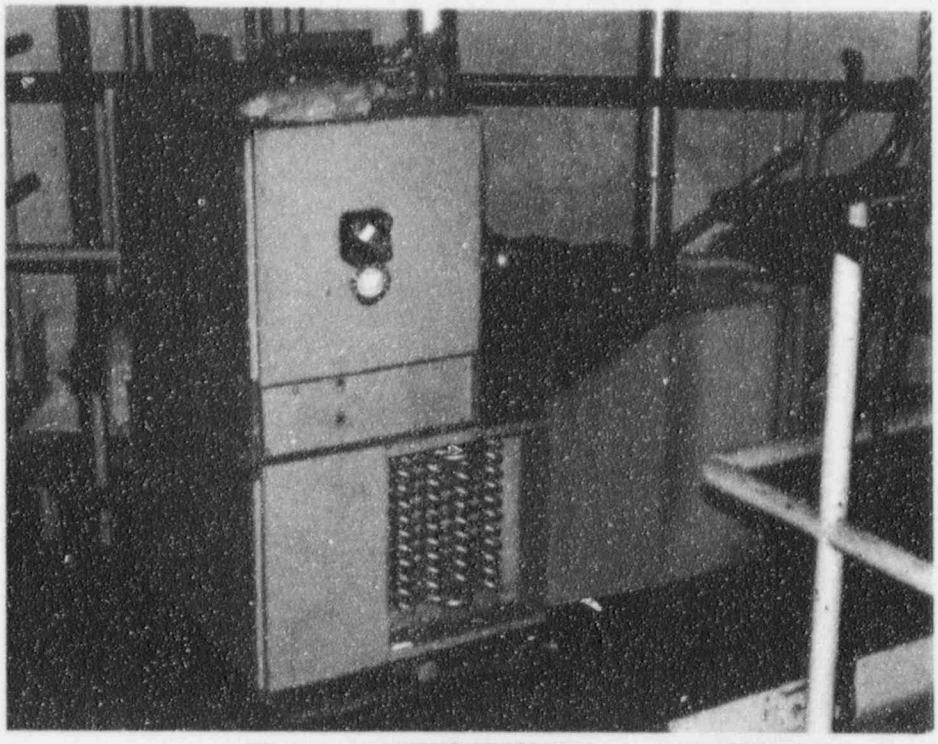
781' elevation Auxiliary compartment, storage well heat exchanger.



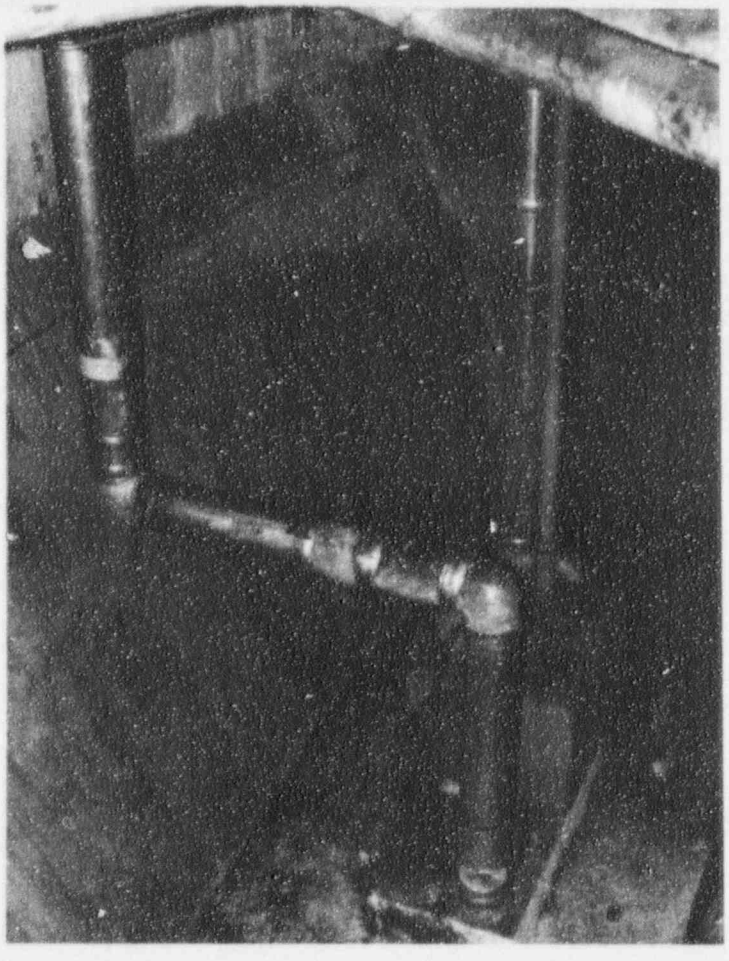
781' elevation Auxiliary compartment looking northeast. Storage well cooling suction piping and strainer are visible. 6V1785



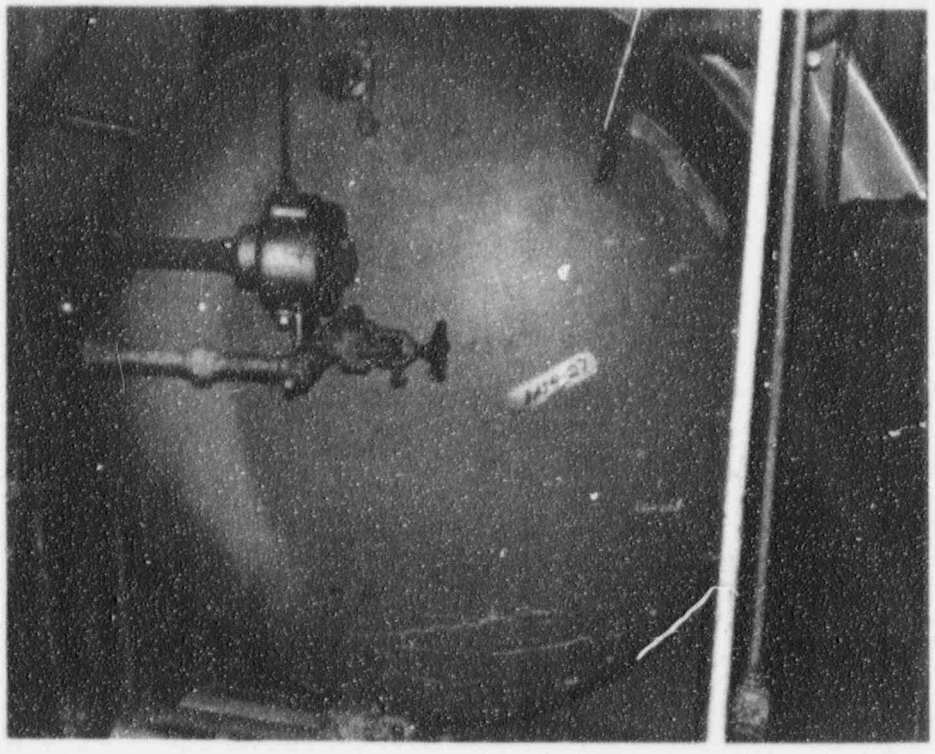
781' elevation Auxiliary compartment looking south at 1LRC-21V. Visible to the left is an incore drive assembly.



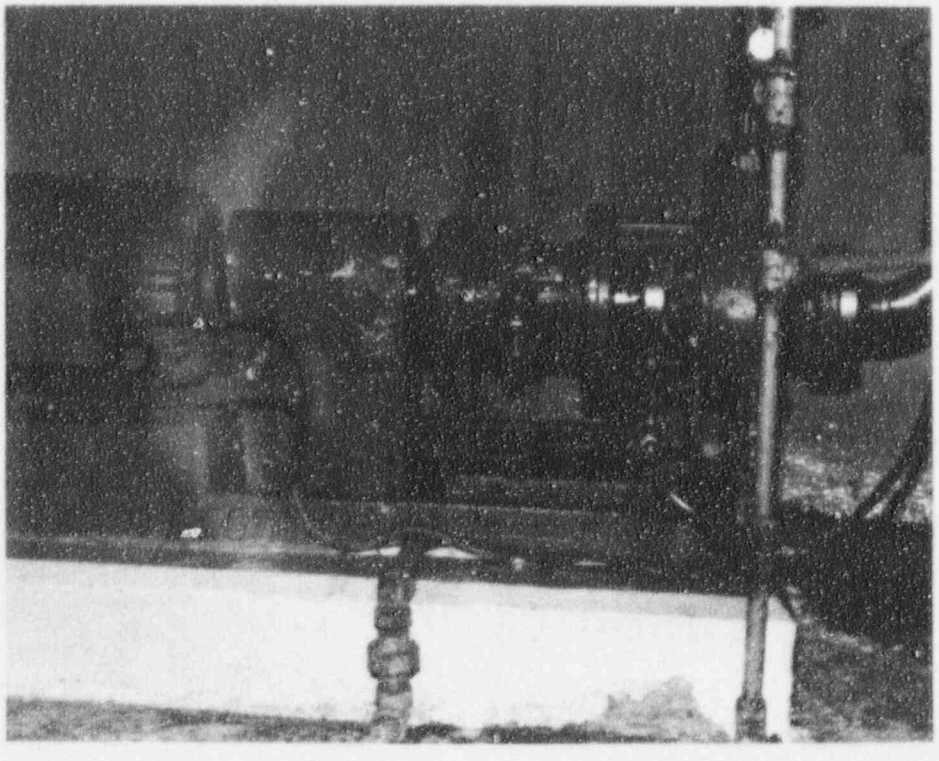
781' elevation Auxiliary compartment air handling unit (#2) looking east. Open hatch at right.



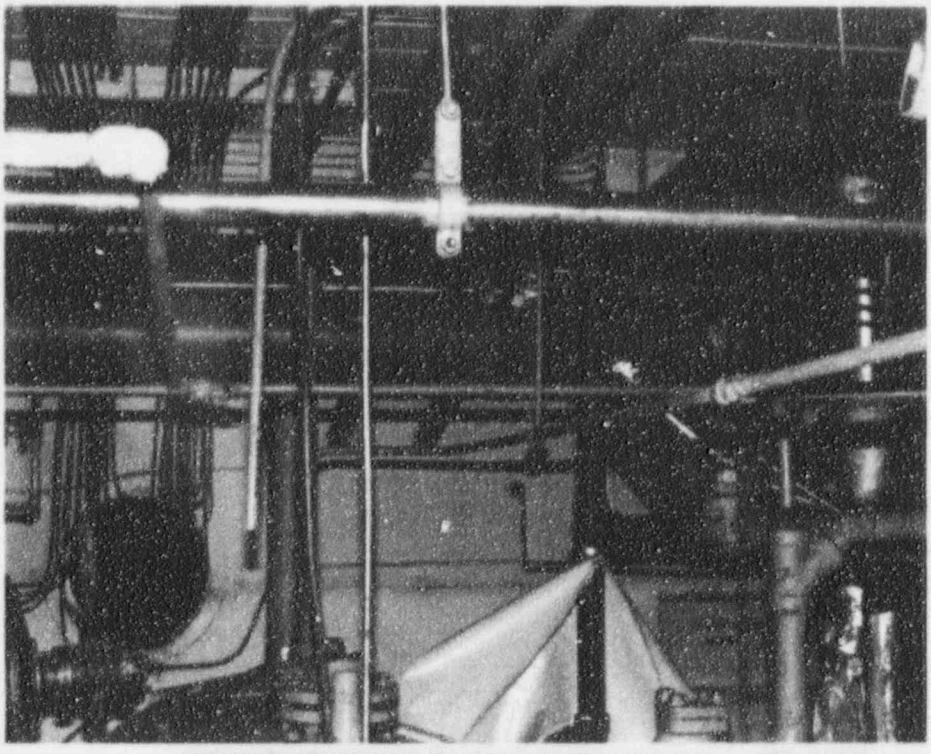
765' elevation Auxiliary compartment southeast side. Condensate return unit.



765' elevation Auxiliary compartment looking north at the south end of the drain tank.

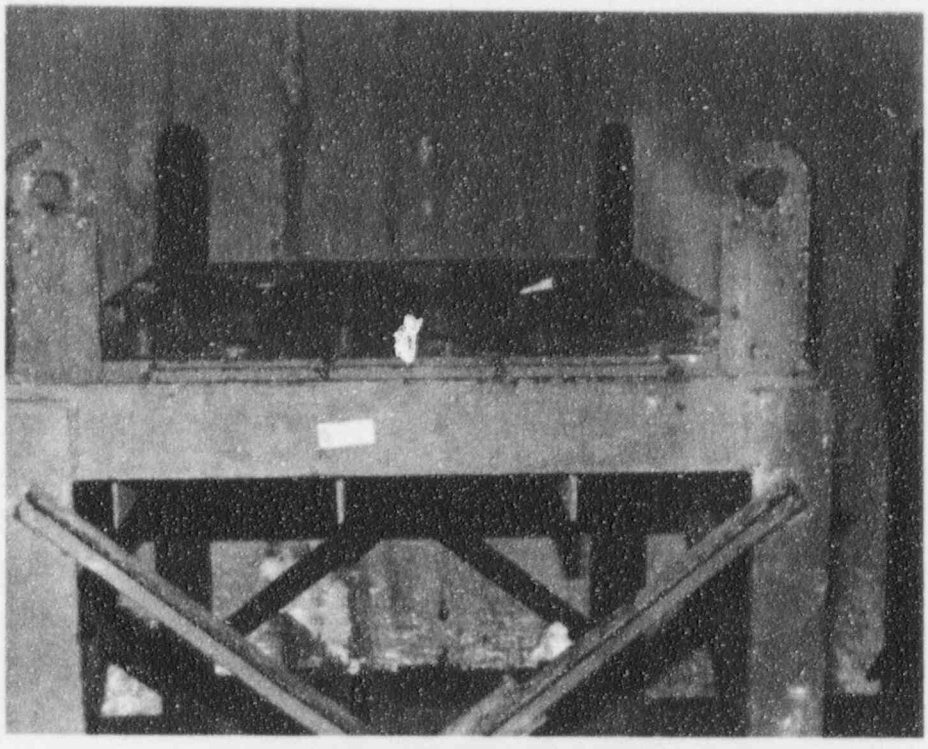


765' elevation Auxiliary compartment south west side. Shutdown cooling pump #2 (1of 2) on the 768'-3" ledge.

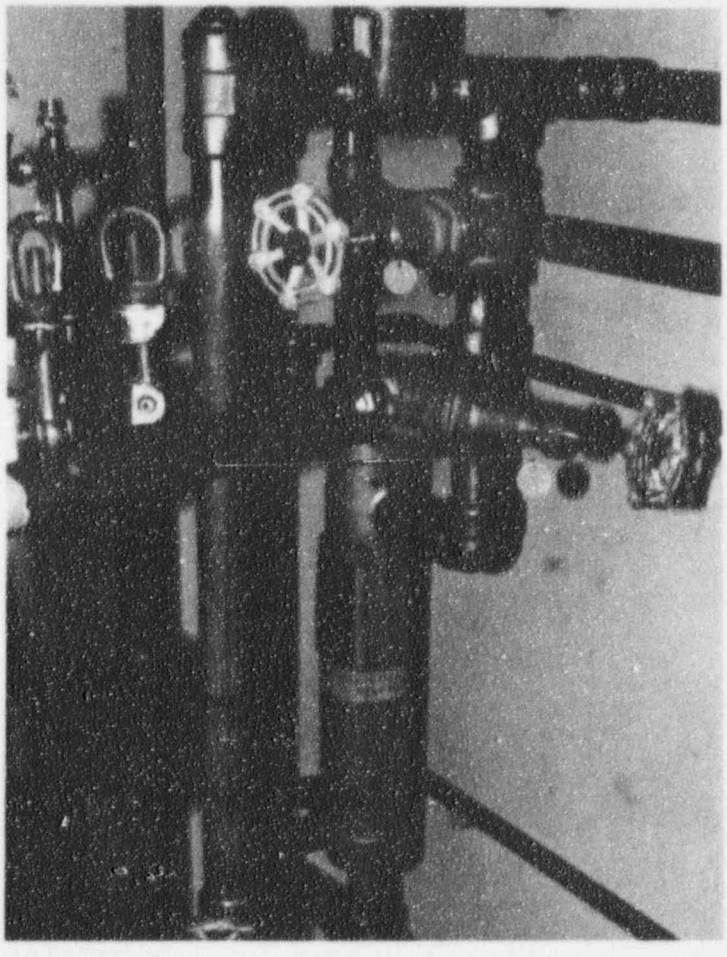


765' elevation Auxiliary compartment looking north. Area above the drain tank. Visible above the tank is the shutdown cooling heat exchanger.

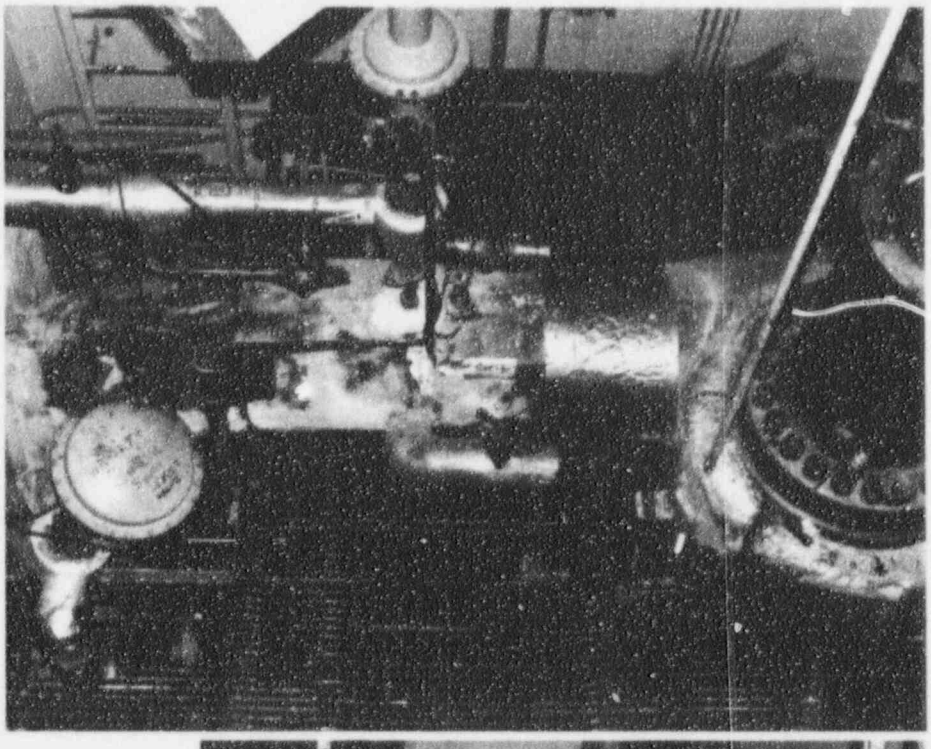
765' elevation Auxiliary compartment looking east at the instrument cabinent on the outer west wall of the filter room.



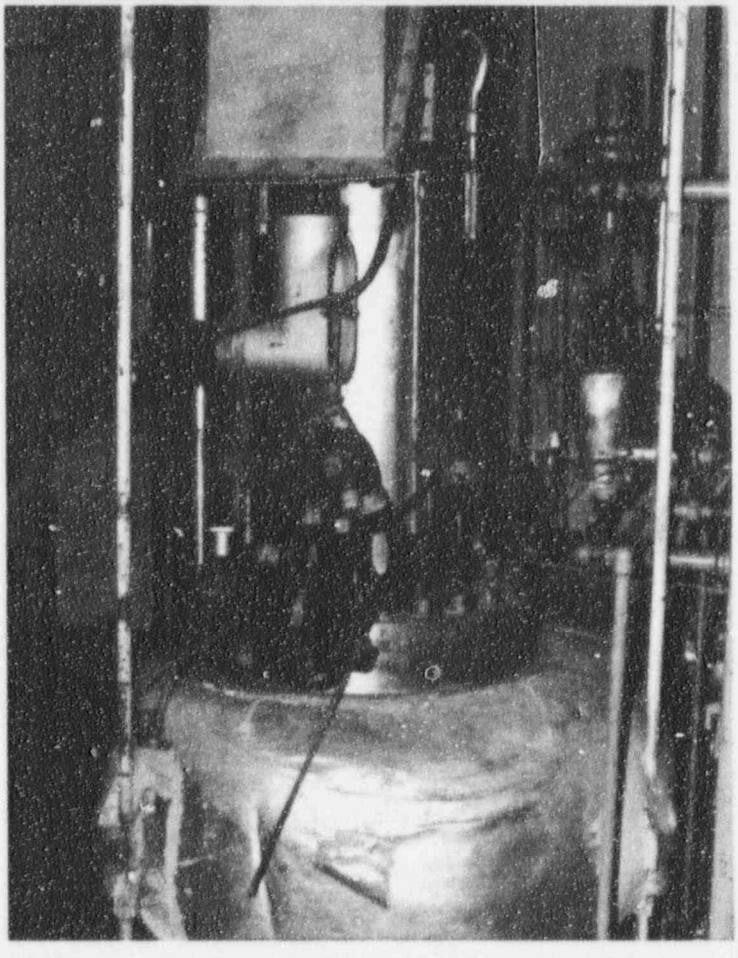
New fuel storage rack, 765' elevation.



765' elevation filter room facing south west corner.

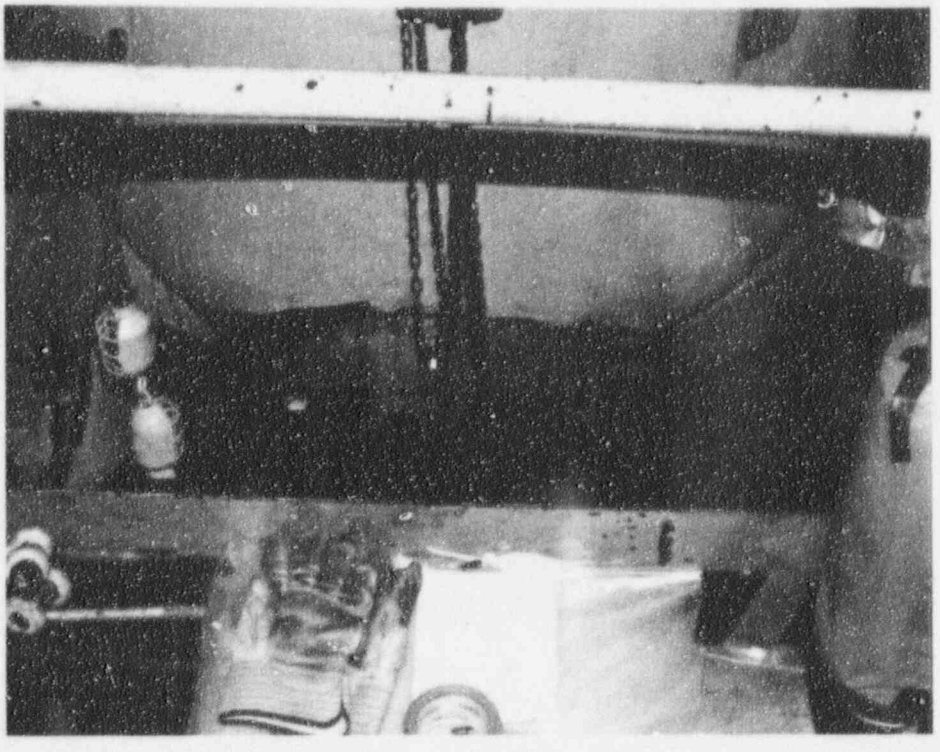


Primary compartment looking down on the 795' elevation platform. Visible is the main coolant cold leg from the discharge of the main coolant pump which is on the right. The piping above the cold leg is the pressurizer spray line.

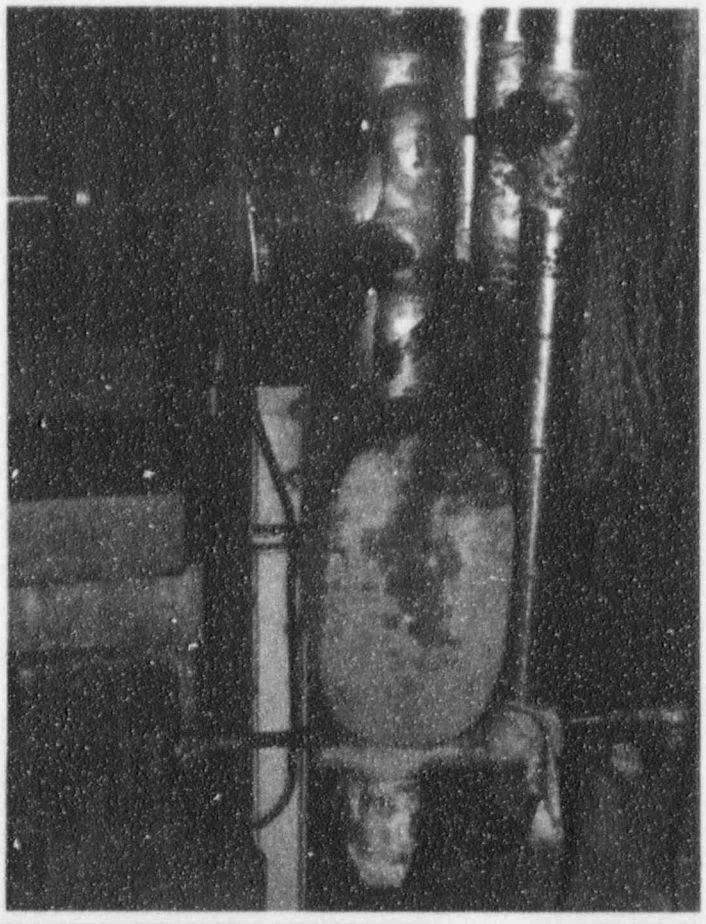


795' elevation Primary compartment main coolant pump looking north.

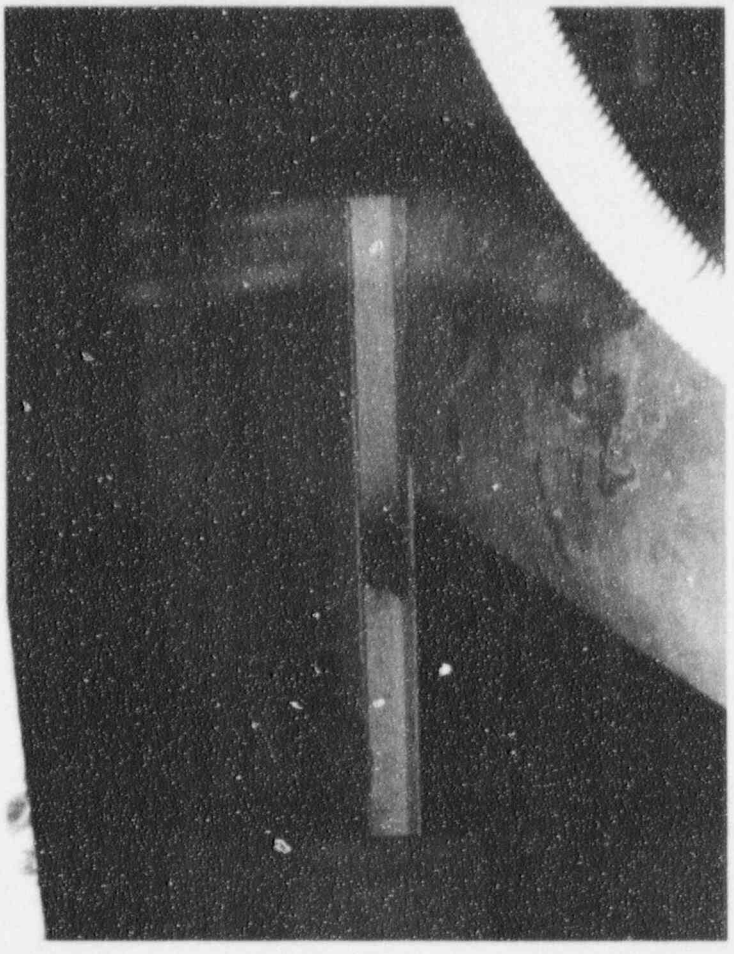
795' elevation Primary compartment looking north at the main coolant pump discharge line (cold leg) as it passes through the south wall of the storage well. The pipe lagging and "bricks" visible are asbestos.



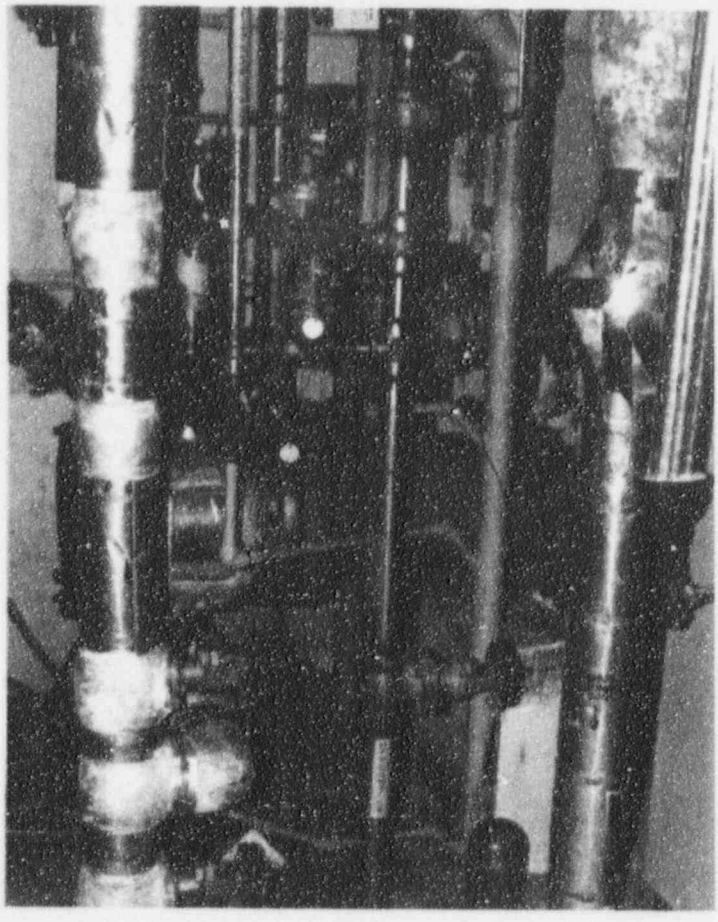
795' elevation Primary compartment looking west, down at the S/G manway.



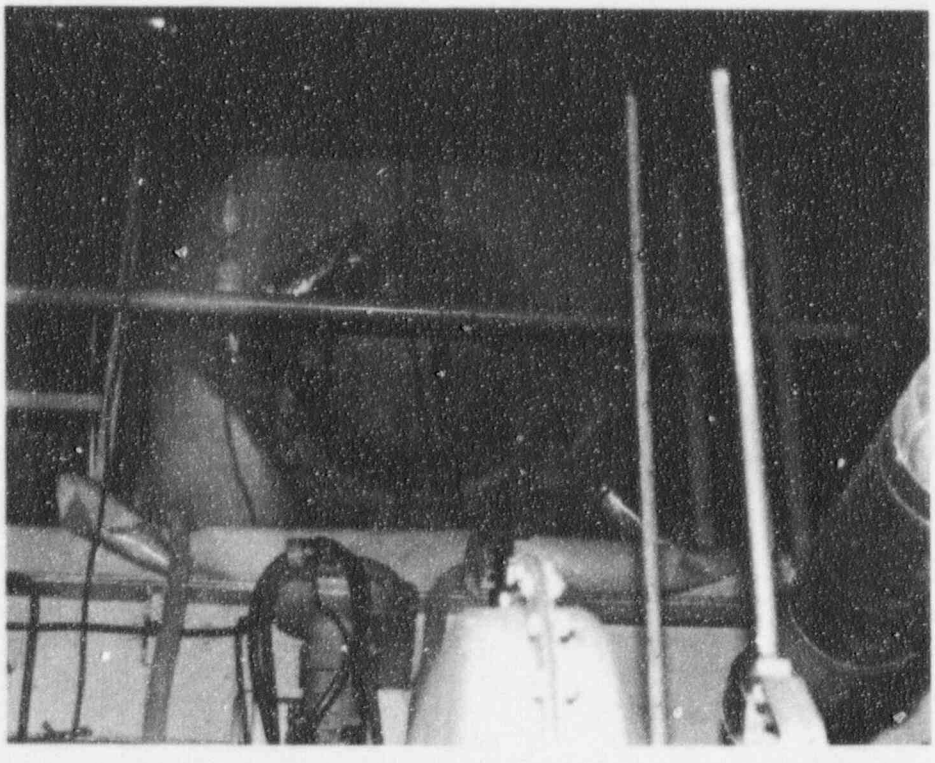
779'-8" elevation Primary compartment looking west. East end of the regen heat exchanger.



779'-8" Primary compartment looking west at the west end of the regen heat exchanger.

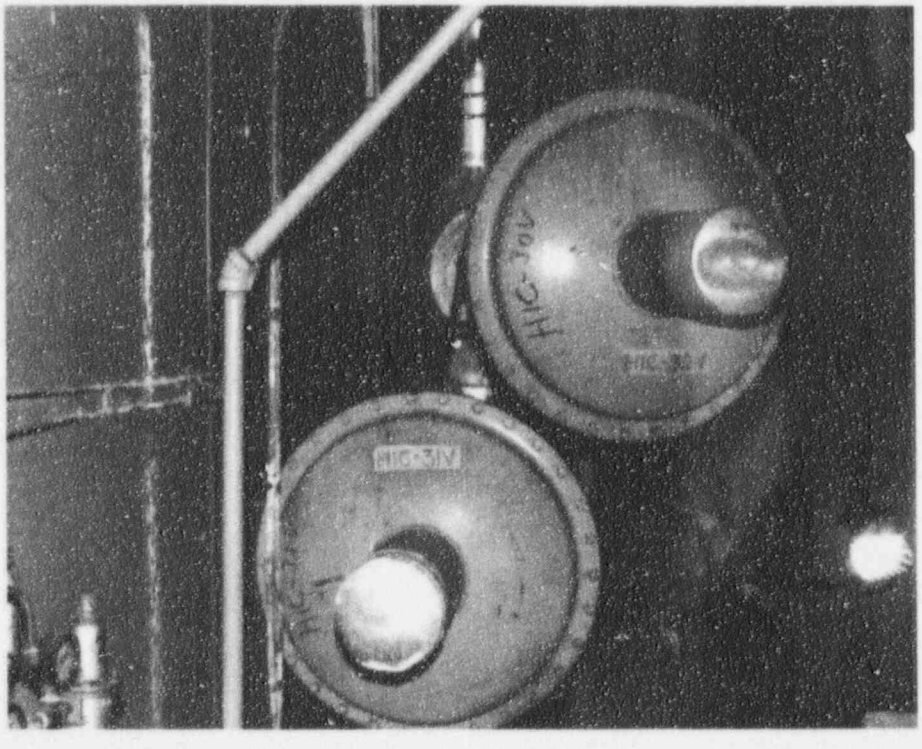


779'-8" elevation Primary compartment valve & piping arrangement in front of the non-regen heat exchanger, the north end of which is visible in the background.

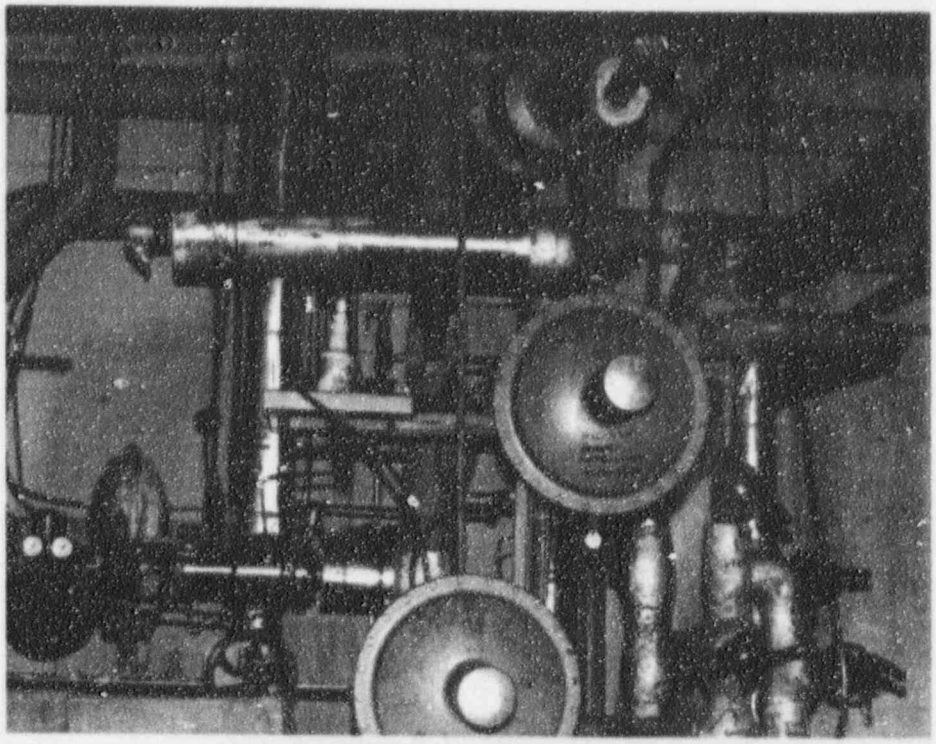


779'-8" elevation Primary compartment looking up at the hot leg side Steam Generator manway.

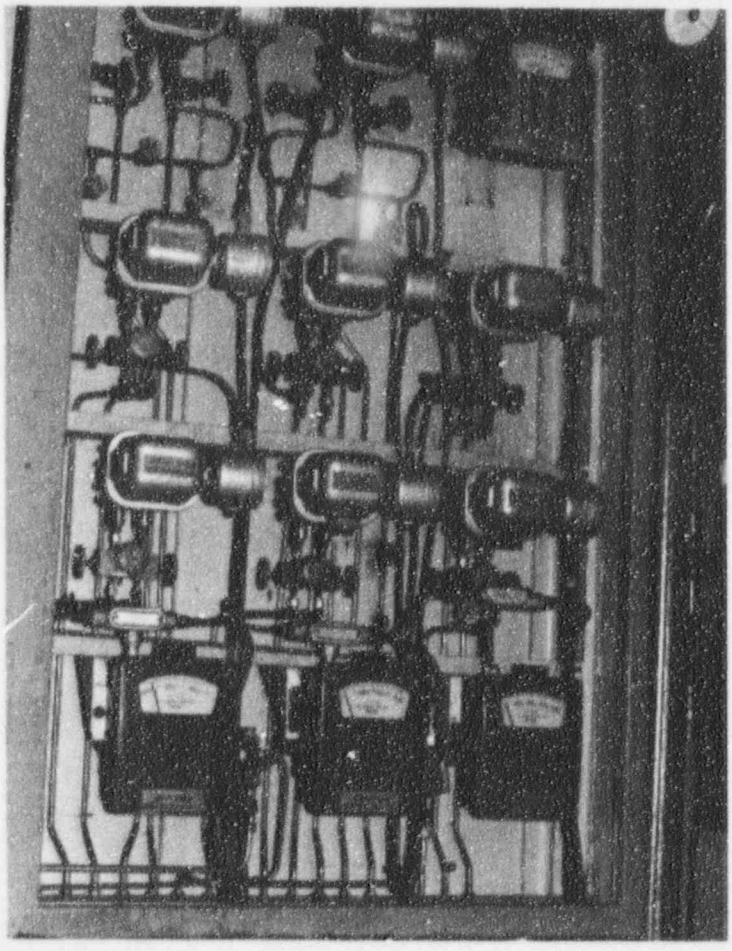
779'-8" elevation Primary compartment looking up at the suction of the Main Coolant Pump.



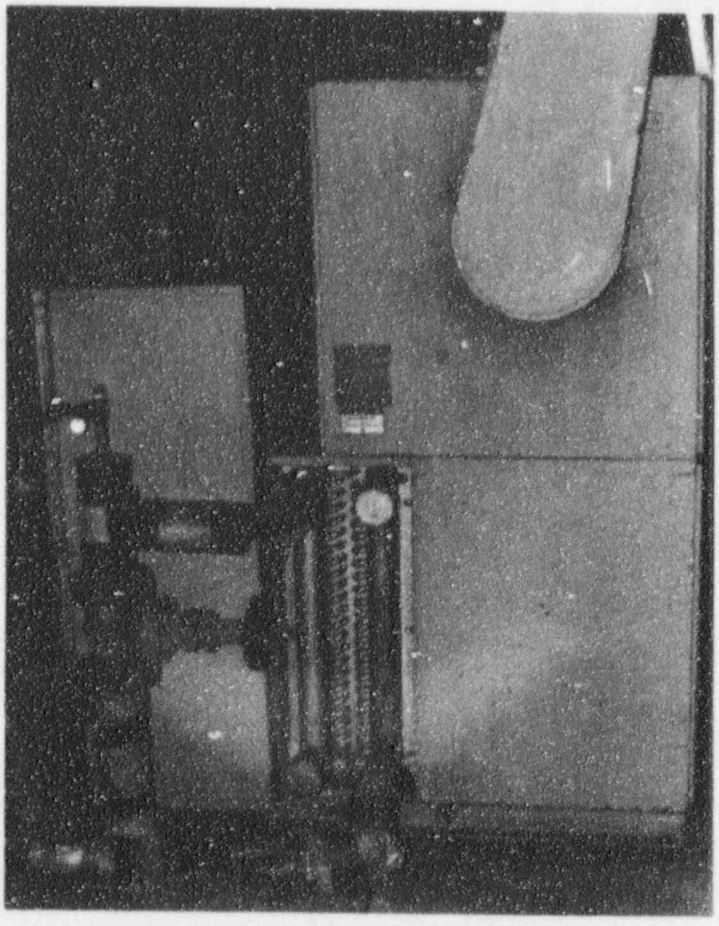
779'-8" elevation Primary compartment area behind the instrument cabinet and above the non-regen heat exchanger looking north.



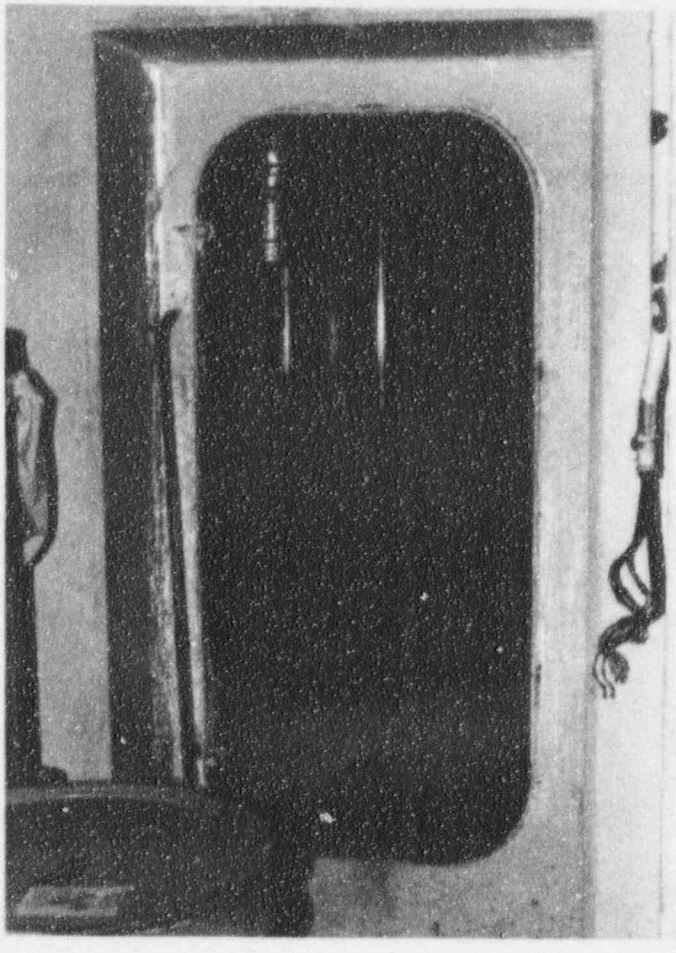
779'-8" elevation Primary compartment valve & piping arrangement above regen heat exchanger looking north.



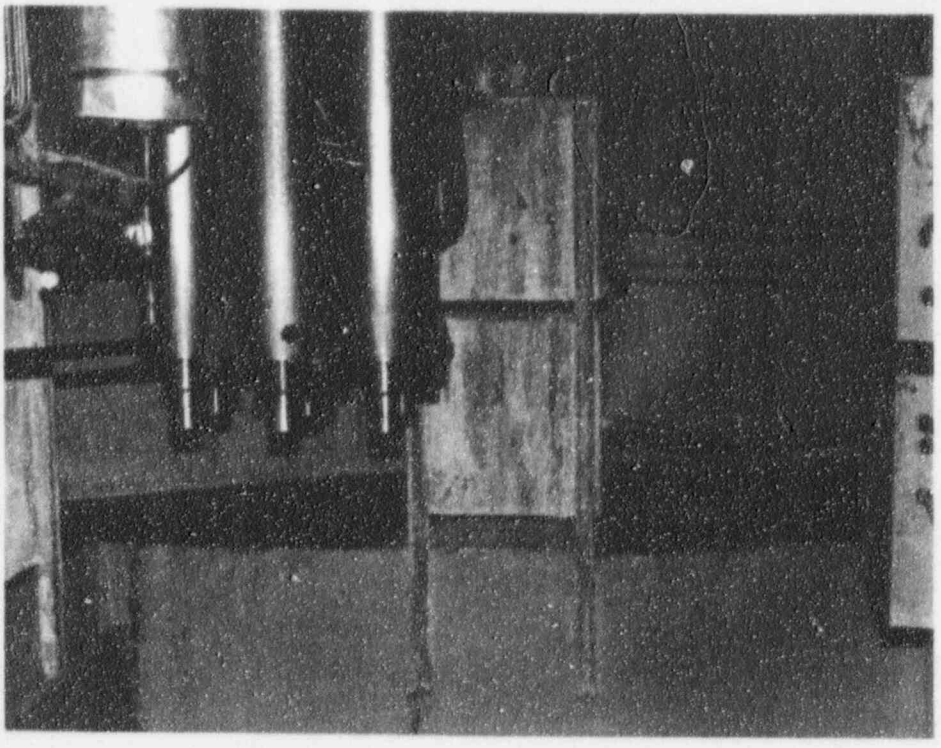
779'-8" elevation Primary compartment looking east. South half of the instrument rack.



779'-8" elevation Primary compartment air handling unit (#3) looking west.

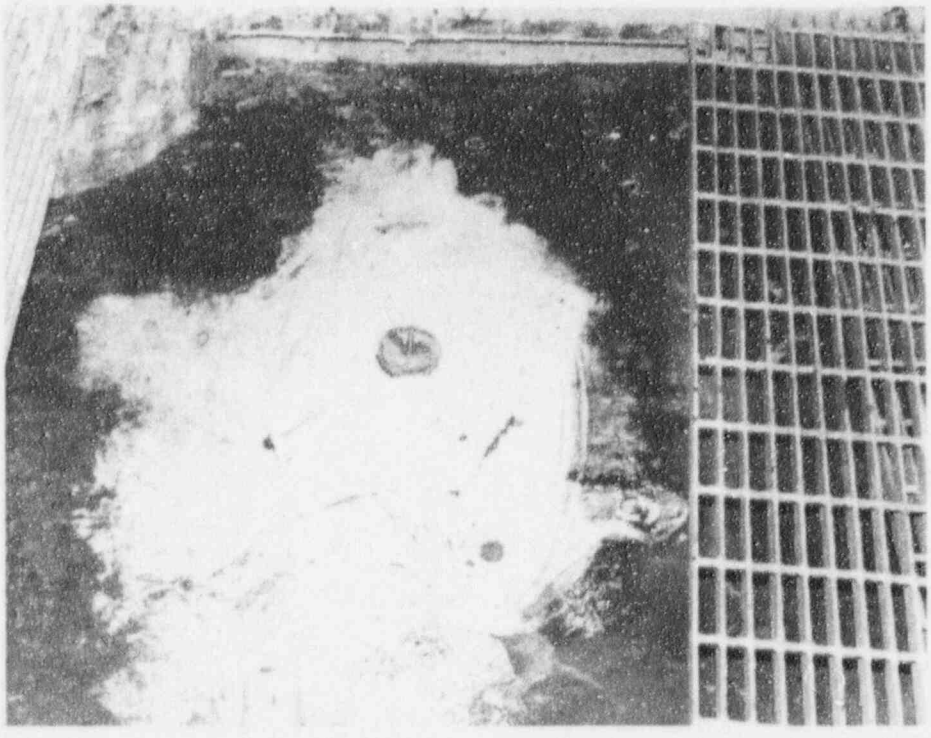


765' elevation looking north into the Rod Room. CDRMs and lower reactor instrument penetration are visible.

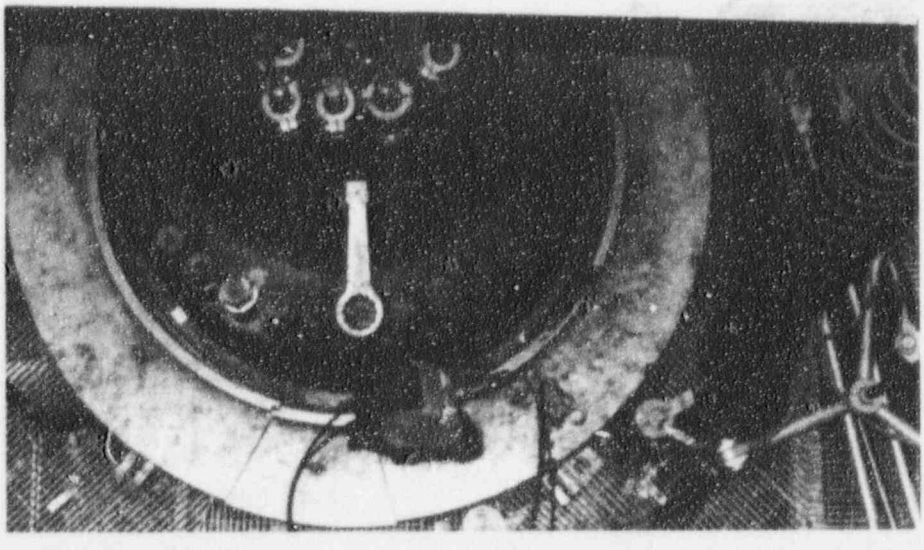


765' elevation Rod Room looking north.

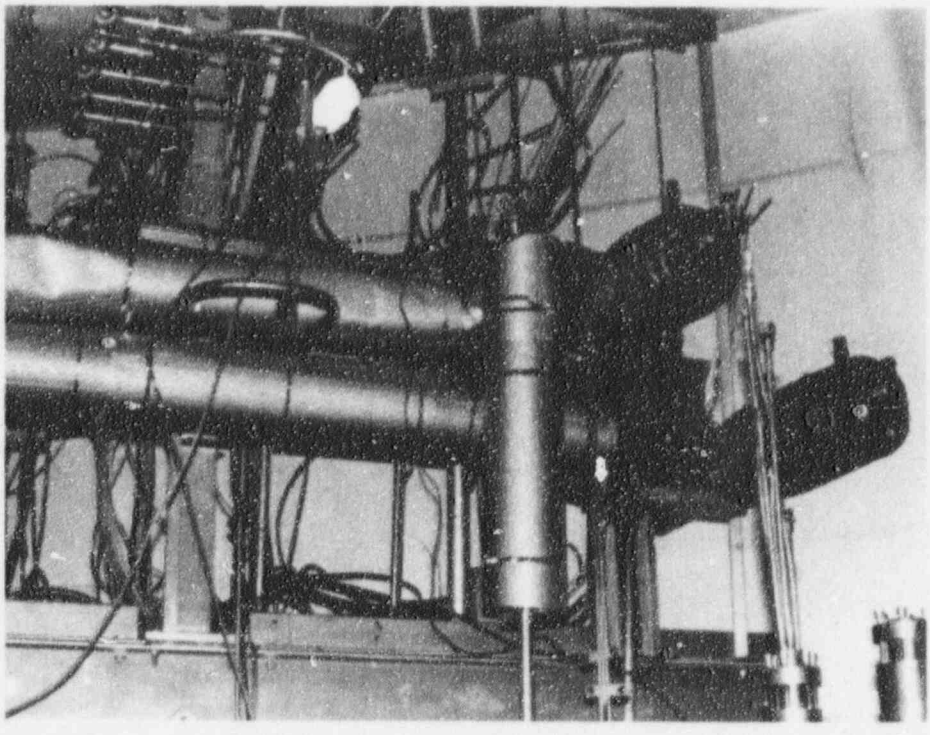
765' elevation under the Reactor Vessel looking up into the Storage Well Penetration Rod Room.



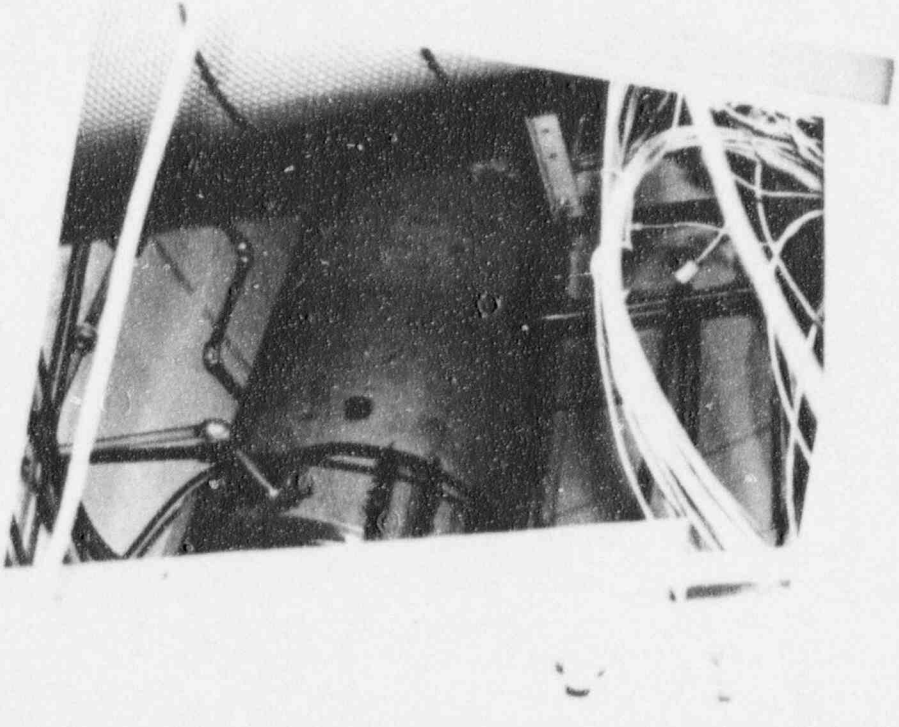
765' elevation Rod Room "Sump" Core Bore Location.



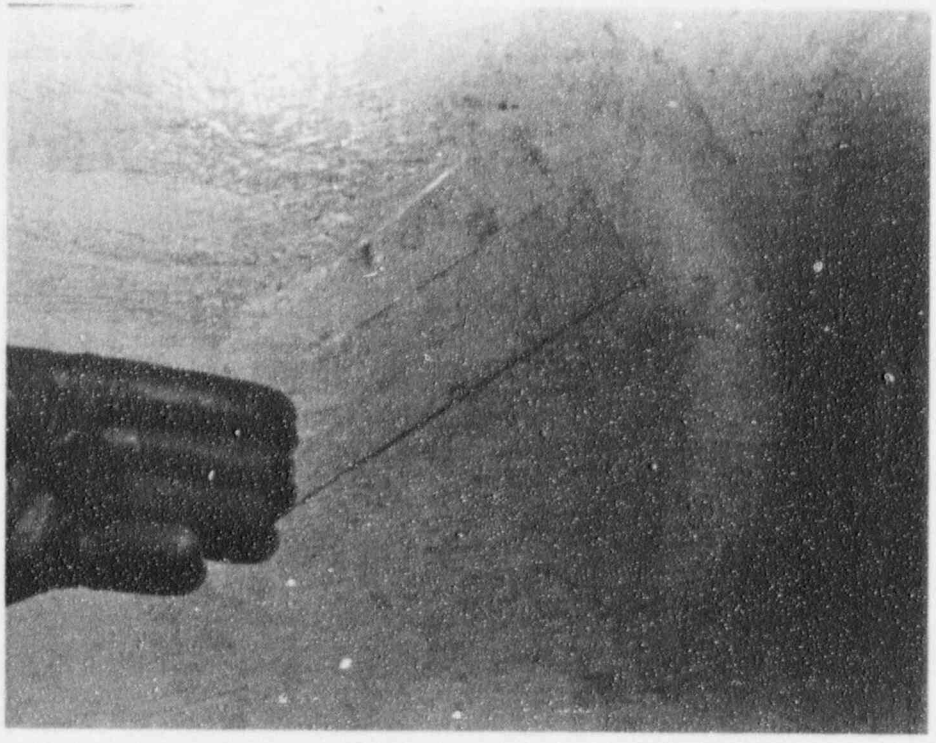
812' elevation view from shield blocks down to the 793' elevation platform of the Reactor Head. Note the steel shield segments surrounding the vessel on the grating.



Superheated steam test project components. Reactor Storage Well. 800' elevation platform west end.

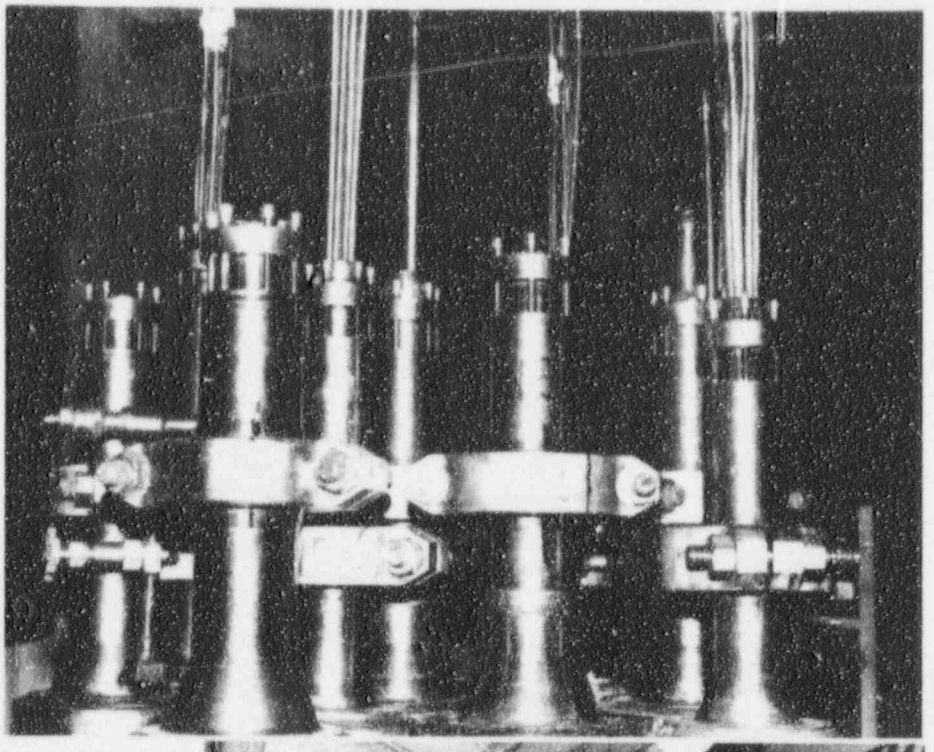


Tank, part of the superheated steam test project. Reactor Storage Well, west end 800' elevation.

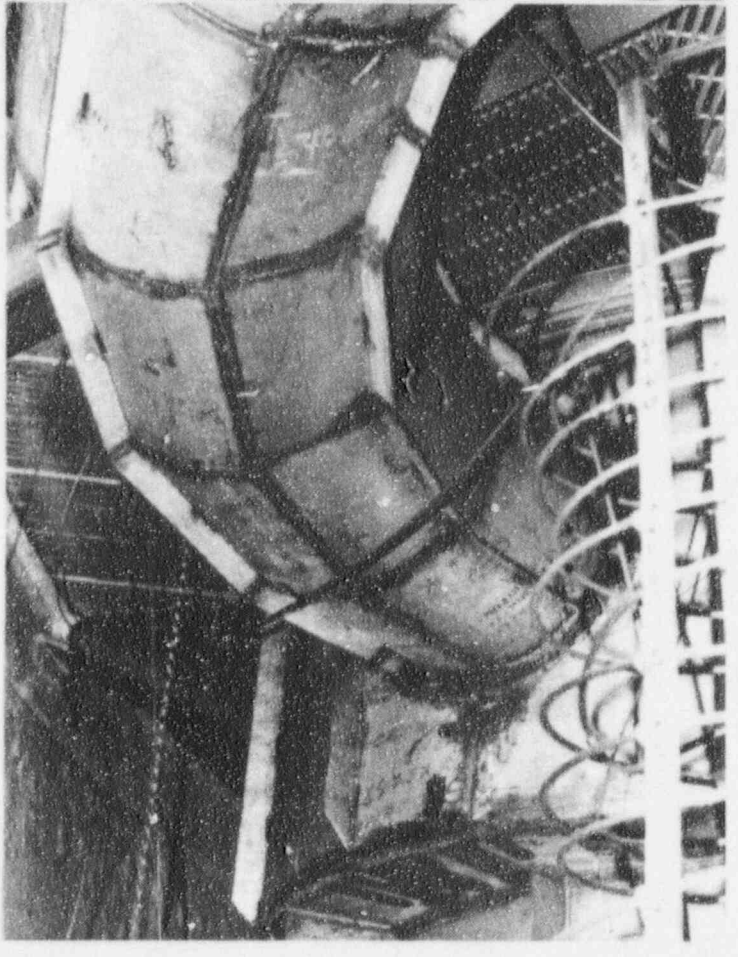


793' elevation Storage Well. Example of coating "repair" (Painted over duct tape?).

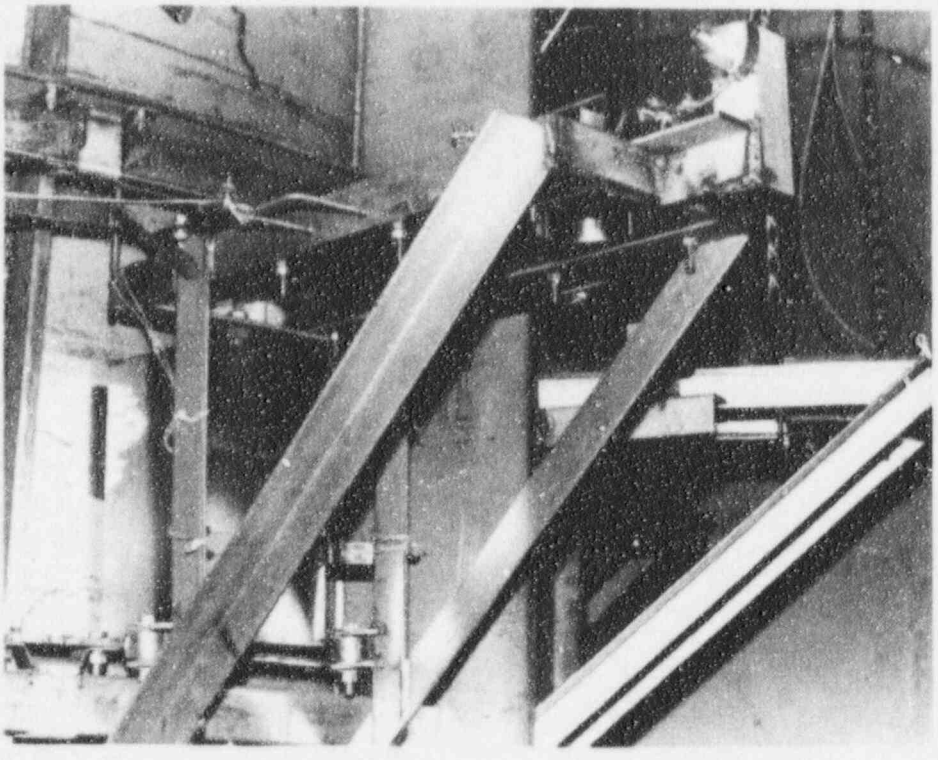
795' elevation example of extensive cracking of coating of the Storage Well/Spent Fuel Pool.



793' elevation Reactor Storage Well. Reactor head penetrations.

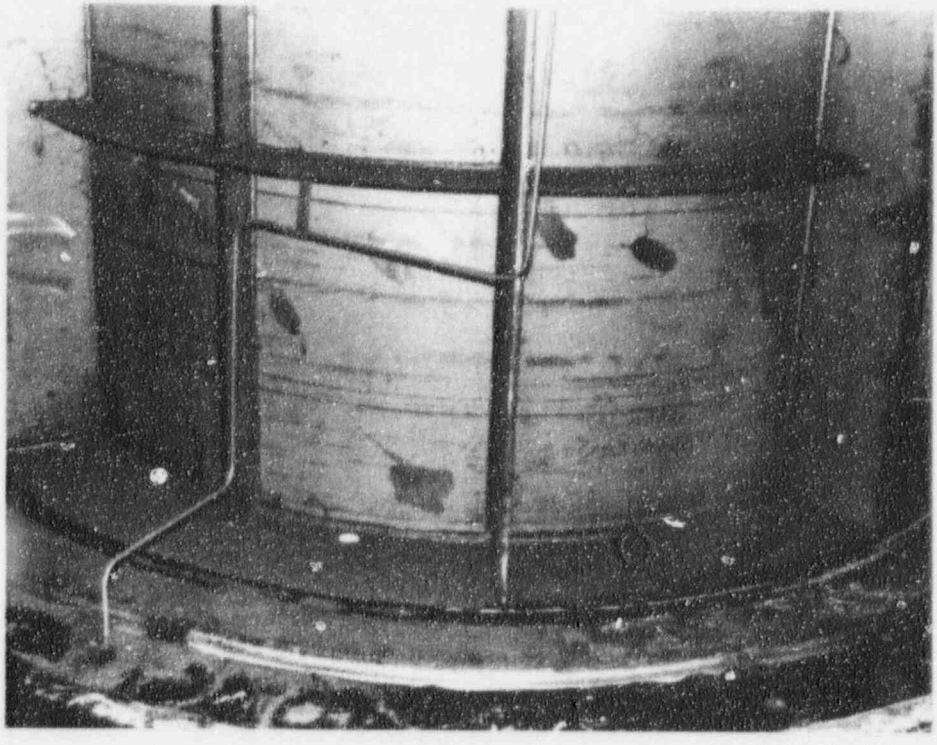


779'-8" elevation looking up at Reactor outlet (hot leg).

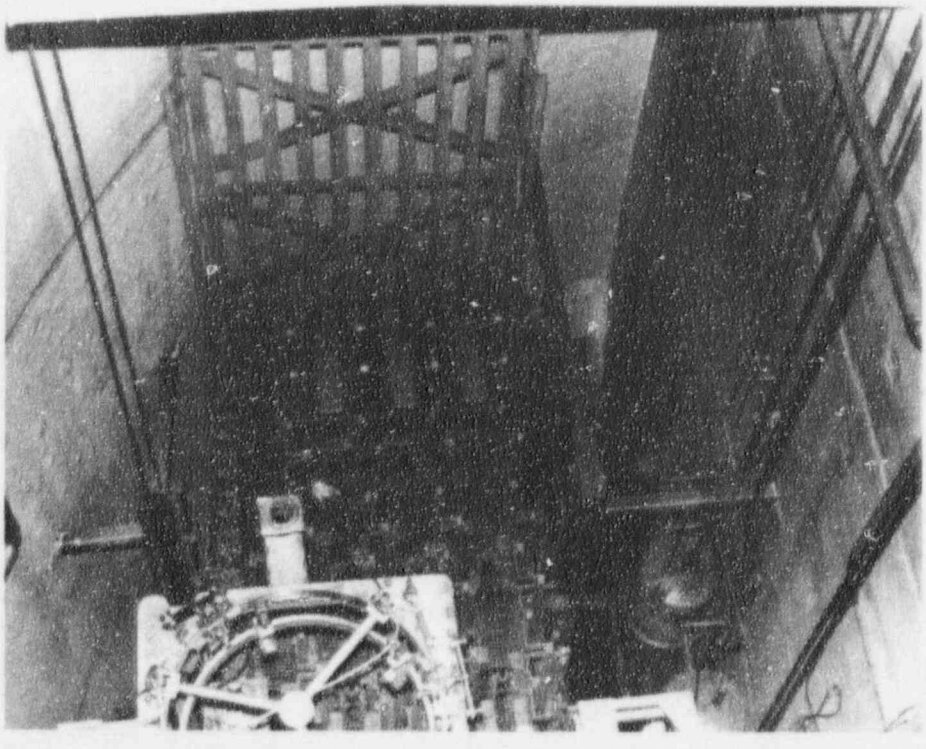


779' elevation Reactor Storage Well. Example of NI mounting assembly (1 of 8).

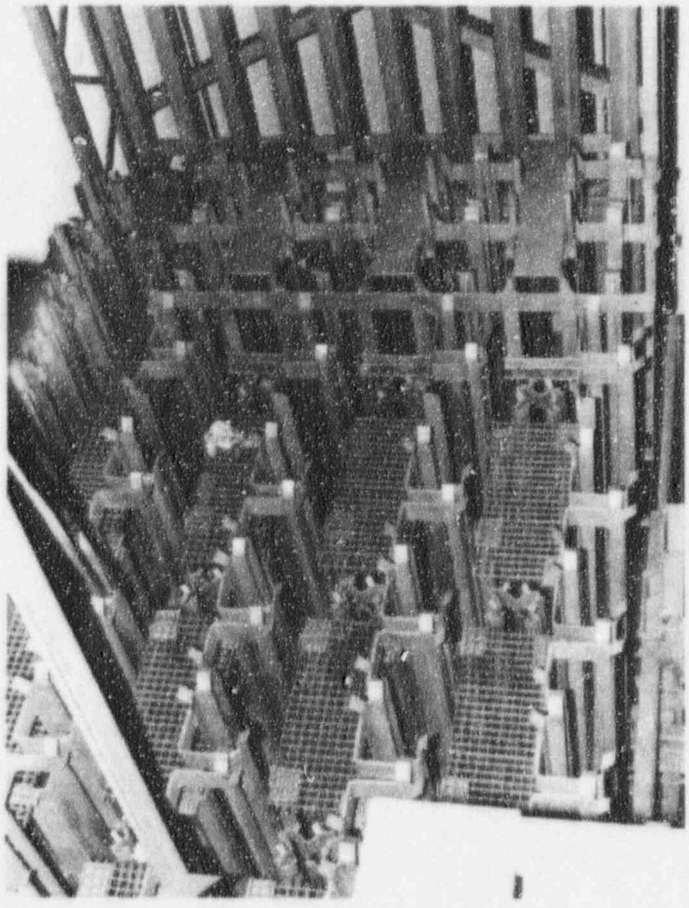
Storage Well safety injection inlet check valve ~ 792' elevation, north wall. Notice the cracking and delamination of the wall lining. Valve 3~V253.



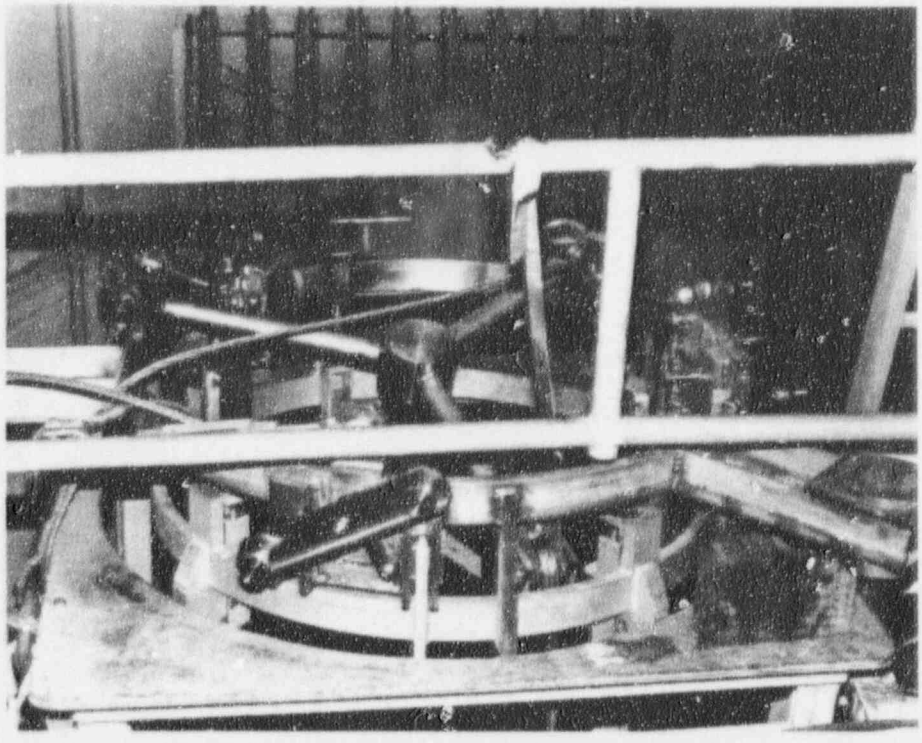
779'-8" elevation Reactor Storage Well Reactor insulating can & floor. "Powder" like material on the floor is resin.



Overall view of the Spent Fuel Pool looking east. The in-vessel instrument assembly removal rigging is in the foreground, the demineralizers to the right, the spent fuel elevator in the center, and the long handled tool rack in the background. Note the delamination of the wall coating.

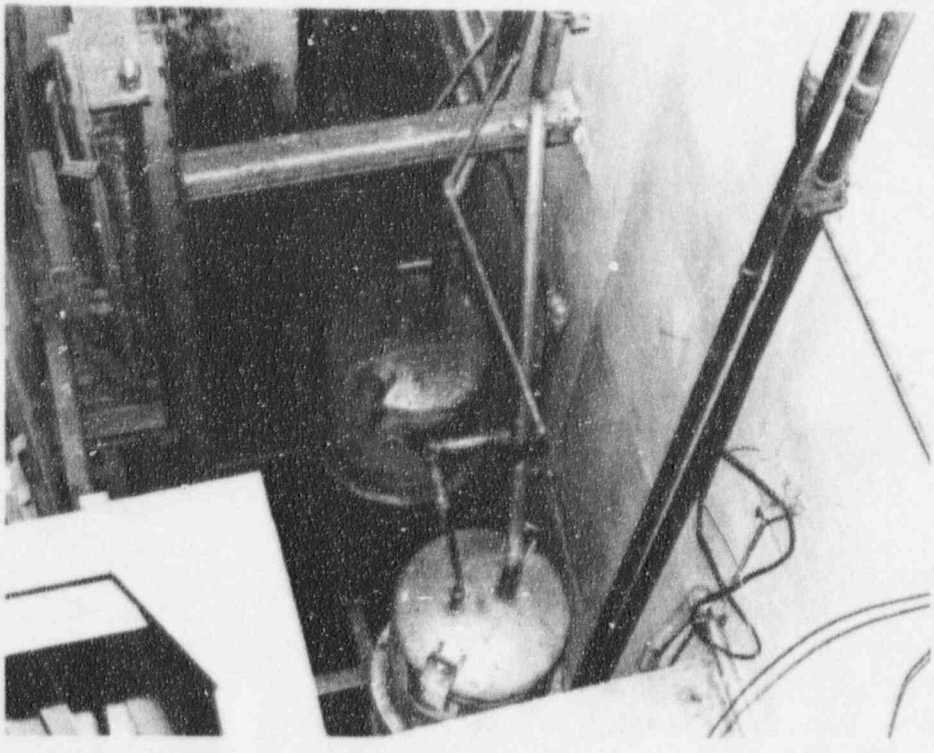


View of the Spent Fuel Rack looking east.



793' elevation Reactor Storage Well. Reactor Vessel internal instrument assembly lifting rig.

Spent Fuel Pool south side, close-up of the purification demineralizer vessel.



Spent Fuel Pool south side taken from 779'-8" elevation Storage Well floor. The purification demineralizer is visible in the foreground, the boric acid demineralizer in the middle, and the storage well demineralizer in the background.

APPENDIX C

U.S. ATOMIC ENERGY COMMISSION

REGULATORY GUIDE

DIRECTORATE OF REGULATORY STANDARDS

June 1974

REGULATORY GUIDE 1.86

TERMINATION OF OPERATING LICENSES FOR NUCLEAR REACTORS

A. INTRODUCTION

Section 50.51, "Duration of license, renewal," of 10 CFR Part 50, "Licensing of Production and Utilization Facilities," requires that each license to operate a production and utilization facility be issued for a specified duration. Upon expiration of the specified period, the license may be either renewed or terminated by the Commission. Section 50.82, "Applications for termination of licenses," specifies the requirements that must be satisfied to terminate an operating license, including the requirement that the dismantlement of the facility and disposal of the component parts not be inimical to the common defense and security or to the health and safety of the public. This guide describes methods and procedures considered acceptable by the Regulatory staff for the termination of operating licenses for nuclear reactors. The Advisory Committee on Reactor Safeguards has been consulted concerning this guide and has concurred in the regulatory position.

B. DISCUSSION

When a licensee decides to terminate his nuclear reactor operating license, he may, as a first step in the process, request that his operating license be amended to restrict him to possess but not operate the facility. The advantage to the licensee of converting to such a possession-only license is reduced surveillance requirements in that periodic surveillance of equipment important to the safety of reactor operation is no longer required. Once this possession-only license is issued, reactor operation is not permitted. Other activities related to cessation of operations such as unloading fuel from the reactor and placing it in storage (either onsite of offsite) may be continued.

A licensee having a possession-only license must retain, with the Part 50 license, authorization for special nuclear material (10 CFR Part 70, "Special Nuclear Material"), byproduct material (10 CFR Part 30, "Rules of General Applicability to Licensing of Byproduct Material"), and source material (10 CFR Part 40, "Licensing of Source Material"), until the fuel, radioactive components, and sources are removed from the facility. Appropriate administrative controls and facility requirements are imposed by the Part 50 license and the technical specifications to assure that proper surveillance is performed and that the reactor facility is maintained in a safe condition and not operated.

A possession-only license permits various options and procedures for decommissioning, such as mothballing, entombment, or dismantling. The requirements imposed depend on the option selected.

Section 50.82 provides that the licensee may dismantle and dispose of the component parts of a nuclear reactor in accordance with existing regulations. For research reactors and critical facilities, this has usually meant the disassembly of a reactor and its shipment offsite, sometimes to another appropriately licensed organization for further use. The site from which a reactor has been removed must be decontaminated, as necessary, and inspected by the Commission to determine whether unrestricted access can be approved. In the case of nuclear power reactors, dismantling has usually been accomplished by shipping fuel offsite, making the reactor inoperable, and disposing of some of the radioactive components.

Radioactive components may be either shipped offsite for burial at an authorized burial ground or secured

USAEC REGULATORY GUIDES

Regulatory Guides are issued to describe and make available to the public methods acceptable to the AEC Regulatory staff of implementing specific parts of the Commission's regulations, to delineate techniques used by the staff in evaluating specific problems or postulated accidents, or to provide guidance to applicants. Regulatory Guides are not substitutes for regulations and compliance with them is not required. Methods and solutions different from those set out in the guides will be acceptable if they provide a basis for the findings requisite to the issuance or continuance of a permit or license by the Commission.

Published guides will be revised periodically, as appropriate, to accommodate comments and to reflect new information or experience.

Copies of published guides may be obtained by request indicating the divisions desired to the U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Director of Regulatory Standards. Comments and suggestions for improvements in these guides are encouraged and should be sent to the Secretary of the Commission, U.S. Atomic Energy Commission, Washington, D.C. 20545, Attention: Chief, Public Proceedings Staff.

The guides are issued in the following ten broad divisions:

1. Power Reactors
2. Research and Test Reactors
3. Fuels and Materials Facilities
4. Environmental and Siting
5. Materials and Plant Protection
6. Products
7. Transportation
8. Occupational Health
9. Antitrust Review
10. General

on the site. Those radioactive materials remaining on the site must be isolated from the public by physical barriers or other means to prevent public access to hazardous levels of radiation. Surveillance is necessary to assure the long term integrity of the barriers. The amount of surveillance required depends upon (1) the potential hazard to the health and safety of the public from radioactive material remaining on the site and (2) the integrity of the physical barriers. Before areas may be released for unrestricted use, they must have been decontaminated or the radioactivity must have decayed to less than prescribed limits (Table I).

The hazard associated with the retired facility is evaluated by considering the amount and type of remaining contamination, the degree of confinement of the remaining radioactive materials, the physical security provided by the confinement, the susceptibility to release of radiation as a result of natural phenomena, and the duration of required surveillance.

C. REGULATORY POSITION

1. APPLICATION FOR A LICENSE TO POSSESS BUT NOT OPERATE (POSSESSION-ONLY LICENSE)

A request to amend an operating license to a possession-only license should be made to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545. The request should include the following information:

a. A description of the current status of the facility.

b. A description of measures that will be taken to prevent criticality or reactivity changes and to minimize releases of radioactivity from the facility.

c. Any proposed changes to the technical specifications that reflect the possession-only facility status and the necessary disassembly/retirement activities to be performed.

d. A safety analysis of both the activities to be accomplished and the proposed changes to the technical specifications.

e. An inventory of activated materials and their location in the facility.

2. ALTERNATIVES FOR REACTOR RETIREMENT

Four alternatives for retirement of nuclear reactor facilities are considered acceptable by the Regulatory staff. These are:

a. **Mothballing**. Mothballing of a nuclear reactor facility consists of putting the facility in a state of protective storage. In general, the facility may be left intact except that all fuel assemblies and the radioactive fluids and waste should be removed from the site. Adequate radiation monitoring, environmental surveillance, and appropriate security procedures should be established under a possession-only license to ensure that the health and safety of the public is not endangered.

b. **In-Place Entombment**. In-place entombment consists of sealing all the remaining highly radioactive or contaminated components (e.g., the pressure vessel and reactor internals) within a structure integral with the biological shield after having all fuel assemblies, radioactive fluids and wastes, and certain selected components shipped offsite. The structure should provide integrity over the period of time in which significant quantities (greater than Table I levels) of radioactivity remain with the material in the entombment. An appropriate and continuing surveillance program should be established under a possession-only license.

c. **Removal of Radioactive Components and Dismantling**. All fuel assemblies, radioactive fluids and waste, and other materials having activities above accepted unrestricted activity levels (Table I) should be removed from the site. The facility owner may then have unrestricted use of the site with no requirement for a license. If the facility owner so desires, the remainder of the reactor facility may be dismantled and all vestiges removed and disposed of.

d. **Conversion to a New Nuclear System or a Fossil Fuel System**. This alternative, which applies only to nuclear power plants, utilizes the existing turbine system with a new steam supply system. The original nuclear steam supply system should be separated from the electric generating system and disposed of in accordance with one of the previous three retirement alternatives.

3. SURVEILLANCE AND SECURITY FOR THE RETIREMENT ALTERNATIVES WHOSE FINAL STATUS REQUIRES A POSSESSION-ONLY LICENSE

A facility which has been licensed under a possession-only license may contain a significant amount of radioactivity in the form of activated and contaminated hardware and structural materials. Surveillance and commensurate security should be provided to assure that the public health and safety are not endangered.

a. Physical security to prevent inadvertent exposure of personnel should be provided by multiple locked barriers. The presence of these barriers should make it extremely difficult for an unauthorized person to gain access to areas where radiation or contamination levels exceed those specified in Regulatory Position C.4. To prevent inadvertent exposure, radiation areas above 5 mR/hr, such as near the activated primary system of a power plant, should be appropriately marked and should not be accessible except by cutting of welded closures or the disassembly and removal of substantial structures

and/or shielding material. Means such as a remote-readout intrusion alarm system should be provided to indicate to designated personnel when a physical barrier is penetrated. Security personnel that provide access control to the facility may be used instead of the physical barriers and the intrusion alarm systems.

b. The physical barriers to unauthorized entrance into the facility, e.g., fences, buildings, welded doors, and access openings, should be inspected at least quarterly to assure that these barriers have not deteriorated and that locks and locking apparatus are intact.

c. A facility radiation survey should be performed at least quarterly to verify that no radioactive material is escaping or being transported through the containment barriers in the facility. Sampling should be done along the most probable path by which radioactive material such as that stored in the inner containment regions could be transported to the outer regions of the facility and ultimately to the environs.

d. An environmental radiation survey should be performed at least semiannually to verify that no signficant amounts of radiation have been released to the environment from the facility. Samples such as soil, vegetation, and water should be taken at locations for which statistical data has been established during reactor operations.

e. A site representative should be designated to be responsible for controlling authorized access into and movement within the facility.

f. Administrative procedures should be established for the notification and reporting of abnormal occurrences such as (1) the entrance of an unauthorized person or persons into the facility and (2) a significant change in the radiation or contamination levels in the facility or the offsite environment.

g. The following reports should be made:

(1) An annual report to the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, describing the results of the environmental and facility radiation surveys, the status of the facility, and an evaluation of the performance of security and surveillance measures.

(2) An abnormal occurrence report to the Regulatory Operations Regional Office by telephone within 24 hours of discovery of an abnormal occurrence. The abnormal occurrence will also be reported in the annual report described in the preceding item.

h. Records or logs relative to the following items should be kept and retained until the license is terminated, after which they may be stored with other plant records:

(1) Environmental surveys,

(2) Facility radiation surveys,

(3) Inspections of the physical barriers, and

(4) Abnormal occurrences.

4. DECONTAMINATION FOR RELEASE FOR UNRESTRICTED USE

If it is desired to terminate a license and to eliminate any further surveillance requirements, the facility should be sufficiently decontaminated to prevent risk to the public health and safety. After the decontamination is satisfactorily accomplished and the site inspected by the Commission, the Commission may authorize the license to be terminated and the facility abandoned or released for unrestricted use. The licensee should perform the decontamination using the following guidelines:

a. The licensee should make a reasonable effort to eliminate residual contamination.

b. No covering should be applied to radioactive surfaces of equipment or structures by paint, plating, or other covering material until it is known that contamination levels (determined by a survey and documented) are below the limits specified in Table I. In addition, a reasonable effort should be made (and documented) to further minimize contamination prior to any such covering.

c. The radioactivity of the interior surfaces of pipes, drain lines, or ductwork should be determined by making measurements at all traps and other appropriate access points, provided contamination at these locations is likely to be representative of contamination on the interior of the pipes, drain lines, or ductwork. Surfaces of premises, equipment, or scrap which are likely to be contaminated but are of such size, construction, or location as to make the surface inaccessible for purposes of measurement should be assumed to be contaminated in excess of the permissable radiation limits.

d. Upon request, the Commission may authorize a licensee to relinquish possession or control of premises, equipment, or scrap having surfaces contaminated in excess of the limits specified. This may include, but is not limited to, special circumstances such as the transfer of premises to another licensed organization that will continue to work with radioactive materials. Requests for such authorization should provide:

(1) Detailed, specific information describing the premises, equipment, scrap, and radioactive contaminants and the nature, extent, and degree of residual surface contamination.

(2) A detailed health and safety analysis indicating that the residual amounts of materials on surface areas, together with other considerations such as the prospective use of the premises, equipment, or scrap, are unlikely to result in an unreasonable risk to the health and safety of the public.

e. Prior to release of the premises for unrestricted use, the licensee should make a comprehensive radiation survey establishing that contamination is within the limits specified in Table I. A survey report should be filed with the Director of Licensing, U.S. Atomic Energy Commission, Washington, D.C. 20545, with a copy to the Director of the Regulatory Operations Regional Office having jurisdiction. The report should be filed at least 30 days prior to the planned date of abandonment. The survey report should:

(1) Identify the premises;

(2) Show that reasonable effort has been made to reduce residual contamination to as low as practicable levels;

(3) Describe the scope of the survey and the general procedures followed; and

(4) State the finding of the survey in units specified in Table 1.

After review of the report, the Commission may inspect the facilities to confirm the survey prior to granting approval for abandonment.

5. REACTOR RETIREMENT PROCEDURES

As indicated in Regulatory Position C.2, several alternatives are acceptable for reactor facility retirement. If minor disassembly or "mothballing" is planned, this could be done by the existing operating and maintenance procedures under the license in effect. Any planned actions involving an unreviewed safety question or a change in the technical specifications should be reviewed and approved in accordance with the requirements of 10 CFR §50.59.

If major structural changes to radioactive components of the facility are planned, such as removal of the pressure vessel or major components of the primary system, a dismantlement plan including the information required by §50.82 should be submitted to the Commission. A dismantlement plan should be submitted for all the alternatives of Regulatory Position C.2 except mothballing. However, minor disassembly activities may still be performed in the absence of such a plan, provided they are permitted by existing operating and maintenance procedures. A dismantlement plan should include the following:

a. A description of the ultimate status of the facility

b. A description of the dismantling activities and the precautions to be taken.

c. A safety analysis of the dismantling activities including any effluents which may be released.

d. A safety analysis of the facility in its ultimate status.

Upon satisfactory review and approval of the dismantling plan, a dismantling order is issued by the Commission in accordance with §50.82. When dismantling is completed and the Commission has been notified by letter, the appropriate Regulatory Operations Regional Office inspects the facility and verifies completion in accordance with the dismantlement plan. If residual radiation levels do not exceed the values in Table I, the Commission may terminate the license. If these levels are exceeded, the licensee retains the possession-only license under which the dismantling activities have been conducted or, as an alternative, may make application to the State (if an Agreement State) for a byproduct materials license.

TABLE I

ACCEPTABLE SURFACE CONTAMINATION LEVELS

NUCLIDE[a]	AVERAGE[b c]	MAXIMUM[b d]	REMOVABLE[b e]
U-nat, U-235, U-238, and associated decay products	5,000 dpm α/100 cm^2	15,000 dpm α/100 cm^2	1,000 dpm α/100 cm^2
Transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129	100 dpm/100 cm^2	300 dpm/100 cm^2	20 dpm/100 cm^2
Th-nat, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133	1000 dpm/100 cm^2	3000 dpm/100 cm^2	200 dpm/100 cm^2
Beta-gamma emitters (nuclides with decay modes other than alpha emission or spontaneous fission) except Sr-90 and others noted above.	5000 dpm β-γ/100 cm^2	15,000 dpm β-γ/100 cm^2	1000 dpm β-γ/100 cm^2

[a]Where surface contamination by both alpha- and beta-gamma-emitting nuclides exists, the limits established for alpha- and beta-gamma-emitting nuclides should apply independently.

[b]As used in this table, dpm (disintegrations per minute) means the rate of emission by radioactive material as determined by correcting the counts per minute observed by an appropriate detector for background, efficiency, and geometric factors associated with the instrumentation.

[c]Measurements of average contaminant should not be averaged over more than 1 square meter. For objects of less surface area, the average should be derived for each such object.

[d]The maximum contamination level applies to an area of not more than 100 cm^2.

[e]The amount of removable radioactive material per 100 cm^2 of surface area should be determined by wiping that area with dry filter or soft absorbent paper, applying moderate pressure, and assessing the amount of radioactive material on the wipe with an appropriate instrument of known efficiency. When removable contamination on objects of less surface area is determined, the pertinent levels should be reduced proportionally and the entire surface should be wiped.

APPENDIX D

B&W NUCLEAR ENVIRONMENTAL SERVICES, INCORPORATED
NUCLEAR ENVIRONMENTAL LABORATORIES

DATA REPORT NUMBER 9507002

10CFR61 ANALYSIS RESULTS

Submitted to

GPU Nuclear Corporation
Saxton Site - Decommissioning Project

September 14, 1995

Prepared by: _____ 9/14/95
David S. Kohl, Supervisor
Radioanalytical Chemistry Laboratory

Released by: _____ 9/14/95
James L. Clark, Project Manager
Nuclear Environmental Laboratories

DATA REPORT SUMMARY

Laboratory Project Summary

- Plant Site: Saxton Decommissioning Project
- Shipment Number: 95-003
- Receipt Date: July 10, 1995
- NEL COC Number: SN-009274,009275,009276
- NEL SDG Number: 9507002
- NEL Proposal: NEL5-1258
- Contract Number: 0397355
- Analysis Service: Routine
- Laboratory QC: Routine - Batch

Sample Delivery Group Summary			
Customer ID	**NEL Sample ID**	**Sample Type**	**Description**
SX815950010	9507002-01-AA	Pipe Section	Item 12
SX825950011	9507002-02-AA	Pipe Section	Demin Water
SX825950040	9507002-03-AA	Pipe Section	Item 6
SX825950041	9507002-04-AA	Pipe Section	Item 3
SX825950042	9507002-05-AA	Pipe Section	Item 7
SX825950043	9507002-06-AA	Pipe Section	Item 2
SX825950044	9507002-07-AA	Pipe Section	Item 4
SX825950045	9507002-08-AA	Pipe Section	Test Cut
SX825950046	9507002-09-AA	Pipe Section	Item 9
SX825950047	9507002-10-AA	Pipe Section	Item 13
SX815950006	9507002-11-AA	Scrapings	Instrument Rack 1
SX815950007	9507002-12-AA	Scrapings	Instrument Rack 2
SX825950038	9507002-13-AA	Filter / Solids	Item 11
SX835950039	9507002-14-AA	Filter / Solids	Aux Air Handler
SX815950050	9507002-15-AA	Filter / Solids	Control Rod Room
SX815950005	9507002-16-AA	Sludge	CV Sump
SX885950048	9507002-17-AA	Sludge	Septic Tank A
SX885950049	9507002-18-AA	Sludge	Septic Tank B

Sample Physical Characteristics Summary

NEL Sample ID	Matrix	Leach Volume (mL)	Pipe Mass Leached (g)
9507002-01-AA	Pipe Leach	3755	163
9507002-02-AA	Pipe Leach	513	10
9507002-03-AA	Pipe Leach	258	10
9507002-04-AA	Pipe Leach	220	10
9507002-05-AA	Pipe Leach	648	11
9507002-06-AA	Pipe Leach	1039	53
9507002-07-AA	Pipe Leach	2919	2
9507002-08-AA	Pipe Leach	1858	0
9507002-09-AA	Pipe Leach	1988	1
9507002-10-AA	Pipe Leach	3676	69

NEL Sample ID	Sample Matrix	Mass / Volume	Density
9507002-11-AA	Mixed Solids	14.65 g	1.33 g/cc
9507002-12-AA	Mixed Solids	12.32 g	1.54 g/cc
9507002-13-AA	Mixed Solids	15.46 g	1.10 g/cc
9507002-14-AA	Mixed Solids	3.74 g	0.93 g/cc
9507002-15-AA	Mixed Solids	2.34 g	2.34 g/cc
9507002-16-AB	Sludge Liquid	43 mL	1.40 g/mL
9507002-16-AC	Sludge Solids	67 g	0.99 g/cc
9507002-17-AB	Sludge Liquid	14 mL	2.16 g/mL
9507002-17-AC	Sludge Solids	83 g	1.28 g/cc
9507002-18-AB	Sludge Liquid	71 mL	1.33 g/mL
9507002-18-AC	Sludge Solids	60 g	1.39 g/cc

Pipe Section Leach / Decon Summary		
NEL Sample ID	% Activity Removed (^{60}Co)	% Activity Removed (^{137}Cs)
9507002-01-AA	77 ± 2	77 ± 3
9507002-02-AA	< 0	65 ± 2
9507002-03-AA	< 1	0
9507002-04-AA	17 ± 1	Not Detected
9507002-05-AA	21 ± 2	64 ± 1
9507002-06-AA	8.7 ± 0.7	Not Detected
9507002-07-AA	43 ± 6	32 ± 1
9507002-08-AA	0	30 ± 6
9507002-09-AA	< 1	61 ± 2
9507002-10-AA	97 ± 1	92 ± 1

Sample Analysis Summary

Customer ID	NEL Sample ID	Sample Matrix	Notes
SX815950010	9507002-01-AA	Acid Leachate	(1,2,3)
SX825950011	9507002-02-AA	Acid Leachate	(1,2)
SX825950040	9507002-03-AA	Acid Leachate	(1,2)
SX825950041	9507002-04-AA	Acid Leachate	(1,2)
SX825950042	9507002-05-AA	Acid Leachate	(1,2)
SX825950043	9507002-06-AA	Acid Leachate	(1,2)
SX825950044	9507002-07-AA	Acid Leachate	(1,2)
SX825950045	9507002-08-AA	Acid Leachate	(1,2)
SX825950046	9507002-09-AA	Acid Leachate	(1,2)
SX825950047	9507002-10-AA	Acid Leachate	(1,2)
SX815950006	9507002-11-AA	Mixed Solids	---
SX815950007	9507002-12-AA	Mixed Solids	---
SX825950038	9507002-13-AA	Mixed Solids	(4)
SX835950039	9507002-14-AA	Mixed Solids	(4)
SX815950050	9507002-15-AA	Mixed Solids	(4)
SX815950005	9507002-16-AB	Sludge Liquid	(5)
SX815950005	9507002-16-AC	Sludge Solids	(5)
SX885950048	9507002-17-AB	Sludge Liquid	(5)
SX885950048	9507002-17-AC	Sludge Solids	(5)
SX885950049	9507002-18-AB	Sludge Liquid	(5)
SX885950049	9507002-18-AC	Sludge Solids	(5)

Sample Analysis Summary Notes

Note-1 Acid leaching with 30% HNO_3 / 5% HCl for 3-4 hour period.

Note-2 Leach solution subsequently analyzed includes small volume rinses.

Note-3 Leach solution combined with significant loose solid deposits.

Note-4 Loose solids combined with surface scrapings from filter media.

Note-5 Solid / Liquid phases separated by filtration. Solid analyzed on wet weight basis.

Activity Results

See Attached Report Sheets

Saxton Results Summary 9507002 (Revised 09/29/95)

NEL ID		9507002 -01 ACTIVITY (uCi/g Removed)	2S UNC		9507002 -02 ACTIVITY (uCi/g Removed)	2S UNC		9507002 -03 ACTIVITY (uCi/g Removed)	2S UNC		9507002 -04 ACTIVITY (uCi/g Removed)	2S UNC		9507002 -05 ACTIVITY (uCi/g Removed)	2S UNC
H-3	<	6.54E-04	---	<	1.12E-03	---	<	7.33E-04	---	<	6.24E-04	---	<	1.67E-03	---
C-14	<	1.59E-04	---	<	1.58E-04	---	<	2.23E-04	---	<	1.68E-04	---	<	3.05E-04	---
Fe-55		3.41E-04	7.14E-05	<	8.84E-06	---		5.37E-03	8.72E-04		4.55E-03	7.39E-04		2.55E-02	4.14E-03
Ni-59		4.85E-03	7.23E-04	<	9.59E-06	---		6.68E-04	9.91E-05		5.30E-03	7.82E-04		2.01E-03	3.01E-04
Ni-63		1.47E-01	2.16E-02		2.19E-04	1.58E-05		4.88E-02	7.12E-03		3.34E-01	4.88E-02		1.24E-01	1.80E-02
Sr-89	<	3.36E-04	---	<	4.62E-06	---	<	3.10E-06	---	<	3.01E-06	---	<	8.01E-06	---
Sr-90		8.70E-03	1.37E-04		2.81E-05	4.47E-06		2.99E-02	1.53E-04		1.41E-02	1.03E-04		3.97E-04	2.57E-05
Nb-94	<	2.04E-05	---	<	2.08E-06	---	<	8.75E-05	---	<	2.46E-04	---		2.97E-04	5.89E-05
Tc-99	<	7.28E-05	---	<	6.79E-05	---	<	5.88E-05	---	<	5.87E-05	---	<	1.22E-03	---
I-129	<	3.62E-05	---	<	2.17E-05	---	<	4.05E-05	---	<	1.53E-05	---	<	3.89E-05	---
Np-237	<	3.99E-07	---	<	4.26E-07	---	<	1.89E-03	---	<	1.78E-03	---	<	3.93E-03	---
Pu-238		4.26E-05	2.39E-06		1.83E-05	1.21E-06		2.73E-02	1.98E-03		4.24E-03	5.85E-04		4.10E-02	3.54E-03
Pu-239/240		8.85E-05	4.70E-06		4.18E-05	2.42E-06		7.40E-02	4.37E-03		9.14E-03	9.28E-04		6.48E-02	4.90E-03
Pu-241		1.74E-03	1.71E-04		8.64E-04	8.52E-05		1.16E+00	1.19E-01		1.89E-01	2.17E-02		1.29E+00	1.38E-01
Pu-242	<	2.67E-06	---	<	3.74E-06	---	<	8.26E-05	---	<	8.13E-05	---	<	2.36E-04	---
Am-241		2.67E-05	2.18E-06		3.73E-05	3.39E-06		8.33E-02	4.51E-03		8.20E-03	4.06E-04		3.53E-03	5.78E-04
Am-243	<	1.23E-07	---	<	2.50E-07	---	<	4.52E-05	---	<	3.14E-05	---	<	9.95E-05	---
Cm-242	<	3.50E-07	---	<	1.30E-06	---	<	4.28E-04	---	<	9.72E-05	---	<	3.08E-04	---
Cm-243/244	<	7.10E-07	---	<	7.93E-07	---		1.99E-03	2.96E-04	<	2.42E-04	---	<	4.34E-04	---
U-234	<	9.24E-08	---	<	1.63E-07	---		1.00E-05	8.51E-07		9.80E-07	1.57E-07		1.34E-06	2.85E-07
U-235	<	5.34E-08	---	<	1.05E-07	---		9.24E-07	1.58E-07	<	9.65E-08	---	<	1.68E-07	---
U-238	<	1.07E-07	---	<	6.87E-08	---		7.22E-06	6.45E-07		4.40E-07	9.93E-08		9.18E-07	2.14E-07
Co-60		2.65E-03	2.53E-04		8.44E-06	2.32E-06		9.80E-02	2.16E-04		1.23E-01	1.72E-04		1.14E-02	1.02E-03
Ru-106	<	4.17E-04	---	<	2.72E-05	---	<	5.37E-04	---	<	5.19E-04	---	<	5.03E-04	---
Ag-108m	<	4.08E-05	---	<	3.38E-06	---	<	4.96E-05	---	<	4.75E-05	---	<	5.03E-05	---
Sb-125	<	1.65E-04	---	<	1.50E-05	---		4.70E-05	1.51E-05	<	1.21E-04	---	<	1.08E-04	---
Cs-134	<	2.26E-05	---	<	2.34E-06	---	<	8.49E-05	---	<	8.48E-05	---	<	6.00E-05	---
Cs-137		7.37E-02	9.91E-03		3.79E-03	5.01E-04		5.99E-03	7.89E-05		1.94E-03	5.56E-05		4.29E-02	4.59E-03
Ce-144	<	1.97E-04	---	<	2.40E-05	---	<	2.21E-04	---	<	1.91E-04	---	<	2.51E-04	---
Eu-152	<	2.09E-04	---	<	1.58E-05	---		3.94E-03	6.37E-04		2.20E-03	6.48E-04		4.73E-04	3.62E-04
Eu-154	<	4.09E-05	---	<	6.10E-06	---		7.62E-03	1.72E-04		1.00E-03	1.17E-04		3.21E-04	1.14E-04
Eu-155	<	8.54E-05	---	<	1.05E-05	---		2.86E-03	1.28E-04		2.48E-04	6.40E-05	<	6.66E-05	---
Am-241	<	1.10E-04	---	<	1.34E-05	---		8.72E-02	3.84E-04		1.89E-02	4.16E-04		1.00E-02	1.04E-03

Sexton Results Summary 9507002 (Revised 09/29/95)

NEL ID		9507002 -06 ACTIVITY (uCi/g Removed)	2S UNC		9507002 -07 ACTIVITY (uCi/g Removed)	2S UNC		9507002 -08 ACTIVITY (uCi/g Removed) *	2S UNC		9507002 -09 ACTIVITY (uCi/g Removed)	2S UNC		9507002 -10 ACTIVITY (uCi/g Removed)	2S UNC
H-3	<	5.57E-04	---	<	4.14E-02	---	<	5.28E-02	---	<	5.65E-02	---	<	1.51E-03	---
C-14	<	8.51E-06	---	<	9.31E-03	---	<	6.81E-03	---	<	8.39E-03	---	<	3.27E-04	---
Fe-55		4.90E-03	8.00E-04		2.61E-03	4.41E-04	<	1.66E-04	---		1.94E-02	3.24E-03		1.50E-03	2.45E-04
Ni-59		1.21E-02	1.79E-03		7.24E-02	1.09E-02	<	1.09E-03	---	<	7.99E-04	---		1.93E-02	2.83E-03
Ni-63		8.25E-01	1.20E-01		3.59E+00	5.25E-01		1.30E-02	1.98E-03		3.62E-02	5.41E-03		1.33E+00	1.95E-01
Sr-89	<	2.84E-06	---	<	2.13E-04	---	<	1.77E-04	---	<	1.70E-04	---	<	1.40E-05	---
Sr-90		1.06E-03	2.70E-05		4.16E-03	4.23E-04		4.50E-04	8.47E-05		1.83E-03	2.29E-04		3.40E-02	3.39E-04
Nb-94	<	1.47E-05	---	<	8.44E-04	---	<	6.41E-06	---		2.78E-03	2.64E-04	<	6.66E-04	---
Tc-99	<	6.87E-05	---	<	4.86E-03	---	<	3.85E-03	---	<	6.22E-03	---	<	2.38E-04	---
I-129	<	1.74E-05	---	<	7.52E-04	---	<	1.72E-03	---	<	4.25E-03	---	<	3.49E-05	---
Np-237	<	1.52E-03	---	<	3.91E-05	---	<	5.09E-05	---	<	1.00E-04	---	<	5.29E-03	---
Pu-238		1.47E-03	3.16E-04		7.94E-04	5.66E-05		1.46E-03	1.08E-04		4.87E-03	2.47E-04	<	1.03E-03	---
Pu-239/240		3.22E-03	4.78E-04		1.61E-03	1.00E-04		3.59E-03	2.20E-04		8.95E-03	5.09E-04	<	1.75E-03	---
Pu-241		6.37E-02	7.64E-03		3.14E-02	3.12E-02		6.54E-02	6.54E-03		1.69E-01	1.66E-02	<	9.22E-02	---
Pu-242	<	7.39E-05	---	<	2.36E-06	---	<	4.74E-06	---	<	3.70E-06	---	<	2.66E-04	---
Am-241		3.43E-03	3.17E-04		7.11E-04	8.44E-05		2.86E-03	2.27E-04		6.48E-03	3.82E-04		5.43E-03	2.69E-04
Am-243	<	2.43E-05	---	<	9.52E-06	---	<	1.28E-05	---		1.23E-04	2.89E-05	<	1.37E-04	---
Cm-242	<	1.21E-04	---	<	3.18E-05	---	<	6.48E-05	---		1.23E-04	2.89E-05	<	3.80E-04	---
Cm-243/244	<	1.73E-04	---	<	3.93E-05	---	<	7.38E-05	---		2.76E-04	4.49E-05	<	7.78E-04	---
U-234		6.35E-08	3.78E-08	<	5.43E-06	---	<	6.06E-06	---	<	9.11E-06	---	<	1.61E-06	---
U-235	<	3.65E-08	---	<	1.16E-06	---	<	3.10E-06	---	<	5.27E-06	---	<	6.23E-07	---
U-238	<	5.16E-08	---	<	2.58E-06	---	<	4.46E-06	---	<	3.40E-06	---	<	6.79E-07	---
Co-60		8.53E-03	7.98E-04		2.10E-01	6.95E-03		4.25E-04	4.78E-05		2.49E-02	2.50E-03		3.30E-01	2.87E-02
Ru-106	<	1.50E-04	---	<	5.40E-02	---	<	1.33E-04	---	<	5.43E-04	---	<	5.91E-03	---
Ag-108m	<	1.10E-05	---	<	5.44E-03	---	<	1.32E-05	---		2.23E-03	2.67E-04	<	5.84E-04	---
Sb-125	<	3.26E-05	---	<	2.74E-02	---	<	5.00E-05	---		1.91E-04	1.56E-04	<	2.27E-03	---
Cs-134	<	2.33E-05	---		8.73E-03	2.80E-03	<	1.29E-05	---		8.03E-05	3.48E-05	<	6.93E-04	---
Cs-137		1.13E-04	2.41E-05		1.77E+01	1.65E+00		1.00E-02	1.14E-03		2.17E-01	2.47E-02		8.74E-01	8.68E-02
Ce-144	<	4.78E-05	---	<	3.12E-02	---	<	8.86E-05	---	<	3.68E-04	---	<	4.16E-03	---
Eu-152		1.98E-04	2.92E-05	<	1.95E-02	---	<	1.06E-04	---		7.24E-04	3.31E-04	<	5.98E-03	---
Eu-154		1.02E-04	4.35E-05	<	3.98E-03	---	<	3.47E-05	---		8.67E-04	1.31E-04	<	9.05E-04	---
Eu-155		2.19E-05	1.61E-05	<	1.38E-02	---	<	4.00E-05	---		2.21E-04	1.17E-04	<	1.20E-03	---
Am-241		2.59E-03	2.76E-04	<	2.10E-02	---		1.62E-04	4.68E-05		6.24E-03	7.59E-04		1.65E-02	2.47E-03

Sexton Results Summary 9507002 (Revised 09/29/95)

NEL ID		9507002 -11 ACTIVITY (uCi/g)	2S UNC		9507002 -12 ACTIVITY (uCi/g)	2S UNC		9507002 -13 ACTIVITY (uCi/g)	2S UNC		9507002 -14 ACTIVITY (uCi/g)	2S UNC		9507002 -15 ACTIVITY (uCi/g)	2S UNC
H-3	<	9.93E-05	---	<	1.17E-04	---	<	7.01E-05	---	<	8.48E-05	---	<	8.05E-04	---
C-14	<	7.62E-05	---	<	8.70E-05	---	<	1.08E-04	---	<	2.25E-04	---	<	2.12E-04	---
Fe-55		1.19E-04	2.02E-05		1.50E-04	2.64E-05		7.41E-05	1.26E-05		2.66E-04	5.10E-05		2.90E-05	9.24E-06
Ni-59		1.27E-04	1.96E-05		1.19E-04	1.88E-05		1.11E-04	1.75E-05		6.14E-05	1.30E-05	<	2.48E-05	---
Ni-63		8.55E-03	1.25E-03		8.84E-03	1.29E-03		5.81E-03	8.22E-04		6.31E-03	9.24E-04		3.43E-05	5.50E-06
Sr-89	<	8.67E-06	---	<	1.38E-05	---	<	5.41E-06	---	<	1.80E-05	---	<	2.68E-05	---
Sr-90		4.48E-04	3.66E-05		9.43E-05	1.59E-05		5.22E-05	8.50E-06		3.94E-05	8.46E-06	<	1.64E-05	---
Nb-94	<	1.49E-05	---	<	2.36E-05	---	<	3.11E-06	---	<	1.49E-05	---	<	9.11E-06	---
Tc-99	<	1.93E-05	---	<	3.96E-04	---	<	5.58E-04	---	<	1.30E-03	---	<	6.10E-05	---
I-129	<	3.87E-06	---	<	9.00E-06	---	<	2.18E-05	---	<	1.53E-05	---	<	3.79E-05	---
Np-237	<	1.47E-07	---	<	5.25E-07	---	<	1.87E-07	---	<	6.91E-07	---	<	1.40E-06	---
Pu-238		2.06E-05	1.12E-06		9.34E-06	6.52E-07		8.80E-07	1.23E-07		1.25E-05	8.38E-07	<	6.64E-07	---
Pu-239/240		5.05E-05	2.64E-06		2.54E-05	1.60E-06		2.13E-06	2.10E-07		2.90E-05	1.68E-06	<	5.54E-07	---
Pu-241		1.51E-05	1.72E-06		3.10E-04	3.16E-05		3.11E-05	6.22E-05		3.57E-04	3.66E-05	<	5.16E-05	---
Pu-242	<	9.31E-09	---	<	2.54E-08	---	<	1.75E-08	---	<	2.78E-08	---	<	1.18E-07	---
Am-241		3.19E-05	1.75E-06		3.03E-05	5.36E-06		2.22E-05	1.53E-06		1.57E-05	1.40E-06		3.07E-06	7.04E-07
Am-243	<	2.25E-08	---	<	1.02E-06	---	<	5.93E-08	---	<	9.90E-06	---	<	1.79E-07	---
Cm-242	<	1.91E-07	---	<	3.43E-06	---	<	2.59E-07	---	<	4.29E-07	---	<	5.11E-07	---
Cm-243/244		7.92E-07	1.30E-07	<	1.76E-06	---	<	4.67E-07	---	<	6.86E-07	---	<	3.58E-07	---
U-234	<	1.88E-07	---	<	6.55E-06	---	<	8.08E-07	---	<	1.03E-06	---		1.18E-05	2.02E-06
U-235	<	9.40E-08	---	<	6.55E-06	---	<	2.69E-07	---	<	5.05E-07	---	<	1.12E-06	---
U-238	<	1.76E-07	---	<	6.55E-06	---	<	4.56E-07	---	<	9.88E-07	---		9.49E-06	1.78E-06
Co-60		2.02E-03	1.78E-04		2.14E-03	1.94E-04		1.85E-03	4.74E-05		2.50E-03	3.46E-05		3.94E-05	9.68E-06
Ru-106	<	5.42E-04	---	<	6.76E-04	---	<	1.33E-04	---	<	1.83E-04	---	<	7.75E-05	---
Ag-108m	<	5.34E-05	---	<	6.70E-05	---	<	1.32E-05	---	<	1.42E-05	---	<	1.20E-05	---
Sb-125	<	2.68E-04	---	<	3.64E-04	---	<	6.30E-05	---	<	7.69E-05	---	<	2.30E-05	---
Cs-134		4.76E-05	1.30E-06	<	2.55E-05	---	<	8.85E-06	---	<	1.54E-05	---	<	9.60E-06	---
Cs-137		2.90E-01	2.90E-02		1.74E-01	1.73E-02		4.70E-02	4.38E-03		2.96E-02	6.28E-05		3.85E-04	1.51E-05
Ce-144	<	4.91E-04	---	<	6.05E-04	---	<	7.26E-05	---	<	9.74E-05	---	<	4.26E-05	---
Eu-152	<	1.30E-04	---	<	2.20E-04	---	<	7.84E-05	---	<	1.39E-04	---	<	8.10E-05	---
Eu-154	<	2.66E-05	---	<	4.73E-05	---	<	1.42E-05	---	<	2.66E-05	---	<	2.64E-05	---
Eu-155	<	1.11E-04	---	<	1.82E-04	---	<	3.22E-05	---	<	4.48E-05	---	<	2.05E-05	---
Am-241	<	2.08E-04	---	<	2.78E-04	---	<	4.94E-05	---	<	7.50E-05	---	<	3.75E-05	---

Sexton Results Summary 9507002 (Revised 09/29/95)

NEL ID		9507002 -16AB ACTIVITY (uCi/mL)	2S UNC		9507002 -17AB ACTIVITY (uCi/mL)	2S UNC		9507002 -18AB ACTIVITY (uCi/mL)	2S UNC		9507002 -16AC ACTIVITY (uCi/g)	2S UNC		9507002 -17AC ACTIVITY (uCi/g)	2S UNC		9507002 -18AC ACTIVITY (uCi/g)	2S UNC
H-3		5.43E-04	1.58E-04	<	1.01E-04	---	<	1.01E-04	---		6.87E-04	1.60E-04	<	1.00E-04	---	<	9.33E-05	---
C-14	<	1.33E-06	---	<	1.42E-05	---	<	5.10E-06	---	<	1.02E-05	---	<	9.82E-06	---	<	1.03E-05	---
Fe-55	<	3.56E-07	---	<	2.07E-06	---	<	7.47E-07	---		2.57E-04	1.04E-04	<	4.92E-06	---	<	2.21E-05	---
Ni-59	<	3.84E-07	---	<	2.13E-06	---	<	1.21E-06	---		9.77E-05	1.63E-05	<	1.27E-05	---	<	9.82E-06	---
Ni-63		6.88E-06	1.05E-06		1.79E-05	2.78E-06		8.83E-05	1.30E-05		7.58E-03	1.11E-03		8.49E-05	1.33E-05		5.04E-05	7.98E-06
Sr-89	<	1.07E-06	---	<	2.40E-06	---	<	8.49E-07	---	<	4.46E-06	---	<	4.37E-06	---	<	4.12E-06	---
Sr-90		3.26E-05	3.38E-06	<	1.75E-06	---		1.00E-06	1.82E-07		5.63E-07	2.52E-08	<	3.18E-06	---	<	3.00E-06	---
Nb-94	<	3.13E-07	---	<	1.80E-07	---	<	1.35E-07	---	<	9.95E-06	---	<	2.04E-07	---	<	1.01E-07	---
Tc-99	<	7.24E-06	---	<	7.96E-06	---	<	4.32E-06	---	<	1.14E-05	---	<	2.53E-06	---	<	3.38E-06	---
I-129	<	1.17E-06	---	<	5.24E-06	---	<	1.84E-06	---	<	1.37E-06	---	<	3.62E-06	---	<	1.87E-06	---
Np-237	<	2.70E-08	---	<	2.25E-07	---	<	3.05E-08	---	<	4.55E-07	---	<	1.85E-07	---	<	1.84E-07	---
Pu-238	<	8.27E-09	---	<	9.06E-08	---	<	6.39E-09	---		5.32E-05	2.86E-06	<	4.30E-08	---		5.56E-06	3.52E-07
Pu-239/240	<	1.74E-08	---	<	7.85E-08	---	<	9.04E-09	---		1.22E-04	6.36E-06	<	4.70E-08	---	<	9.61E-08	---
Pu-241	<	7.74E-07	---	<	8.47E-06	---	<	1.17E-06	---		1.65E-03	1.61E-04	<	3.86E-06	---	<	4.59E-06	---
Pu-242	<	2.31E-09	---	<	2.03E-08	---	<	9.04E-09	---	<	1.95E-08	---	<	9.39E-09	---	<	1.09E-08	---
Am-241		3.75E-08	6.86E-09	<	6.59E-08	---	<	1.81E-08	---		2.65E-04	1.33E-05	<	4.69E-08	---	<	8.85E-08	---
Am-243	<	1.34E-09	---	<	8.88E-09	---	<	2.79E-09	---	<	1.97E-08	---	<	7.32E-09	---	<	1.21E-08	---
Cm-242	<	2.59E-09	---	<	3.12E-08	---	<	1.03E-08	---		1.45E-06	1.72E-07	<	3.26E-08	---	<	2.70E-08	---
Cm-243/244	<	1.02E-08	---	<	3.44E-08	---	<	1.50E-08	---		4.44E-06	3.52E-07	<	2.74E-08	---	<	3.64E-08	---
U-234	<	1.25E-07	---	<	4.13E-06	---	<	2.40E-08	---	<	5.05E-07	---	<	5.84E-07	---	<	4.58E-07	---
U-235	<	9.10E-08	---	<	2.07E-06	---	<	2.90E-08	---	<	1.65E-07	---	<	2.92E-07	---	<	2.81E-07	---
U-238	<	4.30E-08	---	<	2.07E-06	---	<	1.10E-08	---	<	2.75E-07	---	<	4.39E-07	---	<	4.15E-07	---
Co-60	<	4.61E-07	---	<	1.95E-07	---	<	1.75E-07	---		3.21E-03	2.82E-04		1.07E-06	3.58E-07		1.23E-06	1.89E-07
Ru-106	<	2.43E-05	---	<	1.66E-06	---	<	1.23E-06	---	<	2.71E-04	---	<	1.85E-06	---	<	9.94E-07	---
Ag-108m	<	2.55E-06	---	<	1.83E-07	---	<	1.61E-07	---	<	2.75E-05	---	<	1.97E-07	---	<	1.08E-07	---
Sb-125	<	1.28E-05	---	<	4.56E-07	---	<	3.08E-07	---	<	1.16E-04	---	<	5.58E-07	---	<	3.36E-07	---
Cs-134		3.42E-06	5.50E-07	<	2.01E-07	---	<	1.48E-07	---		5.88E-05	1.13E-05	<	2.20E-07	---	<	1.12E-07	---
Cs-137		1.08E-02	8.48E-04	<	2.05E-07	---	<	1.41E-07	---		1.84E-01	1.79E-02		2.11E-05	2.02E-06		3.20E-05	3.44E-06
Ce-144	<	1.62E-05	---	<	9.51E-07	---	<	6.13E-07	---	<	1.62E-04	---	<	5.88E-07	---	<	5.53E-07	---
Eu-152	<	3.07E-06	---	<	1.49E-06	---	<	1.15E-06	---	<	9.30E-05	---	<	1.78E-06	---	<	8.68E-07	---
Eu-154	<	1.06E-06	---	<	5.70E-07	---	<	4.52E-07	---	<	1.86E-05	---	<	6.65E-07	---	<	3.26E-07	---
Eu-155	<	7.28E-06	---	<	4.56E-07	---	<	2.84E-07	---	<	1.21E-04	---	<	2.50E-07	---	<	2.03E-07	---
Am-241	<	1.03E-05	---	<	1.54E-07	---	<	5.94E-07	---		1.87E-04	6.54E-05	<	6.77E-07	---	<	1.40E-07	---

B&W NUCLEAR ENVIRONMENTAL SERVICES, INCORPORATED
NUCLEAR ENVIRONMENTAL LABORATORIES

DATA REPORT NUMBER 9507002S

SUPPLEMENTAL INFORMATION

Submitted to

GPU Nuclear Corporation
Saxton Site - Decommissioning Project

January 10, 1996

Released by: James L. Clark 1/10/96

James L. Clark, Project Manager
Nuclear Environmental Laboratories

DATA REPORT SUMMARY

Laboratory Project Summary

- Plant Site: Saxton Decommissioning Project
- Shipment Number: 95-003
- Report Date: September 14, 1995
- NEL COC Number: SN-009274,009275,009276
- NEL SDG Number: 9507002
- NEL Proposal: NEL5-1258
- Contract Number: 0397355
- Analysis Service: Routine
- Laboratory QC: Routine - Batch

Sample Delivery Group Summary

Customer ID	NEL Sample ID	Sample Type	Description
SX815950010	9507002-01-AA	Pipe Section	Item 12
SX825950011	9507002-02-AA	Pipe Section	Demin Water
SX825950040	9507002-03-AA	Pipe Section	Item 6
SX825950041	9507002-04-AA	Pipe Section	Item 3
SX825950042	9507002-05-AA	Pipe Section	Item 7
SX825950043	9507002-06-AA	Pipe Section	Item 2
SX825950044	9507002-07-AA	Pipe Section	Item 4
SX825950045	9507002-08-AA	Pipe Section	Test Cut
SX825950046	9507002-09-AA	Pipe Section	Item 9
SX825950047	9507002-10-AA	Pipe Section	Item 13

Pipe Sections / Physical Characteristics Summary

NEL Sample ID	Length (in)	OD (in)	ID (in)
9507002-01-AA	12 5/8	2.422	2.222
9507002-02-AA	12 1/4	1.910	1.793
9507002-03-AA	12	1.325	1.039
9507002-04-AA	5 1/2	1.321	1.055
9507002-05-AA	13	2.380	2.030
9507002-06-AA	13 1/2	3.480	2.963
9507002-07-AA	12 1/4	4.560	4.313
9507002-08-AA	13	3.560	3.322
9507002-09-AA	14 1/2	3.500	3.373
9507002-10-AA	9 7/8	2.420	2.260

Sample Aliquot Summary

NEL ID	Matrix	Leach Volume (mL)	Pipe Mass/Removed (g)
9507002-01-AA	Acid Leach	3755	2068 / 163
9507002-02-AA	Acid Leach	513	1047 / 10
9507002-03-AA	Acid Leach	258	1338 / 10
9507002-04-AA	Acid Leach	220	654 / 10
9507002-05-AA	Acid Leach	648	3737 / 11
9507002-06-AA	Acid Leach	1039	6880 / 53
9507002-07-AA	Acid Leach	2919	4964 / 2
9507002-08-AA	Acid Leach	1858	3600 / 0
9507002-09-AA	Acid Leach	1988	2418 / 1
9507002-10-AA	Acid Leach	3676	1416 / 69

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Vents & Drains – Internal Surface of piping between CV sump pumps & CV wall (1.5" to 2" WL152R).*

Saxton	B & W
Sample Number	Sample Number
SX815950010	9507002-01-AA

Sample Type	Pipe Section

Description	Item 12

1.8994	Total TRU Content (nCi/g)
0.0003	Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	6.54E-04	0.2728%		
2	C-14	LESS THAN	1.59E-04	0.0663%		
3	Fe-55		3.41E-04	0.1423%	Fe-55/Co-60	0.12868
4	Ni-59		4.95E-03	2.0651%		
5	Ni-63		1.47E-01	61.3274%		
6	Sr-89	LESS THAN	3.36E-04	0.1402%		
7	Sr-90		6.70E-03	2.7952%	Sr-90/Cs-137	0.09091
8	Nb-94	LESS THAN	2.04E-05	0.0085%		
9	Tc-99	LESS THAN	7.28E-05	0.0304%		
10	I-129	LESS THAN	3.62E-05	0.0151%		
11	Np-237	LESS THAN	3.99E-07	0.0002%		
12	Pu-238		4.26E-05	0.0178%	Pu-238/Am-241	1.59551
13	Pu-239/240		8.85E-05	0.0369%		
14	Pu-241		1.74E-03	0.7259%	Pu-241/Am-241	65.16854
15	Pu-242	LESS THAN	2.67E-08	0.0000%		
16	Am-241		2.67E-05	0.0111%	Am-241/Pu-238	0.62676
17	Am-243	LESS THAN	1.23E-07	0.0001%		
18	Cm-242	LESS THAN	3.50E-07	0.0001%		
19	Cm-243/244	LESS THAN	7.10E-07	0.0003%		
20	U-234	LESS THAN	9.24E-08	0.0000%		
21	U-235	LESS THAN	5.34E-08	0.0000%		
22	U-238	LESS THAN	1.07E-07	0.0000%	U-238/Am-241	0.00401
23	Co-60		2.65E-03	1.1056%	Am-241/U-238	249.53271
24	Ru-106	LESS THAN	4.17E-04	0.1740%		
25	Ag-108m	LESS THAN	4.08E-05	0.0170%		
26	Sb-125	LESS THAN	1.65E-04	0.0688%		
27	Cs-134	LESS THAN	2.28E-05	0.0095%	Cs-134/Cs-137	0.00031
28	Cs-137		7.37E-02	30.7472%	Co-60/Cs-137	0.03596
29	Ce-144	LESS THAN	1.97E-04	0.0822%	Cs-137/Co-60	27.81132
30	Eu-152	LESS THAN	2.09E-04	0.0872%		
31	Eu-154	LESS THAN	4.09E-05	0.0171%		
32	Eu-155	LESS THAN	8.54E-05	0.0356%		
		Totals= = >	2.40E-01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Demineralized Water System*

Saxton	B & W
Sample Number	Sample Number
SX825950011	9507002-02-AA

Sample Type	Pipe Section

Description	Demin Water Pipe

0.9642

Total TRU Content (nCi/g)

0.0003

Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	1.12E-03	17.2119%		
2	C-14	LESS THAN	1.58E-04	2.4281%		
3	Fe-55	LESS THAN	8.84E-06	0.1359%	Fe-55/Co-60	1.04739
4	Ni-59	LESS THAN	9.59E-06	0.1474%		
5	Ni-63		2.19E-04	3.3655%		
6	Sr-89	LESS THAN	4.62E-06	0.0710%		
7	Sr-90		2.81E-05	0.4318%	Sr-90/Cs-137	0.00741
8	Nb-94	LESS THAN	2.08E-06	0.0320%		
9	Tc-99	LESS THAN	6.79E-05	1.0435%		
10	I-129	LESS THAN	2.17E-05	0.3335%		
11	Np-237	LESS THAN	4.26E-07	0.0065%		
12	Pu-238		1.83E-05	0.2812%	Pu-238/Am-241	0.49062
13	Pu-239/240		4.18E-05	0.6424%		
14	Pu-241		8.64E-04	13.2777%	Pu-241/Am-241	23.16354
15	Pu-242	LESS THAN	3.74E-08	0.0006%		
16	Am-241		3.73E-05	0.5732%	Am-241/Pu-238	2.03825
17	Am-243	LESS THAN	2.50E-07	0.0038%		
18	Cm-242	LESS THAN	1.30E-06	0.0200%		
19	Cm-243/244	LESS THAN	7.93E-07	0.0122%		
20	U-234	LESS THAN	1.63E-07	0.0025%		
21	U-235	LESS THAN	1.05E-07	0.0016%		
22	U-238	LESS THAN	6.87E-08	0.0011%	U-238/Am-241	0.00184
23	Co-60		8.44E-06	0.1297%	Am-241/U-238	542.94032
24	Ru-106	LESS THAN	2.72E-05	0.4180%		
25	Ag-108m	LESS THAN	3.38E-06	0.0519%		
26	Sb-125	LESS THAN	1.50E-05	0.2305%		
27	Cs-134	LESS THAN	2.34E-06	0.0360%	Cs-134/Cs-137	0.00062
28	Cs-137		3.79E-03	58.2438%	Co-60/Cs-137	0.00223
29	Ce-144	LESS THAN	2.40E-05	0.3688%	Cs-137/Co-60	449.05213
30	Eu-152	LESS THAN	1.58E-05	0.2428%		
31	Eu-154	LESS THAN	6.10E-06	0.0937%		
32	Eu-155	LESS THAN	1.05E-05	0.1614%		
		Totals===>	6.51E-03	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Purification – Internal Surface of piping between M.C. piping & inlet to Pur. Demin. (1PU2501R).*

Saxton	B & W
Sample Number	Sample Number
SX825950040	9507002-03-AA

1349.0358	Total TRU Content (nCi/g)
0.0181	Total Uranium Content (nCi/g)

Sample Type	Pipe Section

Description	Item 6

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	7.33E-04	0.0470%		
2	C-14	LESS THAN	2.23E-04	0.0143%		
3	Fe-55		5.37E-03	0.3442%	Fe-55/Co-60	0.05480
4	Ni-59		6.68E-03	0.4281%		
5	Ni-63		4.88E-02	3.1276%		
6	Sr-89	LESS THAN	3.10E-06	0.0002%		
7	Sr-90		2.99E-02	1.9163%	Sr-90/Cs-137	4.99165
8	Nb-94	LESS THAN	8.75E-05	0.0056%		
9	Tc-99	LESS THAN	5.88E-05	0.0038%		
10	I-129	LESS THAN	4.05E-05	0.0026%		
11	Np-237	LESS THAN	1.89E-03	0.1211%		
12	Pu-238		2.73E-02	1.7497%	Pu-238/Am-241	0.32773
13	Pu-239/240		7.40E-02	4.7427%		
14	Pu-241		1.16E+00	74.3447%	Pu-241/Am-241	13.92557
15	Pu-242	LESS THAN	8.26E-05	0.0053%		
16	Am-241		8.33E-02	5.3387%	Am-241/Pu-238	3.05128
17	Am-243	LESS THAN	4.52E-05	0.0029%		
18	Cm-242	LESS THAN	4.28E-04	0.0274%		
19	Cm-243/244		1.99E-03	0.1275%		
20	U-234		1.00E-05	0.0006%		
21	U-235		9.24E-07	0.0001%		
22	U-238		7.22E-06	0.0005%	U-238/Am-241	0.00009
23	Co-60		9.80E-02	6.2808%	Am-241/U-238	11537.39612
24	Ru-106	LESS THAN	5.37E-04	0.0344%		
25	Ag-108m	LESS THAN	4.96E-05	0.0032%		
26	Sb-125		4.70E-05	0.0030%		
27	Cs-134	LESS THAN	8.49E-05	0.0054%	Cs-134/Cs-137	0.01417
28	Cs-137		5.99E-03	0.3839%	Co-60/Cs-137	16.36060
29	Ce-144	LESS THAN	2.21E-04	0.0142%	Cs-137/Co-60	0.06112
30	Eu-152		3.94E-03	0.2525%		
31	Eu-154		7.62E-03	0.4884%		
32	Eu-155		2.86E-03	0.1833%		
		Totals= = >	1.56E+00	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Pressure Control & Relief – Internal Surface of piping between M.C. piping "Cold Leg" & inlet to Pressurizer Spray Line (1MC2501R).*

Saxton Sample Number	B & W Sample Number
SX825950041	9507002-04-AA

Sample Type	Pipe Section
Description	Item 3

212.8119 Total TRU Content (nCi/g)

0.0015 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	6.24E-04	0.0890%		
2	C-14	LESS THAN	1.68E-04	0.0240%		
3	Fe-55		4.55E-03	0.6489%	Fe-55/Co-60	0.03699
4	Ni-59		5.30E-03	0.7559%		
5	Ni-63		3.34E-01	47.6306%		
6	Sr-89	LESS THAN	3.01E-06	0.0004%		
7	Sr-90		1.41E-02	2.0108%	Sr-90/Cs-137	7.26804
8	Nb-94	LESS THAN	2.46E-04	0.0351%		
9	Tc-99	LESS THAN	5.87E-05	0.0084%		
10	I-129	LESS THAN	1.53E-05	0.0022%		
11	Np-237	LESS THAN	1.78E-03	0.2538%		
12	Pu-238		4.24E-03	0.6047%	Pu-238/Am-241	0.51707
13	Pu-239/240		9.14E-03	1.3034%		
14	Pu-241		1.89E-01	26.9527%	Pu-241/Am-241	23.04878
15	Pu-242	LESS THAN	8.13E-05	0.0116%		
16	Am-241		8.20E-03	1.1694%	Am-241/Pu-238	1.93396
17	Am-243	LESS THAN	3.14E-05	0.0045%		
18	Cm-242	LESS THAN	9.72E-05	0.0139%		
19	Cm-243/244	LESS THAN	2.42E-04	0.0345%		
20	U-234		9.80E-07	0.0001%		
21	U-235	LESS THAN	9.65E-08	0.0000%		
22	U-238		4.40E-07	0.0001%	U-238/Am-241	0.00005
23	Co-60		1.23E-01	17.5406%	Am-241/U-238	18636.36364
24	Ru-106	LESS THAN	5.19E-04	0.0740%		
25	Ag-108m	LESS THAN	4.75E-05	0.0068%		
26	Sb-125	LESS THAN	1.21E-04	0.0173%		
27	Cs-134	LESS THAN	8.48E-05	0.0121%	Cs-134/Cs-137	0.04371
28	Cs-137		1.94E-03	0.2767%	Co-60/Cs-137	63.40206
29	Ce-144	LESS THAN	1.91E-04	0.0272%	Cs-137/Co-60	0.01577
30	Eu-152		2.20E-03	0.3137%		
31	Eu-154		1.00E-03	0.1426%		
32	Eu-155		2.48E-04	0.0354%		
		Totals= = >	7.01E-01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Shutdown Cooling – Internal Surface of piping between the connection with the main coolant piping and the connection with the Safety Injection piping (2SC2501R).*

Saxton	B & W
Sample Number	Sample Number
SX825950042	9507002-05-AA

Sample Type	Pipe Section

Description	Item 7

1404.3375
Total TRU Content (nCi/g)
0.0024
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	1.67E-03	0.1033%		
2	C-14	LESS THAN	3.05E-04	0.0189%		
3	Fe-55		2.55E-02	1.5780%	Fe-55/Co-60	2.23684
4	Ni-59		2.01E-03	0.1244%		
5	Ni-63		1.24E-01	7.6737%		
6	Sr-89	LESS THAN	8.01E-06	0.0005%		
7	Sr-90		3.97E-04	0.0246%	Sr-90/Cs-137	0.00925
8	Nb-94		2.97E-04	0.0184%		
9	Tc-99	LESS THAN	1.22E-03	0.0755%		
10	I-129	LESS THAN	3.89E-05	0.0024%		
11	Np-237	LESS THAN	3.93E-03	0.2432%		
12	Pu-238		4.10E-02	2.5373%	Pu-238/Am-241	11.61473
13	Pu-239/240		6.48E-02	4.0101%		
14	Pu-241		1.29E+00	79.8307%	Pu-241/Am-241	365.43909
15	Pu-242	LESS THAN	2.36E-04	0.0146%		
16	Am-241		3.53E-03	0.2185%	Am-241/Pu-238	0.08610
17	Am-243	LESS THAN	9.95E-05	0.0062%		
18	Cm-242	LESS THAN	3.08E-04	0.0191%		
19	Cm-243/244	LESS THAN	4.34E-04	0.0269%		
20	U-234		1.34E-06	0.0001%		
21	U-235	LESS THAN	1.68E-07	0.0000%		
22	U-238		9.18E-07	0.0001%	U-238/Am-241	0.00026
23	Co-60		1.14E-02	0.7055%	Am-241/U-238	3845.31590
24	Ru-106	LESS THAN	5.03E-04	0.0311%		
25	Ag-108m	LESS THAN	5.03E-05	0.0031%		
26	Sb-125	LESS THAN	1.08E-04	0.0067%		
27	Cs-134	LESS THAN	6.00E-05	0.0037%	Cs-134/Cs-137	0.00140
28	Cs-137		4.29E-02	2.6548%	Co-60/Cs-137	0.26573
29	Ce-144	LESS THAN	2.51E-04	0.0155%	Cs-137/Co-60	3.76316
30	Eu-152		4.73E-04	0.0293%		
31	Eu-154		3.21E-04	0.0199%		
32	Eu-155	LESS THAN	6.66E-05	0.0041%		
		Totals= = >	1.62E+00	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Pressure Control & Relief – Internal Surface of piping between M.C. piping "Hot Leg" & inlet to the Pressurizer (Surge Line), (3MC2501R).*

Saxton	B & W
Sample Number	Sample Number
SX825950043	9507002-06-AA

Sample Type	Pipe Section

Description	Item 2

73.7322
Total TRU Content (nCi/g)
0.0002
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	5.57E-04	0.0601%		
2	C-14	LESS THAN	8.51E-05	0.0092%		
3	Fe-55		4.90E-03	0.5287%	Fe-55/Co-60	0.57444
4	Ni-59		1.21E-02	1.3056%		
5	Ni-63		8.25E-01	89.0192%		
6	Sr-89	LESS THAN	2.84E-06	0.0003%		
7	Sr-90		1.06E-03	0.1144%	Sr-90/Cs-137	9.38053
8	Nb-94	LESS THAN	1.47E-05	0.0016%		
9	Tc-99	LESS THAN	6.67E-05	0.0072%		
10	I-129	LESS THAN	1.74E-05	0.0019%		
11	Np-237	LESS THAN	1.52E-03	0.1640%		
12	Pu-238		1.47E-03	0.1586%	Pu-238/Am-241	0.42857
13	Pu-239/240		3.22E-03	0.3474%		
14	Pu-241		6.37E-02	6.8734%	Pu-241/Am-241	18.57143
15	Pu-242	LESS THAN	7.39E-05	0.0080%		
16	Am-241		3.43E-03	0.3701%	Am-241/Pu-238	2.33333
17	Am-243	LESS THAN	2.43E-05	0.0026%		
18	Cm-242	LESS THAN	1.21E-04	0.0131%		
19	Cm-243/244	LESS THAN	1.73E-04	0.0187%		
20	U-234		6.35E-08	0.0000%		
21	U-235	LESS THAN	3.65E-08	0.0000%		
22	U-238	LESS THAN	5.16E-08	0.0000%	U-238/Am-241	0.00002
23	Co-60		8.53E-03	0.9204%	Am-241/U-238	66472.86822
24	Ru-106	LESS THAN	1.50E-04	0.0162%		
25	Ag-108m	LESS THAN	1.10E-05	0.0012%		
26	Sb-125	LESS THAN	3.26E-05	0.0035%		
27	Cs-134	LESS THAN	2.33E-05	0.0025%	Cs-134/Cs-137	0.20619
28	Cs-137		1.13E-04	0.0122%	Co-60/Cs-137	75.48673
29	Ce-144	LESS THAN	4.76E-05	0.0051%	Cs-137/Co-60	0.01325
30	Eu-152		1.99E-04	0.0215%		
31	Eu-154		1.02E-04	0.0110%		
32	Eu-155		2.19E-05	0.0024%		
		Totals= = >	9.27E-01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Pressure Control & Relief – Internal Surface of piping between Pressurizer relief valves & the Discharge Tank (4PR302R)*

Saxton	B & W
Sample Number	Sample Number
SX825950044	9507002-07-AA

Sample Type	Pipe Section

Description	Item 4

34.6371 Total TRU Content (nCi/g)

0.0092 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	4.14E-02	0.1896%		
2	C-14	LESS THAN	9.31E-03	0.0426%		
3	Fe-55		2.61E-03	0.0120%	Fe-55/Co-60	0.01243
4	Ni-59		7.24E-02	0.3316%		
5	Ni-63		3.59E+00	16.4413%		
6	Sr-89	LESS THAN	2.13E-04	0.0010%		
7	Sr-90		4.16E-03	0.0191%	Sr-90/Cs-137	0.00024
8	Nb-94	LESS THAN	8.44E-04	0.0039%		
9	Tc-99	LESS THAN	4.86E-03	0.0223%		
10	I-129	LESS THAN	7.52E-04	0.0034%		
11	Np-237	LESS THAN	3.91E-05	0.0002%		
12	Pu-238		7.94E-04	0.0036%	Pu-238/Am-241	1.11674
13	Pu-239/240		1.61E-03	0.0074%		
14	Pu-241		3.14E-02	0.1438%	Pu-241/Am-241	44.16315
15	Pu-242	LESS THAN	2.36E-06	0.0000%		
16	Am-241		7.11E-04	0.0033%	Am-241/Pu-238	0.89547
17	Am-243	LESS THAN	9.52E-06	0.0000%		
18	Cm-242	LESS THAN	3.18E-05	0.0001%		
19	Cm-243/244	LESS THAN	3.93E-05	0.0002%		
20	U-234	LESS THAN	5.43E-06	0.0000%		
21	U-235	LESS THAN	1.16E-06	0.0000%		
22	U-238	LESS THAN	2.58E-06	0.0000%	U-238/Am-241	0.00363
23	Co-60		2.10E-01	0.9617%	Am-241/U-238	275.58140
24	Ru-106	LESS THAN	5.40E-02	0.2473%		
25	Ag-108m	LESS THAN	5.44E-03	0.0249%		
26	Sb-125	LESS THAN	2.74E-02	0.1255%		
27	Cs-134		8.73E-03	0.0400%	Cs-134/Cs-137	0.00049
28	Cs-137		1.77E+01	81.0616%	Co-60/Cs-137	0.01186
29	Ce-144	LESS THAN	3.12E-02	0.1429%	Cs-137/Co-60	84.28571
30	Eu-152	LESS THAN	1.95E-02	0.0893%		
31	Eu-154	LESS THAN	3.98E-03	0.0182%		
32	Eu-155	LESS THAN	1.38E-02	0.0632%		
		Totals===>	2.18E+01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Component Cooling Water System, 3" Diameter Pipe Section (Up–Stream of CC Pump). Down Stream of CC Hx.*

Saxton Sample Number	B & W Sample Number
SX825950045	9507002–08–AA

Sample Type	Pipe Section

Description	Test Cut

73.5370 Total TRU Content (nCi/g)

0.0137 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H–3	LESS THAN	5.28E–02	32.1317%		
2	C–14	LESS THAN	6.61E–03	4.0226%		
3	Fe–55	LESS THAN	1.66E–04	0.1010%	Fe–55/Co–60	0.39059
4	Ni–59	LESS THAN	1.09E–03	0.6633%		
5	Ni–63		1.30E–02	7.9112%		
6	Sr–89	LESS THAN	1.77E–04	0.1077%		
7	Sr–90		4.50E–04	0.2739%	Sr–90/Cs–137	0.04500
8	Nb–94	LESS THAN	6.41E–06	0.0039%		
9	Tc–99	LESS THAN	3.85E–03	2.3429%		
10	I–129	LESS THAN	1.72E–03	1.0467%		
11	Np–237	LESS THAN	5.09E–05	0.0310%		
12	Pu–238		1.48E–03	0.9007%	Pu–238/Am–241	0.51748
13	Pu–239/240		3.59E–03	2.1847%		
14	Pu–241		6.54E–02	39.7995%	Pu–241/Am–241	22.86713
15	Pu–242	LESS THAN	4.74E–06	0.0029%		
16	Am–241		2.86E–03	1.7405%	Am–241/Pu–238	1.93243
17	Am–243	LESS THAN	1.28E–05	0.0078%		
18	Cm–242	LESS THAN	6.48E–05	0.0394%		
19	Cm–243/244	LESS THAN	7.38E–05	0.0449%		
20	U–234	LESS THAN	6.06E–06	0.0037%		
21	U–235	LESS THAN	3.16E–06	0.0019%		
22	U–238	LESS THAN	4.46E–06	0.0027%	U–238/Am–241	0.00156
23	Co–60		4.25E–04	0.2586%	Am–241/U–238	641.25561
24	Ru–106	LESS THAN	1.33E–04	0.0809%		
25	Ag–108m	LESS THAN	1.32E–05	0.0080%		
26	Sb–125	LESS THAN	5.00E–05	0.0304%		
27	Cs–134	LESS THAN	1.29E–05	0.0079%	Cs–134/Cs–137	0.00129
28	Cs–137		1.00E–02	6.0856%	Co–60/Cs–137	0.04250
29	Ce–144	LESS THAN	8.86E–05	0.0539%	Cs–137/Co–60	23.52941
30	Eu–152	LESS THAN	1.06E–04	0.0645%		
31	Eu–154	LESS THAN	3.47E–05	0.0211%		
32	Eu–155	LESS THAN	4.00E–05	0.0243%		
		Totals= = >	1.64E–01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Storage Well – Internal Surface of piping between inlet side of the Storage Well Pumps to the discharge point of the Storage Well (3SW151 & 4SW151).*

Saxton Sample Number	B & W Sample Number
SX825950046	9507002-09-AA

Sample Type	Pipe Section
Description	Item 9

189.9277 Total TRU Content (nCi/g)

0.0178 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	5.65E-02	9.8499%		
2	C-14	LESS THAN	8.39E-03	1.4627%		
3	Fe-55		1.94E-02	3.3821%	Fe-55/Co-60	0.77912
4	Ni-59	LESS THAN	7.99E-04	0.1393%		
5	Ni-63		3.62E-02	6.3109%		
6	Sr-89	LESS THAN	1.70E-04	0.0296%		
7	Sr-90		1.83E-03	0.3190%	Sr-90/Cs-137	0.00843
8	Nb-94		2.78E-03	0.4847%		
9	Tc-99	LESS THAN	6.22E-03	1.0844%		
10	I-129	LESS THAN	4.25E-03	0.7409%		
11	Np-237	LESS THAN	1.00E-04	0.0174%		
12	Pu-238		4.87E-03	0.8490%	Pu-238/Am-241	0.75154
13	Pu-239/240		8.95E-03	1.5603%		
14	Pu-241		1.69E-01	29.4626%	Pu-241/Am-241	26.08025
15	Pu-242	LESS THAN	3.70E-06	0.0006%		
16	Am-241		6.48E-03	1.1297%	Am-241/Pu-238	1.33060
17	Am-243		1.23E-04	0.0214%		
18	Cm-242		1.23E-04	0.0214%		
19	Cm-243/244		2.78E-04	0.0485%		
20	U-234	LESS THAN	9.11E-06	0.0016%		
21	U-235	LESS THAN	5.27E-06	0.0009%		
22	U-238	LESS THAN	3.40E-06	0.0006%	U-238/Am-241	0.00052
23	Co-60		2.49E-02	4.3409%	Am-241/U-238	1905.88235
24	Ru-106	LESS THAN	5.43E-04	0.0947%		
25	Ag-108m		2.23E-03	0.3888%		
26	Sb-125		1.91E-04	0.0333%		
27	Cs-134		8.03E-05	0.0140%	Cs-134/Cs-137	0.00037
28	Cs-137		2.17E-01	37.8307%	Co-60/Cs-137	0.11475
29	Ce-144	LESS THAN	3.68E-04	0.0642%	Cs-137/Co-60	8.71486
30	Eu-152		7.24E-04	0.1262%		
31	Eu-154		8.67E-04	0.1511%		
32	Eu-155		2.21E-04	0.0385%		
		Totals===>	5.74E-01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Vents & Drains – Internal Surface of piping on vent and drain header discharging to the Discharge Tank (2DL076R).*

Saxton	B & W
Sample Number	Sample Number
SX825950047	9507002-10-AA

107.2610	Total TRU Content (nCi/g)
0.0031	Total Uranium Content (nCi/g)

Sample Type	Pipe Section

Description	Item 13

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	1.51E-03	0.0555%		
2	C-14	LESS THAN	3.27E-04	0.0120%		
3	Fe-55		1.50E-03	0.0551%	Fe-55/Co-60	0.00455
4	Ni-59		1.93E-02	0.7094%		
5	Ni-63		1.33E+00	48.8869%		
6	Sr-89	LESS THAN	1.40E-05	0.0005%		
7	Sr-90		3.40E-02	1.2497%	Sr-90/Cs-137	0.03890
8	Nb-94	LESS THAN	6.66E-04	0.0245%		
9	Tc-99	LESS THAN	2.38E-04	0.0087%		
10	I-129	LESS THAN	3.49E-05	0.0013%		
11	Np-237	LESS THAN	5.29E-03	0.1944%		
12	Pu-238	LESS THAN	1.03E-03	0.0379%	Pu-238/Am-241	0.18969
13	Pu-239/240	LESS THAN	1.75E-03	0.0643%		
14	Pu-241	LESS THAN	9.22E-02	3.3890%	Pu-241/Am-241	16.97974
15	Pu-242	LESS THAN	2.66E-04	0.0098%		
16	Am-241		5.43E-03	0.1996%	Am-241/Pu-238	5.27184
17	Am-243	LESS THAN	1.37E-04	0.0050%		
18	Cm-242	LESS THAN	3.80E-04	0.0140%		
19	Cm-243/244	LESS THAN	7.78E-04	0.0286%		
20	U-234	LESS THAN	1.61E-06	0.0001%		
21	U-235	LESS THAN	6.23E-07	0.0000%		
22	U-238	LESS THAN	8.79E-07	0.0000%	U-238/Am-241	0.00016
23	Co-60		3.30E-01	12.1298%	Am-241/U-238	6177.47440
24	Ru-106	LESS THAN	5.91E-03	0.2172%		
25	Ag-108m	LESS THAN	5.84E-04	0.0215%		
26	Sb-125	LESS THAN	2.27E-03	0.0834%		
27	Cs-134	LESS THAN	6.93E-04	0.0255%	Cs-134/Cs-137	0.00079
28	Cs-137		8.74E-01	32.1257%	Co-60/Cs-137	0.37757
29	Ce-144	LESS THAN	4.16E-03	0.1529%	Cs-137/Co-60	2.64848
30	Eu-152	LESS THAN	5.99E-03	0.2202%		
31	Eu-154	LESS THAN	9.05E-04	0.0333%		
32	Eu-155	LESS THAN	1.20E-03	0.0441%		
		Totals= = >	2.72E+00	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Core Inlet Transmitter Rack – AREA 1, west of sump.*

Saxton	*B & W*
Sample Number	*Sample Number*
SX815950006	9507002-11-AA

Sample Type	Scrapings

Description	Instrument Rack 1

0.1193
Total TRU Content (nCi/g)
0.0005
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*	LESS THAN	9.93E-05	0.0327%		
2	*C-14*	LESS THAN	7.62E-05	0.0251%		
3	*Fe-55*		1.18E-04	0.0389%	Fe-55/Co-60	0.05842
4	*Ni-59*		1.27E-04	0.0419%		
5	*Ni-63*		8.55E-03	2.8191%		
6	*Sr-89*	LESS THAN	8.67E-06	0.0029%		
7	*Sr-90*		4.48E-04	0.1477%	Sr-90/Cs-137	0.00154
8	*Nb-94*	LESS THAN	1.49E-05	0.0049%		
9	*Tc-99*	LESS THAN	1.93E-05	0.0064%		
10	*I-129*	LESS THAN	3.67E-06	0.0012%		
11	*Np-237*	LESS THAN	1.47E-07	0.0000%		
12	*Pu-238*		2.06E-05	0.0068%	Pu-238/Am-241	0.64577
13	*Pu-239/240*		5.05E-05	0.0167%		
14	*Pu-241*		1.51E-05	0.0050%	Pu-241/Am-241	0.47335
15	*Pu-242*	LESS THAN	9.31E-09	0.0000%		
16	*Am-241*		3.19E-05	0.0105%	Am-241/Pu-238	1.54854
17	*Am-243*	LESS THAN	2.25E-08	0.0000%		
18	*Cm-242*	LESS THAN	1.91E-07	0.0001%		
19	*Cm-243/244*		7.92E-07	0.0003%		
20	*U-234*	LESS THAN	1.88E-07	0.0001%		
21	*U-235*	LESS THAN	9.40E-08	0.0000%		
22	*U-238*	LESS THAN	1.76E-07	0.0001%	U-238/Am-241	0.00552
23	*Co-60*		2.02E-03	0.6660%	Am-241/U-238	181.25000
24	*Ru-106*	LESS THAN	5.42E-04	0.1787%		
25	*Ag-108m*	LESS THAN	5.34E-05	0.0176%		
26	*Sb-125*	LESS THAN	2.86E-04	0.0943%		
27	*Cs-134*		4.76E-05	0.0157%	Cs-134/Cs-137	0.00016
28	*Cs-137*		2.90E-01	95.6173%	Co-60/Cs-137	0.00697
29	*Ce-144*	LESS THAN	4.91E-04	0.1619%	Cs-137/Co-60	143.56436
30	*Eu-152*	LESS THAN	1.30E-04	0.0429%		
31	*Eu-154*	LESS THAN	2.66E-05	0.0088%		
32	*Eu-155*	LESS THAN	1.11E-04	0.0366%		
		Totals===>	3.03E-01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Auxiliary Compartment Instrument Rack -- AREA 1, east of sump.*

Saxton	*B & W*
Sample Number	*Sample Number*
SX815950007	9507002-12-AA

Sample Type	Scrapings

Description	Instrument Rack 2

0.3818
Total TRU Content (nCi/g)
0.0197
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*	LESS THAN	1.17E-04	0.0620%		
2	*C-14*	LESS THAN	8.70E-05	0.0461%		
3	*Fe-55*		1.50E-04	0.0796%	Fe-55/Co-60	0.07009
4	*Ni-59*		1.19E-04	0.0631%		
5	*Ni-63*		8.84E-03	4.6882%		
6	*Sr-89*	LESS THAN	1.38E-05	0.0073%		
7	*Sr-90*		8.43E-05	0.0447%	Sr-90/Cs-137	0.00048
8	*Nb-94*	LESS THAN	2.36E-05	0.0125%		
9	*Tc-99*	LESS THAN	3.96E-04	0.2100%		
10	*I-129*	LESS THAN	9.00E-06	0.0048%		
11	*Np-237*	LESS THAN	5.25E-07	0.0003%		
12	*Pu-238*		9.34E-06	0.0050%	Pu-238/Am-241	0.30825
13	*Pu-239/240*		2.54E-05	0.0135%		
14	*Pu-241*		3.10E-04	0.1644%	Pu-241/Am-241	10.23102
15	*Pu-242*	LESS THAN	2.54E-08	0.0000%		
16	*Am-241*		3.03E-05	0.0161%	Am-241/Pu-238	3.24411
17	*Am-243*	LESS THAN	1.02E-06	0.0005%		
18	*Cm-242*	LESS THAN	3.43E-06	0.0018%		
19	*Cm-243/244*	LESS THAN	1.76E-06	0.0009%		
20	*U-234*	LESS THAN	6.55E-06	0.0035%		
21	*U-235*	LESS THAN	6.55E-06	0.0035%		
22	*U-238*	LESS THAN	6.55E-06	0.0035%	U-238/Am-241	0.21617
23	*Co-60*		2.14E-03	1.1349%	Am-241/U-238	4.62595
24	*Ru-106*	LESS THAN	6.76E-04	0.3585%		
25	*Ag-108m*	LESS THAN	6.70E-05	0.0355%		
26	*Sb-125*	LESS THAN	3.54E-04	0.1877%		
27	*Cs-134*	LESS THAN	2.55E-05	0.0135%	Cs-134/Cs-137	0.00015
28	*Cs-137*		1.74E-01	92.2793%	Co-60/Cs-137	0.01230
29	*Ce-144*	LESS THAN	6.05E-04	0.3209%	Cs-137/Co-60	81.30841
30	*Eu-152*	LESS THAN	2.20E-04	0.1167%		
31	*Eu-154*	LESS THAN	4.73E-05	0.0251%		
32	*Eu-155*	LESS THAN	1.82E-04	0.0965%		
		Totals= = >	1.89E-01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Cooling, Heating and Ventilation – Primary Compartment Air Handler, AREA 2*

Saxton	*B & W*
Sample Number	*Sample Number*
SX825950038	9507002-13-AA

Sample Type	Filter/solids

Description	Item 11

0.0573

Total TRU Content (nCi/g)

0.0015

Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*	LESS THAN	7.01E-05	0.1253%		
2	*C-14*	LESS THAN	1.08E-04	0.1931%		
3	*Fe-55*		7.41E-05	0.1325%	Fe-55/Co-60	0.04005
4	*Ni-59*		1.11E-04	0.1984%		
5	*Ni-63*		5.61E-03	10.0289%		
6	*Sr-89*	LESS THAN	5.41E-06	0.0097%		
7	*Sr-90*		5.22E-05	0.0933%	Sr-90/Cs-137	0.00111
8	*Nb-94*	LESS THAN	3.11E-06	0.0056%		
9	*Tc-99*	LESS THAN	5.58E-04	0.9975%		
10	*I-129*	LESS THAN	2.18E-05	0.0390%		
11	*Np-237*	LESS THAN	1.87E-07	0.0003%		
12	*Pu-238*		8.80E-07	0.0016%	Pu-238/Am-241	0.03964
13	*Pu-239/240*		2.13E-06	0.0038%		
14	*Pu-241*		3.11E-05	0.0556%	Pu-241/Am-241	1.40090
15	*Pu-242*	LESS THAN	1.75E-08	0.0000%		
16	*Am-241*		2.22E-05	0.0397%	Am-241/Pu-238	25.22727
17	*Am-243*	LESS THAN	5.93E-08	0.0001%		
18	*Cm-242*	LESS THAN	2.59E-07	0.0005%		
19	*Cm-243/244*	LESS THAN	4.67E-07	0.0008%		
20	*U-234*	LESS THAN	8.08E-07	0.0014%		
21	*U-235*	LESS THAN	2.69E-07	0.0005%		
22	*U-238*	LESS THAN	4.56E-07	0.0008%	U-238/Am-241	0.02054
23	*Co-60*		1.85E-03	3.3072%	Am-241/U-238	48.68421
24	*Ru-106*	LESS THAN	1.33E-04	0.2378%		
25	*Ag-108m*	LESS THAN	1.32E-05	0.0236%		
26	*Sb-125*	LESS THAN	6.30E-05	0.1126%		
27	*Cs-134*	LESS THAN	8.85E-06	0.0158%	Cs-134/Cs-137	0.00019
28	*Cs-137*		4.70E-02	84.0213%	Co-60/Cs-137	0.03936
29	*Ce-144*	LESS THAN	7.28E-05	0.1301%	Cs-137/Co-60	25.40541
30	*Eu-152*	LESS THAN	7.84E-05	0.1402%		
31	*Eu-154*	LESS THAN	1.42E-05	0.0254%		
32	*Eu-155*	LESS THAN	3.22E-05	0.0576%		
		Totals===>	5.59E-02	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Cooling, Heating and Ventilation – Auxiliary Compartment Air Handler, AREA 3*

Saxton Sample Number	B & W Sample Number
SX835950039	9507002-14--AA
Sample Type	Filter/solids
Description	Aux. Air Handler

0.4161 Total TRU Content (nCi/g)

0.0025 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	8.48E-05	0.2046%		
2	C-14	LESS THAN	2.25E-04	0.5428%		
3	Fe-55		2.66E-04	0.6418%	Fe-55/Co-60	0.10640
4	Ni-59		8.14E-05	0.1964%		
5	Ni-63		6.31E-03	15.2236%		
6	Sr-89	LESS THAN	1.60E-05	0.0386%		
7	Sr-90		3.94E-05	0.0951%	Sr-90/Cs-137	0.00133
8	Nb-94	LESS THAN	1.49E-05	0.0359%		
9	Tc-99	LESS THAN	1.30E-03	3.1364%		
10	I-129	LESS THAN	1.53E-05	0.0369%		
11	Np-237	LESS THAN	6.91E-07	0.0017%		
12	Pu-238		1.25E-05	0.0302%	Pu-238/Am-241	0.79618
13	Pu-239/240		2.90E-05	0.0700%		
14	Pu-241		3.57E-04	0.8613%	Pu-241/Am-241	22.73885
15	Pu-242	LESS THAN	2.78E-08	0.0001%		
16	Am-241		1.57E-05	0.0379%	Am-241/Pu-238	1.25600
17	Am-243	LESS THAN	9.90E-08	0.0002%		
18	Cm-242	LESS THAN	4.29E-07	0.0010%		
19	Cm-243/244	LESS THAN	6.86E-07	0.0017%		
20	U-234	LESS THAN	1.03E-06	0.0025%		
21	U-235	LESS THAN	5.05E-07	0.0012%		
22	U-238	LESS THAN	9.88E-07	0.0024%	U-238/Am-241	0.06293
23	Co-60		2.50E-03	6.0315%	Am-241/U-238	15.89069
24	Ru-106	LESS THAN	1.63E-04	0.3933%		
25	Ag-108m	LESS THAN	1.42E-05	0.0343%		
26	Sb-125	LESS THAN	7.69E-05	0.1855%		
27	Cs-134	LESS THAN	1.54E-05	0.0372%	Cs-134/Cs-137	0.00052
28	Cs-137		2.96E-02	71.4135%	Co-60/Cs-137	0.08446
29	Ce-144	LESS THAN	9.74E-05	0.2350%	Cs-137/Co-60	11.84000
30	Eu-152	LESS THAN	1.39E-04	0.3354%		
31	Eu-154	LESS THAN	2.66E-05	0.0642%		
32	Eu-155	LESS THAN	4.48E-05	0.1081%		
		Totals===>	4.14E-02	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Cooling, Heating and Ventilation – Control Rod Room Air Handler, AREA 1*

Saxton	B & W
Sample Number	Sample Number
SX815950050	9507002-15-AA

Sample Type	Filter/solids

Description	A/H in Rod Room

0.0585
Total TRU Content (nCi/g)

0.0224
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	6.05E-04	32.6291%		
2	C-14	LESS THAN	2.12E-04	11.4337%		
3	Fe-55		2.90E-05	1.5640%	Fe-55/Co-60	0.73604
4	Ni-59	LESS THAN	2.48E-05	1.3375%		
5	Ni-63		3.43E-05	1.8499%		
6	Sr-89	LESS THAN	2.68E-05	1.4454%		
7	Sr-90	LESS THAN	1.64E-05	0.8845%	Sr-90/Cs-137	0.04260
8	Nb-94	LESS THAN	9.11E-06	0.4913%		
9	Tc-99	LESS THAN	6.10E-05	3.2899%		
10	I-129	LESS THAN	3.79E-05	2.0440%		
11	Np-237	LESS THAN	1.40E-06	0.0755%		
12	Pu-238	LESS THAN	6.64E-07	0.0358%	Pu-238/Am-241	0.21629
13	Pu-239/240	LESS THAN	5.54E-07	0.0299%		
14	Pu-241	LESS THAN	5.16E-05	2.7829%	Pu-241/Am-241	16.80782
15	Pu-242	LESS THAN	1.16E-07	0.0063%		
16	Am-241		3.07E-06	0.1656%	Am-241/Pu-238	4.62349
17	Am-243	LESS THAN	1.79E-07	0.0097%		
18	Cm-242	LESS THAN	5.11E-07	0.0276%		
19	Cm-243/244	LESS THAN	3.58E-07	0.0193%		
20	U-234		1.18E-05	0.6364%		
21	U-235	LESS THAN	1.12E-06	0.0604%		
22	U-238		9.49E-06	0.5118%	U-238/Am-241	3.09121
23	Co-60		3.94E-05	2.1249%	Am-241/U-238	0.32350
24	Ru-106	LESS THAN	7.75E-05	4.1798%		
25	Ag-108m	LESS THAN	1.20E-05	0.6472%		
26	Sb-125	LESS THAN	2.30E-05	1.2404%		
27	Cs-134	LESS THAN	9.60E-06	0.5178%	Cs-134/Cs-137	0.02494
28	Cs-137		3.85E-04	20.7640%	Co-60/Cs-137	0.10234
29	Ce-144	LESS THAN	4.26E-05	2.2975%	Cs-137/Co-60	9.77157
30	Eu-152	LESS THAN	8.10E-05	4.3685%		
31	Eu-154	LESS THAN	2.64E-05	1.4238%		
32	Eu-155	LESS THAN	2.05E-05	1.1056%		
		Totals===>	1.85E-03	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Containment Vessel Sump Sludge (Liquid Phase), AREA 1*

Saxton Sample Number	B & W Sample Number
SX815950005	9507002-16AB

Sample Type	Sludge-LP
Description	CV Sump

0.0009 Total TRU Content (nCi/ml)

0.0003 Total Uranium Content (nCi/ml)

	Nuclide	Notes	Results uCi/ml	Normalized to 100 %	Nuclides	RATIOS
1	H-3		5.43E-04	4.7305%		
2	C-14	LESS THAN	1.33E-05	0.1159%		
3	Fe-55	LESS THAN	3.56E-07	0.0031%	Fe-55/Co-60	0.77223
4	Ni-59	LESS THAN	3.84E-07	0.0033%		
5	Ni-63		6.88E-06	0.0599%		
6	Sr-89	LESS THAN	1.07E-06	0.0093%		
7	Sr-90		3.26E-05	0.2840%	Sr-90/Cs-137	0.00302
8	Nb-94	LESS THAN	3.13E-07	0.0027%		
9	Tc-99	LESS THAN	7.24E-06	0.0631%		
10	I-129	LESS THAN	1.17E-06	0.0102%		
11	Np-237	LESS THAN	2.70E-08	0.0002%		
12	Pu-238	LESS THAN	8.27E-09	0.0001%	Pu-238/Am-241	0.22053
13	Pu-239/240	LESS THAN	1.74E-08	0.0002%		
14	Pu-241	LESS THAN	7.74E-07	0.0067%	Pu-241/Am-241	20.64000
15	Pu-242	LESS THAN	2.01E-09	0.0000%		
16	Am-241		3.75E-08	0.0003%	Am-241/Pu-238	4.53446
17	Am-243	LESS THAN	1.34E-09	0.0000%		
18	Cm-242	LESS THAN	2.59E-09	0.0000%		
19	Cm-243/244	LESS THAN	1.02E-08	0.0001%		
20	U-234	LESS THAN	1.25E-07	0.0011%		
21	U-235	LESS THAN	9.10E-08	0.0008%		
22	U-238	LESS THAN	4.30E-08	0.0004%	U-238/Am-241	1.14667
23	Co-60	LESS THAN	4.61E-07	0.0040%	Am-241/U-238	0.87209
24	Ru-106	LESS THAN	2.43E-05	0.2117%		
25	Ag-108m	LESS THAN	2.55E-06	0.0222%		
26	Sb-125	LESS THAN	1.28E-05	0.1115%		
27	Cs-134		3.42E-06	0.0298%	Cs-134/Cs-137	0.00032
28	Cs-137		1.08E-02	94.0882%	Co-60/Cs-137	0.00004
29	Ce-144	LESS THAN	1.62E-05	0.1411%	Cs-137/Co-60	23427.33189
30	Eu-152	LESS THAN	3.07E-06	0.0267%		
31	Eu-154	LESS THAN	1.06E-06	0.0092%		
32	Eu-155	LESS THAN	7.28E-06	0.0634%		
		Totals= = >	1.15E-02	100.00%		

B & W RESULTS 9/14/95 -- Saxton Samples

SYSTEM===> *Containment Vessel Sump Sludge (Solid Phase), AREA 1*

Saxton	B & W
Sample Number	Sample Number
SX815950005	9507002-16AC

Sample Type	Sludge-SP

Description	CV Sump

2.0966
Total TRU Content (nCi/g)
0.0009
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3		6.67E-04	0.3355%		
2	C-14	LESS THAN	1.02E-05	0.0051%		
3	Fe-55		2.57E-04	0.1293%	Fe-55/Co-60	0.08006
4	Ni-59		9.77E-05	0.0491%		
5	Ni-63		7.58E-03	3.8126%		
6	Sr-89	LESS THAN	4.46E-06	0.0022%		
7	Sr-90		5.63E-07	0.0003%	Sr-90/Cs-137	0.00000
8	Nb-94	LESS THAN	9.95E-06	0.0050%		
9	Tc-99	LESS THAN	1.14E-05	0.0057%		
10	I-129	LESS THAN	1.37E-06	0.0007%		
11	Np-237	LESS THAN	4.55E-07	0.0002%		
12	Pu-238		5.32E-05	0.0268%	Pu-238/Am-241	0.20075
13	Pu-239/240		1.22E-04	0.0614%		
14	Pu-241		1.65E-03	0.8299%	Pu-241/Am-241	6.22642
15	Pu-242	LESS THAN	1.95E-08	0.0000%		
16	Am-241		2.65E-04	0.1333%	Am-241/Pu-238	4.98120
17	Am-243	LESS THAN	1.97E-08	0.0000%		
18	Cm-242		1.45E-06	0.0007%		
19	Cm-243/244		4.44E-06	0.0022%		
20	U-234	LESS THAN	5.05E-07	0.0003%		
21	U-235	LESS THAN	1.65E-07	0.0001%		
22	U-238	LESS THAN	2.75E-07	0.0001%	U-238/Am-241	0.00104
23	Co-60		3.21E-03	1.6146%	Am-241/U-238	963.63636
24	Ru-106	LESS THAN	2.71E-04	0.1363%		
25	Ag-108m	LESS THAN	2.75E-05	0.0138%		
26	Sb-125	LESS THAN	1.16E-04	0.0583%		
27	Cs-134		5.88E-05	0.0296%	Cs-134/Cs-137	0.00032
28	Cs-137		1.84E-01	92.5492%	Co-60/Cs-137	0.01745
29	Ce-144	LESS THAN	1.62E-04	0.0815%	Cs-137/Co-60	57.32087
30	Eu-152	LESS THAN	9.30E-05	0.0468%		
31	Eu-154	LESS THAN	1.66E-05	0.0083%		
32	Eu-155	LESS THAN	1.21E-04	0.0609%		
		Totals===>	1.99E-01	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Septic Tank A, Sludge (Liquid Phase), AREA 8*

Saxton	*B & W*
Sample Number	*Sample Number*
SX885950048	9507002-17AB

Sample Type	Sludge-LP

Description	Septic Tank A

0.0090

Total TRU Content (nCi/ml)

0.0083

Total Uranium Content (nCi/ml)

	Nuclide	Notes	Results uCi/ml	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*	LESS THAN	1.01E-04	56.5852%		
2	*C-14*	LESS THAN	1.42E-05	7.9555%		
3	*Fe-55*	LESS THAN	2.07E-06	1.1597%	Fe-55/Co-60	10.61538
4	*Ni-59*	LESS THAN	2.13E-06	1.1933%		
5	*Ni-63*		1.79E-05	10.0285%		
6	*Sr-89*	LESS THAN	2.40E-06	1.3446%		
7	*Sr-90*	LESS THAN	1.75E-06	0.9804%	Sr-90/Cs-137	8.53659
8	*Nb-94*	LESS THAN	1.80E-07	0.1008%		
9	*Tc-99*	LESS THAN	7.96E-06	4.4596%		
10	*I-129*	LESS THAN	5.24E-06	2.9357%		
11	*Np-237*	LESS THAN	2.25E-07	0.1261%		
12	*Pu-238*	LESS THAN	9.06E-08	0.0508%	Pu-238/Am-241	1.37481
13	*Pu-239/240*	LESS THAN	7.85E-08	0.0440%		
14	*Pu-241*	LESS THAN	8.47E-06	4.7453%	Pu-241/Am-241	128.52807
15	*Pu-242*	LESS THAN	2.03E-08	0.0114%		
16	*Am-241*	LESS THAN	6.59E-08	0.0369%	Am-241/Pu-238	0.72737
17	*Am-243*	LESS THAN	8.88E-09	0.0050%		
18	*Cm-242*	LESS THAN	3.12E-08	0.0175%		
19	*Cm-243/244*	LESS THAN	3.44E-08	0.0193%		
20	*U-234*	LESS THAN	4.13E-06	2.3138%		
21	*U-235*	LESS THAN	2.07E-06	1.1597%		
22	*U-238*	LESS THAN	2.07E-06	1.1597%	U-238/Am-241	31.41123
23	*Co-60*	LESS THAN	1.95E-07	0.1092%	Am-241/U-238	0.03184
24	*Ru-106*	LESS THAN	1.66E-06	0.9300%		
25	*Ag-108m*	LESS THAN	1.83E-07	0.1025%		
26	*Sb-125*	LESS THAN	4.56E-07	0.2555%		
27	*Cs-134*	LESS THAN	2.01E-07	0.1126%	Cs-134/Cs-137	0.98049
28	*Cs-137*	LESS THAN	2.05E-07	0.1149%	Co-60/Cs-137	0.95122
29	*Ce-144*	LESS THAN	9.51E-07	0.5328%	Cs-137/Co-60	1.05128
30	*Eu-152*	LESS THAN	1.49E-06	0.8348%		
31	*Eu-154*	LESS THAN	5.70E-07	0.3193%		
32	*Eu-155*	LESS THAN	4.56E-07	0.2555%		
		Totals===>	1.78E-04	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM= = = > *Septic Tank A, Sludge (Solid Phase), AREA 8*

Saxton	B & W
Sample Number	Sample Number
SX885950048	9507002-17AC

Sample Type	Sludge-SP
Description	Septic Tank A

0.0042
Total TRU Content (nCi/g)
0.0013
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	1.00E-04	38.4563%		
2	C-14	LESS THAN	9.82E-06	3.7764%		
3	Fe-55	LESS THAN	4.92E-06	1.8920%	Fe-55/Co-60	4.59813
4	Ni-59	LESS THAN	1.27E-05	4.8839%		
5	Ni-63		8.49E-05	32.6494%		
6	Sr-89	LESS THAN	4.37E-06	1.6805%		
7	Sr-90	LESS THAN	3.18E-06	1.2229%	Sr-90/Cs-137	0.15071
8	Nb-94	LESS THAN	2.04E-07	0.0785%		
9	Tc-99	LESS THAN	2.53E-06	0.9729%		
10	I-129	LESS THAN	3.62E-06	1.3921%		
11	Np-237	LESS THAN	1.65E-07	0.0635%		
12	Pu-238	LESS THAN	4.30E-08	0.0165%	Pu-238/Am-241	0.91684
13	Pu-239/240	LESS THAN	4.70E-08	0.0181%		
14	Pu-241	LESS THAN	3.86E-06	1.4844%	Pu-241/Am-241	82.30277
15	Pu-242	LESS THAN	9.39E-09	0.0036%		
16	Am-241	LESS THAN	4.69E-08	0.0180%	Am-241/Pu-238	1.09070
17	Am-243	LESS THAN	7.32E-09	0.0028%		
18	Cm-242	LESS THAN	3.26E-08	0.0125%		
19	Cm-243/244	LESS THAN	2.74E-08	0.0105%		
20	U-234	LESS THAN	5.64E-07	0.2169%		
21	U-235	LESS THAN	2.92E-07	0.1123%		
22	U-238	LESS THAN	4.39E-07	0.1688%	U-238/Am-241	9.36034
23	Co-60		1.07E-06	0.4115%	Am-241/U-238	0.10683
24	Ru-106	LESS THAN	1.85E-06	0.7114%		
25	Ag-108m	LESS THAN	1.97E-07	0.0758%		
26	Sb-125	LESS THAN	5.58E-07	0.2146%		
27	Cs-134	LESS THAN	2.20E-07	0.0846%	Cs-134/Cs-137	0.01043
28	Cs-137		2.11E-05	8.1143%	Co-60/Cs-137	0.05071
29	Ce-144	LESS THAN	5.88E-07	0.2261%	Cs-137/Co-60	19.71963
30	Eu-152	LESS THAN	1.76E-06	0.6768%		
31	Eu-154	LESS THAN	6.65E-07	0.2557%		
32	Eu-155	LESS THAN	2.50E-07	0.0961%		
		Totals= = >	2.60E-04	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Septic Tank B, Sludge (Liquid Phase), AREA 8*

Saxton	B & W
Sample Number	Sample Number
SX885950049	9507002-18AB

Sample Type	Sludge-LP

Description	Septic Tank B

0.0013

Total TRU Content (nCi/ml)

0.0001

Total Uranium Content (nCi/ml)

	Nuclide	Notes	Results uCi/ml	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	1.01E-04	47.9869%		
2	C-14	LESS THAN	5.10E-06	2.4231%		
3	Fe-55	LESS THAN	7.47E-07	0.3549%	Fe-55/Co-60	4.26857
4	Ni-59	LESS THAN	1.21E-06	0.5749%		
5	Ni-63		8.83E-05	41.9529%		
6	Sr-89	LESS THAN	8.49E-07	0.4034%		
7	Sr-90		1.00E-06	0.4751%	Sr-90/Cs-137	7.09220
8	Nb-94	LESS THAN	1.35E-07	0.0641%		
9	Tc-99	LESS THAN	4.32E-06	2.0525%		
10	I-129	LESS THAN	1.84E-06	0.8742%		
11	Np-237	LESS THAN	3.05E-08	0.0145%		
12	Pu-238	LESS THAN	6.39E-09	0.0030%	Pu-238/Am-241	0.39689
13	Pu-239/240	LESS THAN	9.04E-09	0.0043%		
14	Pu-241	LESS THAN	1.17E-06	0.5559%	Pu-241/Am-241	72.67081
15	Pu-242	LESS THAN	9.04E-09	0.0043%		
16	Am-241	LESS THAN	1.61E-08	0.0076%	Am-241/Pu-238	2.51956
17	Am-243	LESS THAN	2.79E-09	0.0013%		
18	Cm-242	LESS THAN	1.03E-08	0.0049%		
19	Cm-243/244	LESS THAN	1.50E-08	0.0071%		
20	U-234	LESS THAN	2.40E-08	0.0114%		
21	U-235	LESS THAN	2.90E-08	0.0138%		
22	U-238	LESS THAN	1.10E-08	0.0052%	U-238/Am-241	0.68323
23	Co-60	LESS THAN	1.75E-07	0.0831%	Am-241/U-238	1.46364
24	Ru-106	LESS THAN	1.23E-06	0.5844%		
25	Ag-108m	LESS THAN	1.61E-07	0.0765%		
26	Sb-125	LESS THAN	3.08E-07	0.1463%		
27	Cs-134	LESS THAN	1.46E-07	0.0694%	Cs-134/Cs-137	1.03546
28	Cs-137	LESS THAN	1.41E-07	0.0670%	Co-60/Cs-137	1.24113
29	Ce-144	LESS THAN	6.13E-07	0.2912%	Cs-137/Co-60	0.80571
30	Eu-152	LESS THAN	1.15E-06	0.5464%		
31	Eu-154	LESS THAN	4.52E-07	0.2148%		
32	Eu-155	LESS THAN	2.64E-07	0.1254%		
		Totals===>	2.10E-04	100.00%		

B & W RESULTS 9/14/95 – Saxton Samples

SYSTEM===> *Septic Tank B, Sludge (Solid Phase), AREA 8*

Saxton Sample Number	B & W Sample Number
SX885950049	9507002-18AC

Sample Type	Sludge-SP
Description	Septic Tank B

0.0106 Total TRU Content (nCi/g)

0.0012 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	9.33E-05	37.7797%		
2	C-14	LESS THAN	1.03E-05	4.1707%		
3	Fe-55	LESS THAN	2.21E-05	8.9489%	Fe-55/Co-60	17.96748
4	Ni-59	LESS THAN	9.82E-06	3.9764%		
5	Ni-63		5.04E-05	20.4083%		
6	Sr-89	LESS THAN	4.12E-06	1.6683%		
7	Sr-90	LESS THAN	3.00E-06	1.2148%	Sr-90/Cs-137	0.09375
8	Nb-94	LESS THAN	1.01E-07	0.0409%		
9	Tc-99	LESS THAN	3.38E-06	1.3687%		
10	I-129	LESS THAN	1.97E-06	0.7977%		
11	Np-237	LESS THAN	1.64E-07	0.0664%		
12	Pu-238		5.56E-06	2.2514%	Pu-238/Am-241	62.82486
13	Pu-239/240	LESS THAN	9.61E-08	0.0389%		
14	Pu-241	LESS THAN	4.59E-06	1.8586%	Pu-241/Am-241	51.86441
15	Pu-242	LESS THAN	1.09E-08	0.0044%		
16	Am-241	LESS THAN	8.85E-08	0.0358%	Am-241/Pu-238	0.01592
17	Am-243	LESS THAN	1.21E-08	0.0049%		
18	Cm-242	LESS THAN	2.70E-08	0.0109%		
19	Cm-243/244	LESS THAN	3.64E-08	0.0147%		
20	U-234	LESS THAN	4.58E-07	0.1855%		
21	U-235	LESS THAN	2.81E-07	0.1138%		
22	U-238	LESS THAN	4.15E-07	0.1680%	U-238/Am-241	4.68927
23	Co-60		1.23E-06	0.4981%	Am-241/U-238	0.21325
24	Ru-106	LESS THAN	9.94E-07	0.4025%		
25	Ag-108m	LESS THAN	1.06E-07	0.0429%		
26	Sb-125	LESS THAN	3.36E-07	0.1361%		
27	Cs-134	LESS THAN	1.12E-07	0.0454%	Cs-134/Cs-137	0.00350
28	Cs-137		3.20E-05	12.9577%	Co-60/Cs-137	0.03844
29	Ce-144	LESS THAN	5.53E-07	0.2239%	Cs-137/Co-60	26.01626
30	Eu-152	LESS THAN	8.68E-07	0.3515%		
31	Eu-154	LESS THAN	3.26E-07	0.1320%		
32	Eu-155	LESS THAN	2.03E-07	0.0822%		
		Totals===>	2.47E-04	100.00%		

B&W NUCLEAR ENVIRONMENTAL SERVICES, INCORPORATED
NUCLEAR ENVIRONMENTAL LABORATORIES

DATA REPORT NUMBER 9509065

10CFR61 / CHEMICAL ANALYSIS RESULTS

Submitted to

GPU Nuclear Corporation
Saxton Site - Decommissioning Project

November 2, 1995

Released by: James L Clark 11/2/95

James L. Clark, Project Manager
Nuclear Environmental Laboratories

DATA REPORT SUMMARY

Laboratory Project Summary

- Plant Site: Saxton Decommissioning Project
- Shipment Number: 95-006
- Receipt Date: September 14, 1995
- NEL COC Number: SN-12306, SN-12307
- NEL SDG Number: 9509065, 9509066, 9509067
- NEL Proposal: NEL5-1258
- Contract Number: 0397355
- Analysis Service: Routine
- Laboratory QC: Routine - Batch

Sample Delivery Group Summary			
Customer ID	**NEL Sample ID**	**Sample Type**	**Description**
SX865950053	9509065-01	S-INJ Pipe Section	Item-1 (Leach)
SX865950053	9509065-01-AA	S-INJ Pipe Section	Item-1 (Metal)
SX865950069	9509065-02	S-INJ Pipe/Table B-6	Item-3 (Leach)
SX865950069	9509065-02-AA	S-INJ Pipe/Table B-6	Item-3 (Metal)
SX835950085	9509065-03	CC River Water Pipe	Item-7 (Leach)
SX825950086	9509065-04	SGBD Line (Bottom)	Item-8 (Leach)
SX825950087	9509065-05	SGBD Line (Surface)	Item-9 (Leach)
SX866950116	9509065-06-AA	RX Cavity Steel	Item-13 (Metal)
SX865950118	9509065-07	Make-Up Demin Pipe	Item-14 (Leach)
SX815950068	9509066-01/01AA	Tank Sediment	Item-2
SX8C6950083	9509066-02AA	Paint Chip Comp	Item-5
SX8C6950084	9509066-03AA	Paint Chips - SW	Item-6
SX866950115	9509066-04/04AA	Storage Well Resin	Item-12 (Liq)
SX866950115	9509066-04AB	Storage Well Resin	Item-12 (Solid)
SX835950071	9509067-01	SG Scrape	Item-4
SX825950110	9509067-02	SG Manway Scrape	Item-10 (NA)
SX825950111	9509067-03	SG Bowl Smear	Item-11

Note that "NA" in the preceding Table indicates that sample was not analyzed. This was due to sample being collected on Duct-Tape and being of inadequate total mass for removal and analysis.

Pipe Sections / Physical Characteristics Summary

NEL Sample ID	Length (in)	OD (in)	ID (in)
9509065-01	9 3/4	3.519	2.614
9509065-02	13	3.512	2.610
9509065-03	10 1/8	4.576	4.005
9509065-04	11 7/8	2.380	1.906
9509065-05	11 1/8	1.925	1.502
9509065-07	8 5/8	1.910	1.660

Pipe Section Leach / Decon Summary

NEL Sample ID	% Activity Removed (^{60}Co)	% Activity Removed (^{137}Cs)
9509065-01	86 ± 8	65 ± 6
9509065-02	0	0
9509065-03	0	17 ± 7
9509065-04	52 ± 59	18 ± 4
9509065-05	0	52 ± 3
9509065-07	0	0

Sample Aliquot Summary

NEL Sample ID	Matrix	Volume / Density	Pipe Mass/Removed (g)
9509065-01	Acid Leach	1109 mL / 1.08 g/mL	5492 / 0
9509065-02	Acid Leach	1158 mL / 1.15 g/mL	7328 / 0
9509065-03	Acid Leach	4095 mL / 1.08 g/mL	4236 / 134
9509065-04	Acid Leach	953 mL / 1.14 g/mL	2167 / 58
9509065-05	Acid Leach	965 mL / 1.08 g/mL	1479 / 34
9509065-07	Acid Leach	503 mL / 1.08 g/mL	891 / 2

NEL Sample ID	Sample Matrix	Mass / Volume	Density
9509065-01AA	Metal Solids	NR	NR
9509065-02AA	Metal Solids	NR	NR
9509065-06AA	Metal Solids	NR	NR
9509066-01/01AA	Wet Sediment	3.27 g	0.93 g/cc
9509066-02AA	Paint Chips	15.02 g	1.67 g/cc
9509066-03AA	Paint Chips	15.11 g	1.51 g/cc
9509066-04/04AA	Resin Liquid	62 mL	1.01 g/mL
9509066-04AB	Resin Wet Solids	3.98 g	0.99 g/mL
9509067-01	Scrape Solids	0.504 g	0.84 g/cc
9509067-02	Scrape Solids	NA	NA
9509067-03	Smear	0.922 g	0.46 g/cc

Note that "NA" in the preceding Table indicates that sample was not analyzed. This was due to sample being collected on Duct-Tape and being of inadequate total mass for removal and analysis. "NR" indicates that the listed analysis was not requested.

Sample Analysis Summary

Customer ID	NEL Sample ID	Sample Matrix	Notes
SX865950053	9509065-01	Acid Leachate	(1)
SX865950053	9509065-01-AA	Metal Shavings	(2)
SX865950069	9509065-02	Acid Leachate	(1)
SX865950069	9509065-02-AA	Metal Shavings	(2)
SX835950085	9509065-03	Acid Leachate	(3)
SX825950086	9509065-04	Acid Leachate	(1)
SX825950087	9509065-05	Acid Leachate	(1)
SX866950116	9509065-06-AA	Metal Shavings	(2)
SX865950118	9509065-07	Acid Leachate	(1)
SX815950068	9509066-01/01AA	Wet Sediment Solids	---
SX8C6950083	9509066-02AA	Paint Chips	(4)
SX8C6950084	9509066-03AA	Paint Chips	(4)
SX866950115	9509066-04/04AA	Resin Liquids	(5)
SX866950115	9509066-04AB	Wet Resin	(5)
SX835950071	9509067-01	Scrape Solids	---
SX825950110	9509067-02	Tape Adhered Solids	(6)
SX825950111	9509067-03	Smear Solids	---

Sample Analysis Summary Notes

Note-1 Acid leaching with 30% HNO_3 / 5% HCl for 8-24 hour period. Leach solution subsequently analyzed includes small volume rinses.

Note-2 Metal Shavings collected from multiple locations to yield representative sample with minimal surface contamination.

Note-3 Leach solution combined with significant loose solid deposits.

Note-4 Asbestos Analysis performed by B&W NESI Approved Sub-Contract Laboratory.

Note-5 For 10CFR61 Analysis: Solid / Liquid phases separated by filtration. Solid analyzed on wet weight basis. For TCLP Analysis: Sample analyzed as mixed Solid / Liquid Matrix.

Note-6 Sample not analyzed due to inability to remove from tape adhesive upon which it was collected.

Analytical Results

See Attached Report Sheets

Saxton Results Summary

NEL ID		9509065 -01 ACTIVITY (uCi/g Removed)	2S UNC		9509065 -02 ACTIVITY (uCi/g Removed)	2S UNC		9509065 -03 ACTIVITY (uCi/g Removed)	2S UNC
H-3	<	8.37E-03	---	<	8.74E-03	---	<	2.31E-04	---
C-14	<	1.19E-02	---	<	7.86E-03	---	<	7.36E-04	---
Fe-55		5.27E+00	8.56E-01		5.58E-03	1.07E-03	<	1.83E-05	---
Ni-59		1.14E+00	1.68E-01	<	2.05E-04	---	<	6.17E-06	---
Ni-63		9.12E+01	1.33E+01		1.44E-02	2.14E-03		4.10E-05	6.48E-06
Sr-90		5.91E-01	7.23E-03	<	1.39E-04	---		9.84E-06	2.26E-06
Nb-94		1.65E-02	1.14E-03	<	2.81E-03	---	<	1.39E-05	---
Tc-99	<	5.86E-04	---	<	2.91E-04	---	<	8.95E-06	---
I-129	<	1.41E-03	---	<	1.57E-03	---	<	1.27E-05	---
Np-237	<	3.80E-01	---	<	4.31E-05	---	<	1.61E-06	---
Pu-238		2.27E+00	2.44E-01		6.32E-05	1.29E-05	<	4.00E-07	---
Pu-239/240		4.99E+00	4.08E-01		1.23E-04	1.85E-05	<	6.81E-07	---
Pu-241		5.72E+01	6.57E+00		2.61E-03	3.22E-04	<	4.03E-05	---
Pu-242	<	2.35E-02	---	<	2.86E-06	---	<	1.15E-07	---
Am-241		7.75E+00	5.03E-01		1.96E-04	1.58E-05		1.02E-06	5.06E-08
Am-243	<	1.52E-02	---	<	9.41E-07	---	<	4.77E-08	---
Cm-242	<	8.11E-02	---	<	1.02E-06	---	<	1.73E-07	---
Cm-243/244	<	9.62E-02	---	<	4.98E-06	---	<	1.65E-07	---
U-234	<	2.36E-02	---	<	4.96E-06	---	<	9.11E-07	---
U-235	<	6.54E-03	---	<	7.01E-06	---	<	2.57E-07	---
U-238	<	1.13E-02	---	<	3.51E-06	---	<	4.19E-07	---
Co-60		3.58E+01	6.54E-02		3.12E-03	3.01E-04		8.71E-06	9.05E-07
Ru-106	<	1.34E-01	---	<	8.14E-04	---	<	1.63E-06	---
Cs-134	<	2.33E-02	---		6.62E-05	2.78E-05	<	2.17E-07	---
Cs-137		8.30E-01	1.85E-02		3.16E-01	4.47E-02		4.80E-06	6.97E-07
Ce-144	<	4.34E-02	---	<	6.31E-04	---	<	8.34E-07	---
Am-241		1.05E+00	3.68E-02		3.37E-04	2.52E-04		1.06E-06	9.29E-07
Ag-108m	<	1.45E-02	---	<	8.71E-05	---	<	1.64E-07	---
Eu-152	<	1.07E-01	---	<	2.45E-04	---	<	1.89E-06	---
Eu-154		6.65E-02	3.30E-02	<	5.04E-05	---	<	5.07E-07	---
Eu-155		1.70E-02	1.36E-02	<	3.06E-04	---	<	4.22E-07	---
Sb-125	<	3.17E-02	---	<	4.33E-04	---	<	4.31E-07	---

Saxton Results Summary

NEL ID	9509065 -04		9509065 -05		9509065 -07	
	ACTIVITY (uCi/g Removed)	2S UNC	ACTIVITY (uCi/g Removed)	2S UNC	ACTIVITY (uCi/g Removed)	2S UNC
H-3	< 1.24E-04	---	< 2.14E-04	---	< 1.90E-03	---
C-14	< 1.36E-04	---	< 3.01E-04	---	< 2.33E-03	---
Fe-55	< 3.99E-06	---	< 9.37E-06	---	7.39E-04	1.31E-04
Ni-59	< 1.32E-05	---	3.77E-06	5.52E-07	1.77E-04	4.91E-05
Ni-63	1.41E-04	2.15E-05	2.21E-04	3.34E-05	1.65E-02	2.42E-03
Sr-90	5.03E-06	1.21E-06	< 4.40E-06	---	1.00E-03	1.12E-04
Nb-94	< 4.67E-06	---	< 4.29E-06	---	< 4.78E-04	---
Tc-99	< 4.35E-06	---	< 7.12E-06	---	< 6.61E-05	---
I-129	< 1.53E-05	---	< 1.74E-05	---	< 3.62E-04	---
Np-237	< 1.13E-06	---	< 1.98E-06	---	< 7.82E-05	---
Pu-238	2.37E-06	4.07E-07	< 1.13E-07	---	5.98E-04	5.58E-05
Pu-239/240	3.96E-06	5.46E-07	< 3.92E-07	---	1.72E-03	1.18E-04
Pu-241	4.60E-05	5.78E-06	< 4.09E-05	---	2.42E-02	2.58E-03
Pu-242	< 7.46E-08	---	< 1.13E-07	---	< 4.17E-06	---
Am-241	3.07E-06	3.11E-07	1.59E-05	1.02E-06	1.91E-03	9.45E-05
Am-243	< 2.61E-08	---	< 2.98E-08	---	< 2.29E-06	---
Cm-242	< 7.31E-08	---	< 9.17E-08	---	< 1.41E-05	---
Cm-243/244	< 1.07E-07	---	< 1.60E-07	---	< 1.71E-05	---
U-234	2.73E-06	3.20E-07	< 3.12E-07	---	< 1.77E-05	---
U-235	< 1.36E-07	---	< 1.04E-07	---	< 4.57E-06	---
U-238	2.33E-06	2.88E-07	< 4.77E-07	---	< 4.57E-06	---
Co-60	3.98E-05	4.14E-06	3.35E-05	3.29E-06	2.99E-03	5.43E-05
Ru-106	< 6.52E-06	---	< 1.33E-06	---	< 1.46E-04	---
Cs-134	5.59E-07	3.55E-07	< ---	---	< 2.19E-05	---
Cs-137	1.51E-03	1.73E-04	5.70E-05	7.55E-06	5.23E-03	5.88E-05
Ce-144	< 5.06E-06	---	< 1.39E-06	---	< 8.09E-05	---
Am-241	2.92E-06	1.90E-06	< 1.31E-06	---	2.61E-03	1.69E-04
Ag-108m	< 6.93E-07	---	< 3.01E-07	---	< 1.54E-05	---
Eu-152	< 3.35E-06	---	< 3.52E-06	---	< 1.97E-04	---
Eu-154	< 6.90E-07	---	< 6.02E-07	---	1.13E-04	3.90E-05
Eu-155	< 2.38E-06	---	< 6.93E-07	---	< 2.92E-05	---
Sb-125	< 3.30E-06	---	< 9.28E-07	---	< 5.66E-05	---

Saxton Results Summary

NEL ID		9509065 -01AA ACTIVITY (uCi/g)	2S UNC		9509065 -02AA ACTIVITY (uCi/g)	2S UNC		9509065 -06AA ACTIVITY (uCi/g)	2S UNC
H-3	<	6.32E-05	---	<	6.06E-05	---	<	2.63E-05	---
C-14	<	4.08E-04	---	<	2.39E-04	---	<	1.23E-04	---
Fe-55	<	4.08E-06	---	<	3.68E-06	---		4.98E-06	2.08E-06
Ni-59	<	1.62E-05	---		4.84E-06	4.00E-06		1.66E-05	3.68E-06
Ni-63		3.33E-04	5.00E-05		4.47E-04	6.68E-05		5.25E-04	7.78E-05
Sr-90	<	3.78E-06	---		2.86E-05	5.06E-06	<	1.56E-06	---
Nb-94	<	1.20E-06	---	<	9.75E-07	---	<	5.61E-07	---
Tc-99	<	4.44E-06	---	<	4.11E-06	---	<	2.05E-06	---
I-129	<	4.39E-06	---	<	6.92E-06	---	<	6.22E-06	---
Np-237	<	1.25E-06	---	<	8.52E-07	---	<	7.27E-07	---
Pu-238	<	3.52E-07	---	<	2.95E-07	---	<	3.79E-07	---
Pu-239/240	<	6.96E-07	---	<	3.97E-07	---	<	4.78E-07	---
Pu-241	<	3.82E-05	---	<	3.20E-05	---	<	2.13E-05	---
Pu-242	<	1.06E-07	---	<	8.88E-08	---	<	5.07E-08	---
Am-241	<	5.64E-07	---	<	1.98E-07	---		9.85E-07	6.28E-08
Am-243	<	6.90E-08	---	<	4.42E-08	---	<	1.14E-08	---
Cm-242	<	7.90E-08	---	<	1.52E-07	---	<	5.37E-08	---
Cm-243/244	<	1.95E-07	---	<	1.17E-07	---	<	6.63E-08	---
U-234	<	1.55E-07	---	<	8.31E-07	---	<	4.73E-08	---
U-235	<	6.95E-08	---	<	5.76E-07	---	<	1.50E-08	---
U-238	<	6.95E-08	---	<	4.97E-07	---	<	2.12E-08	---
Co-60		1.43E-04	1.32E-05		1.82E-04	5.30E-06		6.08E-04	5.38E-05
Ru-106	<	1.11E-05	---	<	1.74E-05	---	<	1.11E-05	---
Cs-134	<	1.51E-06	---	<	2.40E-06	---	<	1.60E-06	---
Cs-137		3.91E-06	1.51E-06		7.19E-06	1.90E-06		1.94E-06	9.96E-07
Ce-144	<	4.92E-06	---	<	7.57E-06	---	<	4.62E-06	---
Am-241	<	1.11E-06	---	<	6.40E-06	---	<	2.20E-06	---
Ag-108m	<	1.06E-06	---	<	1.75E-06	---	<	1.10E-06	---
Eu-152	<	1.32E-05	---	<	2.30E-05	---	<	1.48E-05	---
Eu-154	<	3.38E-06	---	<	4.54E-06	---	<	2.59E-06	---
Eu-155	<	1.96E-06	---	<	3.61E-06	---	<	1.99E-06	---
Sb-125	<	2.61E-06	---	<	4.02E-06	---	<	2.53E-06	---

Saxton Results Summary

NEL ID		9509066 -01 ACTIVITY (uCi/g)	2S UNC		9509066 -04AA ACTIVITY (uCi/mL)	2S UNC		9509066 -04AB ACTIVITY (uCi/g)	2S UNC
H-3		7.76E-04	1.20E-04		2.90E-04	5.44E-05		3.37E-04	5.48E-05
C-14	<	1.02E-03	---	<	1.16E-04	---	<	1.96E-03	---
Fe-55		1.19E-03	2.28E-04		1.23E-05	2.84E-06		2.28E-03	4.36E-04
Ni-59		1.47E-02	2.16E-03		3.52E-05	5.20E-06		1.32E-03	1.95E-04
Ni-63		9.93E-01	1.45E-01		2.81E-03	4.10E-04		1.32E-03	1.95E-04
Sr-90		1.44E-02	3.30E-04		2.92E-04	3.74E-06		1.01E-01	1.47E-02
Nb-94	<	1.47E-04	---		1.05E-06	7.32E-03	<	5.66E-06	---
Tc-99	<	3.42E-05	---	<	3.38E-06	---	<	2.55E-05	---
I-129	<	4.86E-06	---	<	1.51E-06	---	<	8.54E-06	---
Np-237	<	1.20E-04	---	<	1.02E-07	---	<	7.34E-06	---
Pu-238		9.19E-04	7.22E-05		9.64E-07	7.58E-08		1.23E-04	9.70E-06
Pu-239/240		2.09E-03	1.35E-04		1.74E-06	1.17E-07		2.73E-04	1.77E-05
Pu-241		3.83E-02	3.98E-03		2.88E-05	3.04E-06		4.02E-03	4.24E-04
Pu-242	<	3.86E-06	---	<	4.06E-09	---	<	5.28E-07	---
Am-241		1.87E-03	9.24E-05		1.16E-06	5.76E-08		3.36E-04	1.98E-05
Am-243	<	2.81E-06	---	<	2.40E-09	---	<	3.94E-07	---
Cm-242	<	1.82E-05	---	<	1.08E-08	---	<	1.87E-06	---
Cm-243/244	<	2.63E-05	---	<	1.70E-08	---	<	3.65E-06	---
U-234	<	1.87E-05	---	<	3.51E-07	---	<	1.52E-07	---
U-235	<	7.48E-06	---	<	1.03E-07	---	<	8.80E-08	---
U-238	<	6.48E-06	---	<	7.31E-08	---	<	7.18E-08	---
Co-60		2.32E-01	3.22E-03		4.92E-04	5.60E-05		7.11E-03	3.56E-04
Ru-106	<	2.56E-02	---	<	4.39E-03	---	<	6.62E-03	---
Cs-134		4.51E-03	1.47E-03	<	1.88E-04	---		6.91E-04	2.04E-04
Cs-137		1.49E+01	2.02E-02		1.85E+00	2.60E-03		3.75E+00	5.62E-03
Ce-144	<	2.43E-02	---	<	3.34E-03	---	<	4.49E-03	---
Am-241	<	1.33E-02	---	<	2.15E-03	---	<	2.13E-03	---
Ag-108m	<	1.99E-03	---	<	4.35E-04	---	<	6.60E-04	---
Eu-152	<	1.19E-02	---	<	8.87E-04	---	<	1.49E-03	---
Eu-154	<	1.99E-03	---	<	2.45E-04	---	<	3.70E-04	---
Eu-155	<	1.15E-02	---	<	1.49E-03	---	<	2.12E-03	---
Sb-125	<	1.66E-02	---	<	2.38E-03	---	<	4.23E-03	---

Saxton Results Summary

NEL ID		9509067 -01 ACTIVITY (uCi/g)	2S UNC		9509067 -03 ACTIVITY (uCi/Sample)	2S UNC
H-3	<	1.48E-03	---	<	7.50E-04	---
C-14	<	4.67E-03	---	<	2.58E-03	---
Fe-55	<	3.25E-05	---		8.46E-02	1.38E-02
Ni-59	<	7.81E-05	---		1.57E-02	2.30E-03
Ni-63	<	7.81E-05	---		1.43E+00	2.10E-01
Sr-90		1.30E-04	2.98E-05		2.64E-01	5.14E-03
Nb-94	<	8.50E-04	---		5.17E-04	3.60E-05
Tc-99	<	5.14E-05	---	<	2.52E-04	---
I-129	<	8.87E-05	---	<	6.37E-05	---
Np-237	<	2.43E-05	---	<	1.80E-04	---
Pu-238		1.26E-05	2.78E-06		6.88E-04	7.96E-05
Pu-239/240	<	9.11E-06	---		1.45E-03	1.23E-04
Pu-241	<	2.73E-04	---		1.99E-02	2.30E-03
Pu-242	<	6.77E-07	---	<	8.32E-06	---
Am-241		3.63E-05	4.44E-06		1.73E-03	1.08E-04
Am-243	<	5.53E-07	---	<	2.91E-06	---
Cm-242	<	2.10E-06	---	<	1.37E-05	---
Cm-243/244	<	2.47E-06	---	<	2.38E-05	---
U-234		2.80E-05	4.44E-06	<	1.38E-04	---
U-235	<	2.01E-06	---	<	6.52E-05	---
U-238		2.61E-05	4.26E-06	<	4.61E-05	---
Co-60		1.52E-04	3.64E-05		7.60E-01	1.80E-02
Ru-106	<	2.10E-04	---	<	1.24E-02	---
Cs-134	<	2.30E-05	---	<	1.74E-03	---
Cs-137		1.54E-03	2.14E-04		9.58E-01	8.90E-02
Ce-144	<	1.07E-04	---	<	4.67E-03	---
Am-241	<	6.84E-05	---		2.04E-01	1.14E-02
Ag-108m	<	2.15E-05	---	<	1.23E-03	---
Eu-152	<	1.91E-04	---	<	1.22E-02	---
Eu-154	<	6.22E-05	---		7.05E-03	2.26E-03
Eu-155	<	4.21E-05	---	<	1.22E-03	---
Sb-125	<	6.32E-05	---	<	3.68E-03	---

A N A L Y S I S R E P O R T

DATE: 10/31/95
CONTRACT #: 431-1258-00
CLIENT: GPU-SAXTON
CLIENT REPRESENTATIVE: B. H. Brosey
NEL SAMPLE #: 9509066
SAMPLE DESCRIPTION: Miscellaneous Matrices
NUMBER OF SAMPLES: 4
SAMPLE RECEIPT DATE: 9/15/95

	Customer ID:	SX815950068	SX8C6950083	SX8C6950084	SX866950115		
	NEL #:	9509066-01AA	9509066-02AA	9509066-03AA	9509066-04AA		
ANALYTE	METHOD					LIMIT	UNITS
TCLP EXTRACTION/ METALS ANALYSIS							
Arsenic	SW846 1311/6010	<0.5	<0.5	<0.5	<0.5	5.0	mg/L
Barium	SW846 1311/6010	<10.0	<10.0	<10.0	<10.0	100.0	mg/L
Cadmium	SW846 1311/6010	0.40	<0.1	<0.1	0.12	1.0	mg/L
Chromium	SW846 1311/6010	<0.5	<0.5	<0.5	<0.5	5.0	mg/L
Lead	SW846 1311/6010	<0.5	<0.5	<0.5	7.2	5.0	mg/L
Mercury	SW846 1311/7470	<0.021	0.055	<0.021	<0.021	0.2	mg/L
Selenium	SW846 1311/6010	<0.16	<0.16	<0.16	<0.16	1.0	mg/L
Silver	SW846 1311/6010	<0.5	<0.5	<0.5	<0.5	5.0	mg/L

The sample aliquot to extraction fluid ratio required by TCLP was maintained, but the sample volume was reduced due to activity.
Extracts were diluted for analysis without exceeding the reporting limits for TCLP.

Reviewed By: James L. Olsen Date: 10/31/95

Approved By: [signature] Date: 10/31/95

R&W Nuclear Environmental Services Inc
Nuclear Environmental Laboratories
[illegible]

P. O. Box 11165
Route 726
Lynchburg, VA 24506-1165

AGX, Inc.

- Air Monitoring
- Testing Laboratory
- Project Management
- Surveys

REPORT OF
BULK SAMPLE ANALYSIS

Report To: Babcock & Wilcox N.E.S.I.
RD #1, Box 355
Vandergrift, PA 15690

Attention: Ms. Joan Maritto

Project: Saxton

Lab No: 9510073
Client Code: BWA
Client No: 431-1258-00
Sampled by: Client
Date: October 20, 1995

Sample I.D.	84158	84159	
Client I.D. Sample Description:	9509066-02-AA 0101 35.9730g	9509066-03-AA 0101 19.94g	
Is It Homogeneous?	No	No	
Does It Contain Layers?	Yes	Yes	
Is the Sample Fibrous?	Yes	No	
Sample Color:	Blue/Gray/Tan	Black/White/Tan	
Does the Sample Contain Asbestos Fibers?	**No**	**No**	
Asbestos Type Present: (Type and Percent)	None	None	
Total Percent Asbestos:	0%	0%	
Other Fibrous Materials (Type and Percent)	Cellulose 1-2%	Cellulose <1%	
Nonfibrous Constituents	Not Analyzed	Not Analyzed	

Sample analyzed according to EPA Method EPA/600/R-93/116. Results are reported as estimates of percent area, subject to variability and are specific for material analyzed. Reports cannot be duplicated or altered without expressed written consent of AGX, Inc.

Reviewed and Approved By: Daniel J. Winkle

AGX, Inc. Daniel Winkle
Laboratory Manager

Analyzed By: Daniel J. Winkle

AGX, Inc. Daniel Winkle
Industrial Hygienist

610
1/95

NUCLEAR ENVIRONMENTAL LABORATORIES | P. O. BOX 11165 | LYNCHBURG, VIRGINIA 24506-1165

LEVEL 1 INORGANICS DATA REPORT

MULTIPLE SAMPLES OR MULTIPLE ANALYTES

Report Date: November 17, 1995	Report No.: 9509066S	NEL Contract No.: 431-1258-00	Customer SDG No.: N/A
Customer: GPU Nuclear Corporation		Customer Site: Saxton Decommissioning Project	
Customer Representative: B. H. Brosey		Customer Authorization No.: 0397355	
Sample Description: Saxton Paint Chips / Spent Resin			
No. of Samples: 3	Sample Receipt Date: 09/14/95	Analysis Date: 11/16/95	

Customer's Sample ID	NEL's Sample No.	Analytical Method	Analyte	Results	Units
SX8C6950083	9509066-02AA	SW846 6010	Total Lead	34,200	mg/Kg
SX8C6950084	9509066-03AA	SW846 6010	Total Lead	16.4	mg/Kg
SX866950115	9509066-04AA (Liquid)	SW846 6010	Total Lead	29.7	mg/L
SX866950115	9509066-04AB (Solid)	SW846 6010	Total Lead	1880	mg/Kg

Data Released By: James L. Clark | Date: 11/17/95

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Safety Injection Piping – Pipe Section Between RV and Check Valve.*

Saxton	B & W
Sample Number	Sample Number
SX865950053	9509065-01

Sample Type	Pipe Section

Description	SCP, Item 8, Int.

72806.0000
Total TRU Content (nCi/g)

41.4400
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	8.37E-03	0.0040%		
2	C-14	LESS THAN	1.19E-02	0.0057%		
3	Fe-55		5.27E+00	2.5318%	Fe-55/Co-60	0.14721
4	Ni-59		1.14E+00	0.5477%		
5	Ni-63		9.12E+01	43.8136%		
6	Sr-89	LESS THAN	N/R	0.0000%		
7	Sr-90		5.91E-01	0.2839%	Sr-90/Cs-137	0.71205
8	Nb-94		1.65E-02	0.0079%		
9	Tc-99	LESS THAN	5.86E-04	0.0003%		
10	I-129	LESS THAN	1.41E-03	0.0007%		
11	Np-237	LESS THAN	3.80E-01	0.1826%		
12	Pu-238		2.27E+00	1.0905%	Pu-238/Am-241	0.29290
13	Pu-239/240		4.99E+00	2.3973%		
14	Pu-241		5.72E+01	27.4796%	Pu-241/Am-241	7.38065
15	Pu-242	LESS THAN	2.35E-02	0.0113%		
16	Am-241		7.75E+00	3.7232%	Am-241/Pu-238	3.41410
17	Am-243	LESS THAN	1.52E-02	0.0073%		
18	Cm-242	LESS THAN	8.11E-02	0.0390%		
19	Cm-243/244	LESS THAN	9.62E-02	0.0462%		
20	U-234	LESS THAN	2.36E-02	0.0113%		
21	U-235	LESS THAN	6.54E-03	0.0031%		
22	U-238	LESS THAN	1.13E-02	0.0054%	U-238/Am-241	0.00146
23	Co-60		3.58E+01	17.1988%	Am-241/U-238	685.84071
24	Ru-106	LESS THAN	1.34E-01	0.0644%		
25	Ag-108m	LESS THAN	1.45E-02	0.0070%		
26	Sb-125	LESS THAN	3.17E-02	0.0152%		
27	Cs-134	LESS THAN	2.33E-02	0.0112%	Cs-134/Cs-137	0.02807
28	Cs-137		8.30E-01	0.3987%	Co-60/Cs-137	43.13253
29	Ce-144	LESS THAN	4.34E-02	0.0208%	Cs-137/Co-60	0.02318
30	Eu-152	LESS THAN	1.07E-01	0.0514%		
31	Eu-154		6.65E-02	0.0319%		
32	Eu-155		1.70E-02	0.0082%		
		Totals= = >	2.08E+02	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Safety Injection Piping – Pipe Section Between RV and Check Valve*

Saxton Sample Number	B & W Sample Number
SX865950053	9509065-01-AA

Sample Type	Pipe Section
Description	SCP, Item 8, Metal

0.0415 Total TRU Content (nCi/g)

0.0003 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	6.32E-05	5.9246%		
2	C-14	LESS THAN	4.08E-04	38.2472%		
3	Fe-55	LESS THAN	4.08E-06	0.3825%	Fe-55/Co-60	0.02853
4	Ni-59	LESS THAN	1.62E-05	1.5186%		
5	Ni-63		3.33E-04	31.2165%		
6	Sr-89	LESS THAN	N/R	0.0000%		
7	Sr-90	LESS THAN	3.78E-06	0.3543%	Sr-90/Cs-137	0.96675
8	Nb-94	LESS THAN	1.20E-06	0.1125%		
9	Tc-99	LESS THAN	4.44E-06	0.4162%		
10	I-129	LESS THAN	4.39E-06	0.4115%		
11	Np-237	LESS THAN	1.25E-06	0.1172%		
12	Pu-238	LESS THAN	3.52E-07	0.0330%	Pu-238/Am-241	0.62411
13	Pu-239/240	LESS THAN	6.96E-07	0.0652%		
14	Pu-241	LESS THAN	3.82E-05	3.5810%	Pu-241/Am-241	67.73050
15	Pu-242	LESS THAN	1.06E-07	0.0099%		
16	Am-241	LESS THAN	5.64E-07	0.0529%	Am-241/Pu-238	1.60227
17	Am-243	LESS THAN	6.90E-08	0.0065%		
18	Cm-242	LESS THAN	7.90E-08	0.0074%		
19	Cm-243/244	LESS THAN	1.95E-07	0.0183%		
20	U-234	LESS THAN	1.55E-07	0.0145%		
21	U-235	LESS THAN	6.95E-08	0.0065%		
22	U-238	LESS THAN	6.95E-08	0.0065%	U-238/Am-241	0.12323
23	Co-60		1.43E-04	13.4053%	Am-241/U-238	8.11511
24	Ru-106	LESS THAN	1.11E-05	1.0405%		
25	Ag-108m	LESS THAN	1.06E-06	0.0994%		
26	Sb-125	LESS THAN	2.61E-06	0.2447%		
27	Cs-134	LESS THAN	1.51E-06	0.1416%	Cs-134/Cs-137	0.38619
28	Cs-137		3.91E-06	0.3665%	Co-60/Cs-137	36.57289
29	Ce-144	LESS THAN	4.92E-06	0.4612%	Cs-137/Co-60	0.02734
30	Eu-152	LESS THAN	1.32E-05	1.2374%		
31	Eu-154	LESS THAN	3.38E-06	0.3169%		
32	Eu-155	LESS THAN	1.96E-06	0.1837%		
		Totals= = >	1.07E-03	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Safety Injection Piping – Pipe Section Between Check Valve and CV Wall*

Saxton	B & W
Sample Number	Sample Number
SX865950069	9509065-02

3.0451	Total TRU Content (nCi/g)
0.0155	Total Uranium Content (nCi/g)

Sample Type	Pipe Section
Description	SCP Table B-6

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	8.74E-03	2.3853%		
2	C-14	LESS THAN	7.86E-03	2.1451%		
3	Fe-55		5.58E-03	1.5229%	Fe-55/Co-60	1.78846
4	Ni-59	LESS THAN	2.05E-04	0.0559%		
5	Ni-63		1.44E-02	3.9300%		
6	Sr-89	LESS THAN	N/R	0.0000%		
7	Sr-90	LESS THAN	1.39E-04	0.0379%	Sr-90/Cs-137	0.00044
8	Nb-94	LESS THAN	2.81E-03	0.7669%		
9	Tc-99	LESS THAN	2.91E-04	0.0794%		
10	I-129	LESS THAN	1.57E-03	0.4285%		
11	Np-237	LESS THAN	4.31E-05	0.0118%		
12	Pu-238		6.32E-05	0.0172%	Pu-238/Am-241	0.32245
13	Pu-239/240		1.23E-04	0.0336%		
14	Pu-241		2.61E-03	0.7123%	Pu-241/Am-241	13.31633
15	Pu-242	LESS THAN	2.86E-06	0.0008%		
16	Am-241		1.96E-04	0.0535%	Am-241/Pu-238	3.10127
17	Am-243	LESS THAN	9.41E-07	0.0003%		
18	Cm-242	LESS THAN	1.02E-06	0.0003%		
19	Cm-243/244	LESS THAN	4.98E-06	0.0014%		
20	U-234	LESS THAN	4.96E-06	0.0014%		
21	U-235	LESS THAN	7.01E-06	0.0019%		
22	U-238	LESS THAN	3.51E-06	0.0010%	U-238/Am-241	0.01791
23	Co-60		3.12E-03	0.8515%	Am-241/U-238	55.84046
24	Ru-106	LESS THAN	8.14E-04	0.2222%		
25	Ag-108m	LESS THAN	8.71E-05	0.0238%		
26	Sb-125	LESS THAN	4.33E-04	0.1182%		
27	Cs-134		6.62E-05	0.0181%	Cs-134/Cs-137	0.00021
28	Cs-137		3.16E-01	86.2426%	Co-60/Cs-137	0.00987
29	Ce-144	LESS THAN	6.31E-04	0.1722%	Cs-137/Co-60	101.28205
30	Eu-152	LESS THAN	2.45E-04	0.0669%		
31	Eu-154	LESS THAN	5.04E-05	0.0138%		
32	Eu-155	LESS THAN	3.06E-04	0.0835%		
		Totals= = >	3.66E-01	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM===> *Safety Injection Piping – Pipe Section Between Check Valve and CV Wall.*

Saxton	B & W
Sample Number	Sample Number
SX865950069	9509065-02-AA

Sample Type	Pipe Section

Description	SCP TB-6, Metal

0.0341	Total TRU Content (nCi/g)
0.0019	Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	6.06E-05	5.5840%		
2	C-14	LESS THAN	2.39E-04	22.0225%		
3	Fe-55	LESS THAN	3.68E-06	0.3391%	Fe-55/Co-60	0.02022
4	Ni-59		4.84E-06	0.4460%		
5	Ni-63		4.47E-04	41.1886%		
6	Sr-89	LESS THAN	N/R	0.0000%		
7	Sr-90		2.86E-05	2.6353%	Sr-90/Cs-137	3.97775
8	Nb-94	LESS THAN	9.75E-07	0.0898%		
9	Tc-99	LESS THAN	4.11E-06	0.3787%		
10	I-129	LESS THAN	6.92E-06	0.6376%		
11	Np-237	LESS THAN	8.52E-07	0.0785%		
12	Pu-238	LESS THAN	2.95E-07	0.0272%	Pu-238/Am-241	1.48990
13	Pu-239/240	LESS THAN	3.97E-07	0.0366%		
14	Pu-241	LESS THAN	3.20E-05	2.9486%	Pu-241/Am-241	161.61616
15	Pu-242	LESS THAN	8.88E-08	0.0082%		
16	Am-241	LESS THAN	1.98E-07	0.0182%	Am-241/Pu-238	0.67119
17	Am-243	LESS THAN	4.42E-08	0.0041%		
18	Cm-242	LESS THAN	1.52E-07	0.0140%		
19	Cm-243/244	LESS THAN	1.17E-07	0.0108%		
20	U-234	LESS THAN	8.31E-07	0.0766%		
21	U-235	LESS THAN	5.76E-07	0.0531%		
22	U-238	LESS THAN	4.97E-07	0.0458%	U-238/Am-241	2.51010
23	Co-60		1.82E-04	16.7703%	Am-241/U-238	0.39839
24	Ru-106	LESS THAN	1.74E-05	1.6033%		
25	Ag-108m	LESS THAN	1.75E-06	0.1613%		
26	Sb-125	LESS THAN	4.02E-06	0.3704%		
27	Cs-134	LESS THAN	2.40E-06	0.2211%	Cs-134/Cs-137	0.33380
28	Cs-137		7.19E-06	0.6625%	Co-60/Cs-137	25.31293
29	Ce-144	LESS THAN	7.57E-06	0.6975%	Cs-137/Co-60	0.03951
30	Eu-152	LESS THAN	2.30E-05	2.1193%		
31	Eu-154	LESS THAN	4.54E-06	0.4183%		
32	Eu-155	LESS THAN	3.61E-06	0.3326%		
		Totals===>	1.09E-03	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *River Water Pipe Section*

Saxton	*B & W*
Sample Number	*Sample Number*
SX835950085	9509065--03

Sample Type	Pipe Section

Description	SCP, Table B-4

0.0445

Total TRU Content (nCi/g)

0.0016

Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*	LESS THAN	2.31E-04	20.2000%		
2	*C-14*	LESS THAN	7.36E-04	64.3602%		
3	*Fe-55*	LESS THAN	1.83E-05	1.6003%	Fe-55/Co-60	2.10103
4	*Ni-59*	LESS THAN	6.17E-06	0.5395%		
5	*Ni-63*		4.10E-05	3.5853%		
6	*Sr-89*	LESS THAN	N/R	0.0000%		
7	*Sr-90*		9.84E-06	0.8605%	Sr-90/Cs-137	2.05000
8	*Nb-94*	LESS THAN	1.39E-05	1.2155%		
9	*Tc-99*	LESS THAN	8.95E-06	0.7826%		
10	*I-129*	LESS THAN	1.27E-05	1.1106%		
11	*Np-237*	LESS THAN	1.61E-06	0.1408%		
12	*Pu-238*	LESS THAN	4.00E-07	0.0350%	Pu-238/Am-241	0.39216
13	*Pu-239/240*	LESS THAN	6.81E-07	0.0596%		
14	*Pu-241*	LESS THAN	4.03E-05	3.5241%	Pu-241/Am-241	39.50980
15	*Pu-242*	LESS THAN	1.15E-07	0.0101%		
16	*Am-241*		1.02E-06	0.0892%	Am-241/Pu-238	2.55000
17	*Am-243*	LESS THAN	4.77E-08	0.0042%		
18	*Cm-242*	LESS THAN	1.73E-07	0.0151%		
19	*Cm-243/244*	LESS THAN	1.65E-07	0.0144%		
20	*U-234*	LESS THAN	9.11E-07	0.0797%		
21	*U-235*	LESS THAN	2.57E-07	0.0225%		
22	*U-238*	LESS THAN	4.19E-07	0.0366%	U-238/Am-241	0.41078
23	*Co-60*		8.71E-06	0.7617%	Am-241/U-238	2.43437
24	*Ru-106*	LESS THAN	1.63E-06	0.1425%		
25	*Ag-108m*	LESS THAN	1.64E-07	0.0143%		
26	*Sb-125*	LESS THAN	4.31E-07	0.0377%		
27	*Cs-134*	LESS THAN	2.17E-07	0.0190%	Cs-134/Cs-137	0.04521
28	*Cs-137*		4.80E-06	0.4197%	Co-60/Cs-137	1.81458
29	*Ce-144*	LESS THAN	8.34E-07	0.0729%	Cs-137/Co-60	0.55109
30	*Eu-152*	LESS THAN	1.89E-06	0.1653%		
31	*Eu-154*	LESS THAN	5.07E-07	0.0443%		
32	*Eu-155*	LESS THAN	4.22E-07	0.0369%		
		Totals= = >	1.14E-03	100.00%		

N/R -- Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM===> *Steam Generator – Bottom Blow Down Line*

Saxton	*B & W*
Sample Number	*Sample Number*
SX825950086	9509065-04
Sample Type	Pipe Section
Description	SCP, Table B-10

0.0568
Total TRU Content (nCi/g)

0.0052
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*	LESS THAN	1.24E-04	5.9561%		
2	*C-14*	LESS THAN	1.36E-04	6.5325%		
3	*Fe-55*	LESS THAN	3.99E-06	0.1917%	Fe-55/Co-60	0.10025
4	*Ni-59*	LESS THAN	1.32E-05	0.6340%		
5	*Ni-63*		1.41E-04	6.7727%		
6	*Sr-89*	LESS THAN	N/R	0.0000%		
7	*Sr-90*		5.03E-06	0.2416%	Sr-90/Cs-137	0.00333
8	*Nb-94*	LESS THAN	4.67E-06	0.2243%		
9	*Tc-99*	LESS THAN	4.35E-06	0.2089%		
10	*I-129*	LESS THAN	1.53E-05	0.7349%		
11	*Np-237*	LESS THAN	1.13E-06	0.0543%		
12	*Pu-238*		2.37E-06	0.1138%	Pu-238/Am-241	0.77199
13	*Pu-239/240*		3.96E-06	0.1902%		
14	*Pu-241*		4.60E-05	2.2095%	Pu-241/Am-241	14.98371
15	*Pu-242*	LESS THAN	7.46E-08	0.0036%		
16	*Am-241*		3.07E-06	0.1475%	Am-241/Pu-238	1.29536
17	*Am-243*	LESS THAN	2.61E-08	0.0013%		
18	*Cm-242*	LESS THAN	7.31E-08	0.0035%		
19	*Cm-243/244*	LESS THAN	1.07E-07	0.0051%		
20	*U-234*		2.73E-06	0.1311%		
21	*U-235*	LESS THAN	1.36E-07	0.0065%		
22	*U-238*		2.33E-06	0.1119%	U-238/Am-241	0.75896
23	*Co-60*		3.98E-05	1.9117%	Am-241/U-238	1.31760
24	*Ru-106*	LESS THAN	6.52E-06	0.3132%		
25	*Ag-108m*	LESS THAN	6.93E-07	0.0333%		
26	*Sb-125*	LESS THAN	3.30E-06	0.1585%		
27	*Cs-134*		5.59E-07	0.0269%	Cs-134/Cs-137	0.00037
28	*Cs-137*		1.51E-03	72.5299%	Co-60/Cs-137	0.02636
29	*Ce-144*	LESS THAN	5.06E-06	0.2430%	Cs-137/Co-60	37.93970
30	*Eu-152*	LESS THAN	3.35E-06	0.1609%		
31	*Eu-154*	LESS THAN	6.90E-07	0.0331%		
32	*Eu-155*	LESS THAN	2.38E-06	0.1143%		
		Totals===>	2.08E-03	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Steam Generator – Surface Blow Down Piping*

Saxton Sample Number	B & W Sample Number
SX825950087	9509065-05

Sample Type	Pipe Section
Description	SCP, Table B-10

0.0597	Total TRU Content (nCi/g)
0.0009	Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	2.14E-04	22.7131%		
2	C-14	LESS THAN	3.01E-04	31.9470%		
3	Fe-55	LESS THAN	9.37E-06	0.9945%	Fe-55/Co-60	0.27970
4	Ni-59		3.77E-06	0.4001%		
5	Ni-63		2.21E-04	23.4561%		
6	Sr-89	LESS THAN	N/R	0.0000%		
7	Sr-90	LESS THAN	4.40E-06	0.4670%	Sr-90/Cs-137	0.07719
8	Nb-94	LESS THAN	4.29E-06	0.4553%		
9	Tc-99	LESS THAN	7.12E-06	0.7557%		
10	I-129	LESS THAN	1.74E-05	1.8468%		
11	Np-237	LESS THAN	1.98E-06	0.2101%		
12	Pu-238	LESS THAN	1.13E-07	0.0120%	Pu-238/Am-241	0.00711
13	Pu-239/240	LESS THAN	3.92E-07	0.0416%		
14	Pu-241	LESS THAN	4.09E-05	4.3410%	Pu-241/Am-241	2.57233
15	Pu-242	LESS THAN	1.13E-07	0.0120%		
16	Am-241		1.59E-05	1.6876%	Am-241/Pu-238	140.70796
17	Am-243	LESS THAN	2.98E-08	0.0032%		
18	Cm-242	LESS THAN	9.17E-08	0.0097%		
19	Cm-243/244	LESS THAN	1.60E-07	0.0170%		
20	U-234	LESS THAN	3.12E-07	0.0331%		
21	U-235	LESS THAN	1.04E-07	0.0110%		
22	U-238	LESS THAN	4.77E-07	0.0506%	U-238/Am-241	0.03000
23	Co-60		3.35E-05	3.5556%	Am-241/U-238	33.33333
24	Ru-106	LESS THAN	1.33E-06	0.1412%		
25	Ag-108m	LESS THAN	3.01E-07	0.0319%		
26	Sb-125	LESS THAN	9.28E-07	0.0985%		
27	Cs-134	LESS THAN	N/R	0.0000%	Cs-134/Cs-137	0.00000
28	Cs-137		5.70E-05	6.0498%	Co-60/Cs-137	0.58772
29	Ce-144	LESS THAN	1.39E-06	0.1475%	Cs-137/Co-60	1.70149
30	Eu-152	LESS THAN	3.52E-06	0.3736%		
31	Eu-154	LESS THAN	6.02E-07	0.0639%		
32	Eu-155	LESS THAN	6.93E-07	0.0736%		
		Totals= = >	9.42E-04	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM===> *Reactor Cavity Steel Support Structure – NNE Quadrant*

Saxton	*B & W*
Sample Number	*Sample Number*
SX866950116	9509065-06-AA
Sample Type	Steel Support
Description	Support of ECIS

0.0241	Total TRU Content (nCi/g)
0.0001	Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*	LESS THAN	2.63E-05	1.9049%		
2	*C-14*	LESS THAN	1.23E-04	8.9087%		
3	*Fe-55*		4.98E-06	0.3607%	Fe-55/Co-60	0.00819
4	*Ni-59*		1.66E-05	1.2023%		
5	*Ni-63*		5.25E-04	38.0249%		
6	*Sr-89*	LESS THAN	N/R	0.0000%		
7	*Sr-90*	LESS THAN	1.56E-06	0.1130%	Sr-90/Cs-137	0.80412
8	*Nb-94*	LESS THAN	5.61E-07	0.0406%		
9	*Tc-99*	LESS THAN	2.05E-06	0.1485%		
10	*I-129*	LESS THAN	6.22E-06	0.4505%		
11	*Np-237*	LESS THAN	7.27E-07	0.0527%		
12	*Pu-238*	LESS THAN	3.79E-07	0.0275%	Pu-238/Am-241	0.38477
13	*Pu-239/240*	LESS THAN	4.78E-07	0.0346%		
14	*Pu-241*	LESS THAN	2.13E-05	1.5427%	Pu-241/Am-241	21.62437
15	*Pu-242*	LESS THAN	5.07E-08	0.0037%		
16	*Am-241*		9.85E-07	0.0713%	Am-241/Pu-238	2.59894
17	*Am-243*	LESS THAN	1.14E-08	0.0008%		
18	*Cm-242*	LESS THAN	5.37E-08	0.0039%		
19	*Cm-243/244*	LESS THAN	6.63E-08	0.0048%		
20	*U-234*	LESS THAN	4.73E-08	0.0034%		
21	*U-235*	LESS THAN	1.50E-08	0.0011%		
22	*U-238*	LESS THAN	2.12E-08	0.0015%	U-238/Am-241	0.02152
23	*Co-60*		6.08E-04	44.0364%	Am-241/U-238	46.46226
24	*Ru-106*	LESS THAN	1.11E-05	0.8040%		
25	*Ag-108m*	LESS THAN	1.10E-06	0.0797%		
26	*Sb-125*	LESS THAN	2.53E-06	0.1832%		
27	*Cs-134*	LESS THAN	1.60E-06	0.1159%	Cs-134/Cs-137	0.82474
28	*Cs-137*		1.94E-06	0.1405%	Co-60/Cs-137	313.40206
29	*Ce-144*	LESS THAN	4.62E-06	0.3346%	Cs-137/Co-60	0.00319
30	*Eu-152*	LESS THAN	1.48E-05	1.0719%		
31	*Eu-154*	LESS THAN	2.59E-06	0.1876%		
32	*Eu-155*	LESS THAN	1.99E-06	0.1441%		
		Totals===>	1.38E-03	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Resin Sluice From Demineralizers*

Saxton Sample Number	B & W Sample Number
SX866950118	9509065-07

Sample Type	Pipe Section

Description	SCP, Item 10

28.5439 Total TRU Content (nCi/g)

0.0268 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	1.90E-03	3.1146%		
2	C-14	LESS THAN	2.33E-03	3.8195%		
3	Fe-55		7.39E-04	1.2114%	Fe-55/Co-60	0.24716
4	Ni-59		1.77E-04	0.2902%		
5	Ni-63		1.65E-02	27.0479%		
6	Sr-89	LESS THAN	N/R	0.0000%		
7	Sr-90		1.00E-03	1.6393%	Sr-90/Cs-137	0.19120
8	Nb-94	LESS THAN	4.78E-04	0.7836%		
9	Tc-99	LESS THAN	6.61E-05	0.1084%		
10	I-129	LESS THAN	3.62E-04	0.5934%		
11	Np-237	LESS THAN	7.82E-05	0.1282%		
12	Pu-238		5.98E-04	0.9803%	Pu-238/Am-241	0.31309
13	Pu-239/240		1.72E-03	2.8195%		
14	Pu-241		2.42E-02	39.6703%	Pu-241/Am-241	12.67016
15	Pu-242	LESS THAN	4.17E-06	0.0068%		
16	Am-241		1.91E-03	3.1310%	Am-241/Pu-238	3.19398
17	Am-243	LESS THAN	2.29E-06	0.0038%		
18	Cm-242	LESS THAN	1.41E-05	0.0231%		
19	Cm-243/244	LESS THAN	1.71E-05	0.0280%		
20	U-234	LESS THAN	1.77E-05	0.0290%		
21	U-235	LESS THAN	4.57E-06	0.0075%		
22	U-238	LESS THAN	4.57E-06	0.0075%	U-238/Am-241	0.00239
23	Co-60		2.99E-03	4.9014%	Am-241/U-238	417.94311
24	Ru-106	LESS THAN	1.46E-04	0.2393%		
25	Ag-108m	LESS THAN	1.54E-05	0.0252%		
26	Sb-125	LESS THAN	5.66E-05	0.0928%		
27	Cs-134	LESS THAN	2.19E-05	0.0359%	Cs-134/Cs-137	0.00419
28	Cs-137		5.23E-03	8.5734%	Co-60/Cs-137	0.57170
29	Ce-144	LESS THAN	8.09E-05	0.1326%	Cs-137/Co-60	1.74916
30	Eu-152	LESS THAN	1.97E-04	0.3229%		
31	Eu-154		1.13E-04	0.1852%		
32	Eu-155	LESS THAN	2.92E-05	0.0479%		
		Totals= = >	6.10E-02	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Discharge Tank Sediment*

Saxton	*B & W*
Sample Number	*Sample Number*
SX815950068	9509066-01

Sample Type	Sediment

Description	SCP, Item 5

43.3502
Total TRU Content (nCi/g)
0.0327
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*		7.76E-04	0.0048%		
2	*C-14*	LESS THAN	1.02E-03	0.0063%		
3	*Fe-55*		1.19E-03	0.0073%	Fe-55/Co-60	0.00513
4	*Ni-59*		1.47E-02	0.0902%		
5	*Ni-63*		9.93E-01	6.0924%		
6	*Sr-89*	LESS THAN	N/R	0.0000%		
7	*Sr-90*		1.44E-02	0.0883%	Sr-90/Cs-137	0.00097
8	*Nb-94*	LESS THAN	1.47E-04	0.0009%		
9	*Tc-99*	LESS THAN	3.42E-05	0.0002%		
10	*I-129*	LESS THAN	4.86E-06	0.0000%		
11	*Np-237*	LESS THAN	1.20E-04	0.0007%		
12	*Pu-238*		9.19E-04	0.0056%	Pu-238/Am-241	0.49144
13	*Pu-239/240*		2.09E-03	0.0128%		
14	*Pu-241*		3.83E-02	0.2350%	Pu-241/Am-241	20.48128
15	*Pu-242*	LESS THAN	3.86E-06	0.0000%		
16	*Am-241*		1.87E-03	0.0115%	Am-241/Pu-238	2.03482
17	*Am-243*	LESS THAN	2.81E-06	0.0000%		
18	*Cm-242*	LESS THAN	1.82E-05	0.0001%		
19	*Cm-243/244*	LESS THAN	2.63E-05	0.0002%		
20	*U-234*	LESS THAN	1.87E-05	0.0001%		
21	*U-235*	LESS THAN	7.48E-06	0.0000%		
22	*U-238*	LESS THAN	6.48E-06	0.0000%	U-238/Am-241	0.00347
23	*Co-60*		2.32E-01	1.4234%	Am-241/U-238	288.58025
24	*Ru-106*	LESS THAN	2.56E-02	0.1571%		
25	*Ag-108m*	LESS THAN	1.99E-03	0.0122%		
26	*Sb-125*	LESS THAN	1.66E-02	0.1018%		
27	*Cs-134*		4.51E-03	0.0277%	Cs-134/Cs-137	0.00030
28	*Cs-137*		1.49E+01	91.4164%	Co-60/Cs-137	0.01557
29	*Ce-144*	LESS THAN	2.43E-02	0.1491%	Cs-137/Co-60	64.22414
30	*Eu-152*	LESS THAN	1.19E-02	0.0730%		
31	*Eu-154*	LESS THAN	1.99E-03	0.0122%		
32	*Eu-155*	LESS THAN	1.15E-02	0.0706%		
		Totals = = >	1.63E+01	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM===> *Storage Well Resin Sample*

Saxton Sample Number	B & W Sample Number
SX866950115	9509066-04/04AA
Sample Type	Resin (LP)
Description	SW Floor Resin

0.0328	Total TRU Content (nCi/ml)
0.0005	Total Uranium Content (nCi/ml)

	Nuclide	Notes	Results uCi/ml	Normalized to 100 %	Nuclides	RATIOS
1	H-3		2.90E-04	0.0155%		
2	C-14	LESS THAN	1.16E-04	0.0062%		
3	Fe-55		1.23E-05	0.0007%	Fe-55/Co-60	0.02500
4	Ni-59		3.52E-05	0.0019%		
5	Ni-63		2.81E-03	0.1505%		
6	Sr-89	LESS THAN	N/R	0.0000%		
7	Sr-90		2.92E-04	0.0156%	Sr-90/Cs-137	0.00016
8	Nb-94		1.05E-06	0.0001%		
9	Tc-99	LESS THAN	3.38E-06	0.0002%		
10	I-129	LESS THAN	1.51E-06	0.0001%		
11	Np-237	LESS THAN	1.02E-07	0.0000%		
12	Pu-238		9.64E-07	0.0001%	Pu-238/Am-241	0.83103
13	Pu-239/240		1.74E-06	0.0001%		
14	Pu-241		2.88E-05	0.0015%	Pu-241/Am-241	24.82759
15	Pu-242	LESS THAN	4.06E-09	0.0000%		
16	Am-241		1.16E-06	0.0001%	Am-241/Pu-238	1.20332
17	Am-243	LESS THAN	2.40E-09	0.0000%		
18	Cm-242	LESS THAN	1.08E-08	0.0000%		
19	Cm-243/244	LESS THAN	1.70E-08	0.0000%		
20	U-234	LESS THAN	3.51E-07	0.0000%		
21	U-235	LESS THAN	1.03E-07	0.0000%		
22	U-238	LESS THAN	7.31E-08	0.0000%	U-238/Am-241	0.06302
23	Co-60		4.92E-04	0.0263%	Am-241/U-238	15.86867
24	Ru-106	LESS THAN	4.39E-03	0.2351%		
25	Ag-108m	LESS THAN	4.35E-04	0.0233%		
26	Sb-125	LESS THAN	2.38E-03	0.1274%		
27	Cs-134	LESS THAN	1.88E-04	0.0101%	Cs-134/Cs-137	0.00010
28	Cs-137		1.85E+00	99.0660%	Co-60/Cs-137	0.00027
29	Ce-144	LESS THAN	3.34E-03	0.1789%	Cs-137/Co-60	3760.16260
30	Eu-152	LESS THAN	8.87E-04	0.0475%		
31	Eu-154	LESS THAN	2.45E-04	0.0131%		
32	Eu-155	LESS THAN	1.49E-03	0.0798%		
		Totals===>	1.87E+00	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Storage Well Resin Sample*

Saxton	*B & W*
Sample Number	*Sample Number*
SX866950115	9509065–04AB
Sample Type	Resin (SP)
Description	SW FLoor Resin

4.7658 Total TRU Content (nCi/g)

0.0003 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H–3*		3.37E–04	0.0087%		
2	*C–14*	LESS THAN	1.96E–03	0.0504%		
3	*Fe–55*		2.28E–03	0.0586%	Fe–55/Co–60	0.32068
4	*Ni–59*		1.32E–03	0.0339%		
5	*Ni–63*		1.32E–03	0.0339%		
6	*Sr–89*	LESS THAN	N/R	0.0000%		
7	*Sr–90*		1.01E–01	2.5959%	Sr–90/Cs–137	0.02693
8	*Nb–94*	LESS THAN	5.66E–06	0.0001%		
9	*Tc–99*	LESS THAN	2.55E–05	0.0007%		
10	*I–129*	LESS THAN	8.54E–06	0.0002%		
11	*Np–237*	LESS THAN	7.34E–06	0.0002%		
12	*Pu–238*		1.23E–04	0.0032%	Pu–238/Am–241	0.36607
13	*Pu–239/240*		2.73E–04	0.0070%		
14	*Pu–241*		4.02E–03	0.1033%	Pu–241/Am–241	11.96429
15	*Pu–242*	LESS THAN	5.28E–07	0.0000%		
16	*Am–241*		3.36E–04	0.0086%	Am–241/Pu–238	2.73171
17	*Am–243*	LESS THAN	3.94E–07	0.0000%		
18	*Cm–242*	LESS THAN	1.87E–06	0.0000%		
19	*Cm–243/244*	LESS THAN	3.65E–06	0.0001%		
20	*U–234*	LESS THAN	1.52E–07	0.0000%		
21	*U–235*	LESS THAN	8.80E–08	0.0000%		
22	*U–238*	LESS THAN	7.18E–08	0.0000%	U–238/Am–241	0.00021
23	*Co–60*		7.11E–03	0.1827%	Am–241/U–238	4679.66574
24	*Ru–106*	LESS THAN	6.62E–03	0.1701%		
25	*Ag–108m*	LESS THAN	6.60E–04	0.0170%		
26	*Sb–125*	LESS THAN	4.23E–03	0.1087%		
27	*Cs–134*		6.91E–04	0.0178%	Cs–134/Cs–137	0.00018
28	*Cs–137*		3.75E+00	96.3811%	Co–60/Cs–137	0.00190
29	*Ce–144*	LESS THAN	4.49E–03	0.1154%	Cs–137/Co–60	527.42616
30	*Eu–152*	LESS THAN	1.49E–03	0.0383%		
31	*Eu–154*	LESS THAN	3.70E–04	0.0095%		
32	*Eu–155*	LESS THAN	2.12E–03	0.0545%		
		Totals= = >	3.89E+00	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Secondary Side of Steam Generator – Small Manway*

Saxton	B & W
Sample Number	Sample Number
SX835950071	9509067-01

Sample Type	S/G Scrape

Description	SCP, Table B-10

0.3611
Total TRU Content (nCi/g)

0.0561
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	1.48E-03	14.3857%		
2	C-14	LESS THAN	4.67E-03	45.3926%		
3	Fe-55	LESS THAN	3.25E-05	0.3159%	Fe-55/Co-60	0.21382
4	Ni-59	LESS THAN	7.81E-05	0.7591%		
5	Ni-63	LESS THAN	7.81E-05	0.7591%		
6	Sr-89	LESS THAN	N/R	0.0000%		
7	Sr-90		1.30E-04	1.2636%	Sr-90/Cs-137	0.08442
8	Nb-94	LESS THAN	8.50E-04	8.2620%		
9	Tc-99	LESS THAN	5.14E-05	0.4996%		
10	I-129	LESS THAN	8.87E-05	0.8622%		
11	Np-237	LESS THAN	2.43E-05	0.2362%		
12	Pu-238		1.26E-05	0.1225%	Pu-238/Am-241	0.34711
13	Pu-239/240	LESS THAN	9.11E-06	0.0885%		
14	Pu-241	LESS THAN	2.73E-04	2.6536%	Pu-241/Am-241	7.52066
15	Pu-242	LESS THAN	6.77E-07	0.0066%		
16	Am-241		3.63E-05	0.3528%	Am-241/Pu-238	2.88095
17	Am-243	LESS THAN	5.53E-07	0.0054%		
18	Cm-242	LESS THAN	2.10E-06	0.0204%		
19	Cm-243/244	LESS THAN	2.47E-06	0.0240%		
20	U-234		2.80E-05	0.2722%		
21	U-235	LESS THAN	2.01E-06	0.0195%		
22	U-238		2.61E-05	0.2537%	U-238/Am-241	0.71901
23	Co-60		1.52E-04	1.4774%	Am-241/U-238	1.39080
24	Ru-106	LESS THAN	2.10E-04	2.0412%		
25	Ag-108m	LESS THAN	2.15E-05	0.2090%		
26	Sb-125	LESS THAN	6.32E-05	0.6143%		
27	Cs-134	LESS THAN	2.30E-05	0.2236%	Cs-134/Cs-137	0.01494
28	Cs-137		1.54E-03	14.9689%	Co-60/Cs-137	0.09870
29	Ce-144	LESS THAN	1.07E-04	1.0400%	Cs-137/Co-60	10.13158
30	Eu-152	LESS THAN	1.91E-04	1.8565%		
31	Eu-154	LESS THAN	6.22E-05	0.6046%		
32	Eu-155	LESS THAN	4.21E-05	0.4092%		
		Totals= = >	1.03E-02	100.00%		

N/R – Not Reported

B & W RESULTS 11/3/95 – Saxton Samples

SYSTEM= = = > *Steam Generator – Cold Leg Side, Bowl Smear*

Saxton	*B & W*
Sample Number	*Sample Number*
SX825950111	9509067-03
Sample Type	S/G Smear
Description	SCP, Item 1

23.9967 Total TRU Content (nCi)

0.2493 Total Uranium Content (nCi)

	Nuclide	Notes	Results uCi	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*	LESS THAN	7.50E-04	0.0209%		
2	*C-14*	LESS THAN	2.58E-03	0.0720%		
3	*Fe-55*		8.46E-02	2.3599%	Fe-55/Co-60	0.11132
4	*Ni-59*		1.57E-02	0.4379%		
5	*Ni-63*		1.43E+00	39.8896%		
6	*Sr-89*	LESS THAN	N/R	0.0000%		
7	*Sr-90*		2.64E-01	7.3642%	Sr-90/Cs-137	0.27557
8	*Nb-94*		5.17E-04	0.0144%		
9	*Tc-99*	LESS THAN	2.52E-04	0.0070%		
10	*I-129*	LESS THAN	6.37E-05	0.0018%		
11	*Np-237*	LESS THAN	1.80E-04	0.0050%		
12	*Pu-238*		6.88E-04	0.0192%	Pu-238/Am-241	0.39769
13	*Pu-239/240*		1.45E-03	0.0404%		
14	*Pu-241*		1.99E-02	0.5551%	Pu-241/Am-241	11.50289
15	*Pu-242*	LESS THAN	8.32E-06	0.0002%		
16	*Am-241*		1.73E-03	0.0483%	Am-241/Pu-238	2.51453
17	*Am-243*	LESS THAN	2.91E-06	0.0001%		
18	*Cm-242*	LESS THAN	1.37E-05	0.0004%		
19	*Cm-243/244*	LESS THAN	2.38E-05	0.0007%		
20	*U-234*	LESS THAN	1.38E-04	0.0038%		
21	*U-235*	LESS THAN	6.52E-05	0.0018%		
22	*U-238*	LESS THAN	4.61E-05	0.0013%	U-238/Am-241	0.02665
23	*Co-60*		7.60E-01	21.2000%	Am-241/U-238	37.52711
24	*Ru-106*	LESS THAN	1.24E-02	0.3459%		
25	*Ag-108m*	LESS THAN	1.23E-03	0.0343%		
26	*Sb-125*	LESS THAN	3.68E-03	0.1027%		
27	*Cs-134*	LESS THAN	1.74E-03	0.0485%	Cs-134/Cs-137	0.00182
28	*Cs-137*		9.58E-01	26.7232%	Co-60/Cs-137	0.79332
29	*Ce-144*	LESS THAN	4.67E-03	0.1303%	Cs-137/Co-60	1.26053
30	*Eu-152*	LESS THAN	1.22E-02	0.3403%		
31	*Eu-154*	LESS THAN	7.05E-03	0.1967%		
32	*Eu-155*	LESS THAN	1.22E-03	0.0340%		
		Totals= = >	3.58E+00	100.00%		

N/R – Not Reported

B&W NUCLEAR ENVIRONMENTAL SERVICES, INCORPORATED
NUCLEAR ENVIRONMENTAL LABORATORIES

DATA REPORT NUMBER 9510024

RADIOCHEMICAL ANALYSIS RESULTS

Submitted to

GPU Nuclear Corporation
Saxton Site - Decommissioning Project

December 6, 1995

Released by: James L. Clark 12/6/95

James L. Clark, Project Manager
Nuclear Environmental Laboratories

DATA REPORT SUMMARY

Laboratory Project Summary

- Plant Site: Saxton Decommissioning Project
- Shipment Number: 95-007
- Receipt Date: October 5, 1995
- NEL COC Number: SN-12537,12538,12539,12543
- NEL SDG Number: 9510024
- NEL Proposal: NEL5-1258
- Contract Number: 0397355
- Analysis Service: Routine
- Laboratory QC: Routine - Batch

Sample Delivery Group / Characteristics Summary			
Customer ID	NEL Sample ID	Sample Type / Slices	Total Mass (g)
SX801950127	9510024-01	Core Bore / 2	208.90
SX811950128	9510024-02	Core Bore / 4	405.13
SX821950129	9510024-03	Core Bore / 4	439.34
SX832950130	9510024-04	Core Bore / 2	190.07
SX832950131	9510024-05	Core Bore / 2	185.17
SX832950132	9510024-06	Core Bore / 1	111.27
SX841950133	9510024-07	Core Bore / 6	595.08
SX852950134	9510024-08	Core Bore / 4	405.61
SX861950135	9510024-09	Core Bore / 4	382.37
SX861950136	9510024-10	Core Bore / 2	208.22
SX811950137	9510024-11	Core Bore / 1	82.21
SX811950138	9510024-12	Core Bore / 1	85.65
SX811950139	9510024-13	Core Bore / 1	89.29
SX811950140	9510024-14	Core Bore / 1	100.36
SX822950141	9510024-15	Core Bore / 2	208.48
SX822950142	9510024-16	Core Bore / 2	192.10
SX822950143	9510024-17	Core Bore / 1	98.93
SX822950144	9510024-18	Core Bore / 1	105.21
SX822950145	9510024-19	Core Bore / 2	208.37

Sample Delivery Group / Characteristics Summary - Continued

Customer ID	NEL Sample ID	Sample Type / Slices	Total Mass (g)
SX822950146	9510024-20	Core Bore / 2	191.29
SX822950147	9510024-21	Core Bore / 1	101.58
SX822950148	9510024-22	Core Bore / 1	103.87
SX841950149	9510024-23	Core Bore / 1	80.62
SX841950150	9510024-24	Core Bore / 1	99.24
SX841950151	9510024-25	Core Bore / 1	106.20
SX841950152	9510024-26	Core Bore / 1	111.28
SX861950153	9510024-27	Core Bore / 2	208.67
SX861950154	9510024-28	Core Bore / 1	100.22
SX862950155	9510024-29	Core Bore / 2	187.05
SX862950156	9510024-30	Core Bore / 1	105.41
SX862950157	9510024-31	Core Bore / 2	192.60
SX862950158	9510024-32	Core Bore / 1	117.38
SX862950159	9510024-33	Core Bore / 2	198.75
SX862950160	9510024-34	Core Bore / 1	109.72
SX862950161	9510024-35	Core Bore / 2	216.91
SX862950162	9510024-36	Core Bore / 1	93.18
SX862950163	9510024-37	Core Bore / 1	111.91
SX862950164	9510024-38	Core Bore / 1	109.11

Note: Sample Number 9510024-36 contained a section of Rebar Metal which was removed prior to analysis. This Rebar section weighed 57.74 g. The mass given in this Table has been corrected for the Rebar Section weight.

Analytical Results

See Attached Report Sheets

GPU Saxton Results Summary

B&W NESI, Nuclear Environmental Laboratories

12/06/95

	(Background)		Area 1-Floor		Area 2-Floor		Area 3-4'Wall		Area 6-4' Wall	
	SX801950127		SX811950128		SX821950129		SX832950130		SX832950131	
NEL ID	9510024-01		9510024-02		9510024-03		9510024-04		9510024-05	
NUCLIDE	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60	< 9.89E-09	---	4.97E-07	7.96E-08	6.37E-06	6.64E-06	2.58E-07	7.74E-08	1.32E-06	1.62E-07
Ru-106	< 1.12E-07	---	< 3.56E-06	---	< 5.03E-06	---	< 9.55E-07	---	< 5.26E-07	---
Cs-134	< 1.64E-08	---	3.81E-07	7.06E-08	7.67E-07	1.43E-07	< 4.96E-08	---	< 5.05E-08	---
Cs-137	1.16E-07	2.14E-08	1.48E-03	2.02E-04	4.69E-03	8.02E-04	5.86E-05	8.02E-06	1.42E-05	2.44E-06
Ce-144	< 5.58E-08	---	< 2.28E-06	---	< 3.57E-06	---	< 6.25E-07	---	< 3.37E-07	---
Am-241	< 5.16E-08	---	< 2.08E-06	---	< 2.68E-06	---	< 5.66E-07	---	< 2.55E-07	---
Ag-108m	< 1.11E-08	---	< 3.71E-07	---	< 5.29E-07	---	< 1.01E-07	---	< 5.90E-08	---
Eu-152	< 1.14E-07	---	< 3.54E-07	---	< 7.32E-07	---	< 1.42E-07	---	< 4.42E-07	---
Eu-154	< 4.06E-08	---	< 9.29E-08	---	< 1.29E-07	---	< 1.46E-07	---	< 1.02E-07	---
Eu-155	< 1.07E-07	---	< 1.12E-06	---	< 9.67E-07	---	< 3.03E-07	---	< 1.63E-07	---
Sb-125	< 2.97E-08	---	< 1.91E-06	---	< 2.64E-06	---	< 5.15E-07	---	< 2.27E-07	---
H-3	< 1.73E-05	---	< 1.69E-05	---	< 1.89E-05	---	< 1.80E-05	---	< 1.71E-05	---
C-14	< 2.13E-05	---	< 1.74E-05	---	< 2.12E-05	---	< 2.06E-05	---	< 2.37E-05	---
Ni-59	< 3.35E-06	---	< 4.11E-06	---	< 4.36E-06	---	< 1.33E-05	---	< 4.24E-06	---
Ni-63	< 5.32E-06	---	< 5.13E-06	---	2.35E-05	3.66E-06	< 4.73E-06	---	< 5.08E-06	---
Nb-94	< 1.21E-08	---	< 4.25E-08	---	< 8.38E-08	---	< 3.87E-08	---	< 4.96E-08	---
Tc-99	< 1.50E-06	---	< 1.45E-06	---	< 1.52E-06	---	< 1.64E-06	---	< 1.52E-06	---
I-129	< 3.39E-06	---	< 2.99E-06	---	< 8.94E-06	---	< 2.08E-06	---	< 1.89E-06	---
Gross Alpha	< 3.90E-06	---	< 2.12E-06	---	< 3.06E-06	---	< 1.99E-06	---	< 2.45E-06	---
Sr-90	NA		NA		NA		NA		< 5.08E-06	---

GPU Saxton Results Summary — B&W NESI, Nuclear Environmental Laboratories — 12/06/95

	Area 6 - 4' Wall SX832950132		Area 4 - 812' Floor SX841950133		Area 5-Tunnel Wall SX852950134		Area 6 - Floor Shallow SX861950135		Area 6 - Floor Deep SX861950136	
NEL ID	9510024-06		9510024-07		9510024-08		9510024-09		9510024-10	
NUCLIDE	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60	3.43E-08	2.06E-08	9.81E-08	2.36E-08	3.10E-08	1.66E-07	3.19E-05	3.40E-06	2.15E-06	2.64E-07
Ru-106	< 2.02E-07	---	< 2.66E-07	---	< 2.21E-07	---	< 1.53E-05	---	< 3.48E-06	---
Cs-134	< 2.60E-08	---	< 2.11E-08	---	< 1.76E-08	---	1.87E-06	4.36E-07	< 9.12E-08	---
Cs-137	1.24E-06	2.16E-07	1.35E-05	1.88E-06	3.06E-06	5.26E-06	1.38E-02	1.88E-03	9.45E-04	1.29E-04
Ce-144	< 1.21E-07	---	< 1.42E-07	---	< 1.09E-07	---	< 9.66E-06	---	< 2.18E-06	---
Am-241	< 9.57E-08	---	< 1.08E-07	---	< 8.63E-08	---	< 1.02E-06	---	< 2.01E-06	---
Ag-108m	< 2.02E-08	---	< 2.73E-08	---	< 1.8[illegible]E-08	---	< 9.16E-07	---	< 3.61E-07	---
Eu-152	< 1.78E-07	---	< 1.43E-07	---	< 1.29E-07	---	< 4.49E-06	---	< 6.36E-07	---
Eu-154	< 6.36E-08	---	< 5.36E-08	---	< 4.53E-08	---	< 5.14E-07	---	< 1.39E-07	---
Eu-155	< 8.33E-08	---	< 7.12E-08	---	< 3.46E-08	---	< 4.79E-06	---	< 4.11E-07	---
Sb-125	< 6.16E-08	---	< 1.07E-07	---	< 6.31E-08	---	< 8.15E-06	---	< 1.86E-06	---
H-3	< 1.93E-05	---	< 2.22E-05	---	< 2.57E-05	---	< 2.35E-05	---	< 2.14E-05	---
C-14	< 2.62E-05	---	< 2.80E-05	---	< 3.49E-05	---	< 2.43E-05	---	< 2.16E-05	---
Ni-59	< 5.37E-06	---	< 5.66E-06	---	< 1.03E-05	---	< 6.20E-06	---	< 5.50E-06	---
Ni-63	< 4.34E-06	---	2.28E-05	3.58E-06	< 4.61E-06	---	4.41E-05	6.78E-06	7.99E-06	1.28E-06
Nb-94	< 1.91E-08	---	< 2.13E-08	---	< 2.98E-08	---	< 4.29E-07	---	< 5.47E-08	---
Tc-99	< 1.52E-06	---	< 1.55E-06	---	< 1.49E-06	---	< 2.11E-06	---	< 2.17E-06	---
I-129	< 1.34E-06	---	< 1.34E-06	---	< 1.85E-06	---	< 2.54E-06	---	< 2.30E-06	---
Gross Alpha	< 2.52E-06	---	< 2.98E-06	---	< 2.39E-06	---	< 2.24E-06	---	< 2.66E-06	---
Sr-90	NA		NA		NA		< 7.07E-06	---	NA	

GPU Saxton Results Summary

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	Area 1 Floor	Area 1 Floor	Area 1 Floor	Area 1 Floor	Area 2 5' Wall Surface
	SX811950137	SX811950138	SX811950139	SX811950140	SX822950141
NEL ID	9510024-11	9510024-12	9510024-13	9510024-14	9510024-15

NUCLIDE	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60	1.90E-06	2.46E-06	2.92E-07	6.64E-08	2.12E-07	6.60E-08	5.27E-08	4.18E-08	1.60E-07	2.96E-08
Ru-106	< 1.00E-05	---	< 3.32E-06	---	< 7.17E-07	---	< 5.44E-07	---	< 7.06E-07	---
Cs-134	2.14E-06	3.20E-07	4.91E-07	9.96E-08	< 6.20E-08	---	< 5.79E-08	---	< 2.75E-08	---
Cs-137	7.18E-03	1.00E-03	1.87E-03	3.18E-04	3.14E-05	4.38E-06	1.15E-05	1.60E-06	1.27E-04	2.16E-05
Ce-144	< 4.74E-06	---	< 2.24E-06	---	< 2.34E-07	---	< 2.99E-07	---	< 4.97E-07	---
Am-241	< 3.65E-06	---	< 1.77E-06	---	< 2.81E-07	---	< 2.96E-07	---	< 3.73E-07	---
Ag-108m	< 1.02E-06	---	< 3.45E-07	---	< 7.61E-08	---	< 5.29E-08	---	< 7.38E-08	---
Eu-152	2.16E-06	8.16E-07	2.61E-06	5.80E-07	1.18E-06	4.14E-07	< 4.80E-07	---	< 1.71E-07	---
Eu-154	< 2.34E-07	---	< 1.04E-07	---	< 1.53E-07	---	< 1.49E-07	---	< 5.23E-08	---
Eu-155	< 2.60E-06	---	< 1.12E-06	---	< 1.78E-07	---	< 1.09E-07	---	< 2.43E-07	---
Sb-125	< 4.51E-06	---	< 1.85E-06	---	< 2.85E-07	---	< 2.30E-07	---	< 3.68E-07	---
H-3	< 2.54E-05	---	< 2.46E-05	---	< 2.28E-05	---	< 2.25E-05	---	< 2.36E-05	---
C-14	< 2.74E-05	---	< 2.56E-05	---	< 4.34E-05	---	< 2.58E-05	---	< 4.11E-05	---
Ni-59	< 2.82E-06	---	< 3.88E-06	---	< 5.10E-06	---	< 9.31E-06	---	< 4.56E-06	---
Ni-63	< 4.09E-06	---	< 4.78E-06	---	< 5.36E-06	---	8.56E-06	1.37E-06	< 5.10E-06	---
Nb-94	< 1.05E-07	---	< 4.97E-08	---	< 4.93E-08	---	< 5.63E-08	---	< 1.95E-08	---
Tc-99	< 2.29E-06	---	< 1.47E-06	---	< 2.39E-06	---	< 2.26E-06	---	< 1.75E-06	---
I-129	< 5.75E-06	---	< 1.61E-06	---	< 1.46E-06	---	< 1.18E-06	---	< 1.67E-06	---
Gross Alpha	< 3.56E-06	---	< 1.91E-06	---	< 2.54E-06	---	< 1.19E-06	---	< 2.16E-06	---
Sr-90	NA		NA		NA		NA		NA	

GPU Saxton Results Summary — B&W NESI, Nuclear Environmental Laboratories — 12/06/95

	Area 6 - 5' Wall Surface SX822950142		Area 6 - 5' Wall SX822950143		Area 6 - 5' Wall SX822950144		Above H_2O Level Area 2-Wall 5' SX822950145		Above H_2O Level Area 6 - 5' Wall SX822950146	
NEL ID	9510024-16		9510024-17		9510024-18		9510024-19		9510024-20	
NUCLIDE	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60	1.46E-05	1.54E-06	1.21E-07	2.70E-08	< 2.95E-08	---	9.12E-08	1.99E-08	2.67E-06	2.90E-06
Ru-106	< 1.24E-06	---	< 2.69E-07	---	< 2.71E-07	---	< 5.61E-07	---	< 4.55E-07	---
Cs-134	< 1.02E-07	---	< 2.76E-08	---	2.70E-08	1.75E-08	4.33E-08	1.74E-08	< 5.16E-08	---
Cs-137	2.46E-04	3.36E-05	1.38E-05	2.36E-06	8.98E-06	1.26E-06	1.32E-04	1.80E-05	2.78E-05	3.80E-06
Ce-144	< 7.15E-07	---	< 1.76E-07	---	< 1.33E-07	---	< 3.55E-07	---	< 2.40E-07	---
Am-241	< 4.30E-07	---	< 1.40E-07	---	< 1.08E-07	---	< 3.27E-07	---	< 1.21E-07	---
Ag-108m	< 1.30E-07	---	< 3.11E-08	---	< 2.75E-08	---	< 5.94E-08	---	< 4.74E-08	---
Eu-152	< 8.91E-07	---	< 1.84E-07	---	< 1.77E-07	---	< 1.45E-07	---	9.31E-06	1.07E-06
Eu-154	< 1.47E-07	---	< 6.60E-08	---	< 6.36E-08	---	< 4.83E-08	---	5.87E-07	1.47E-07
Eu-155	< 1.16E-07	---	< 7.55E-08	---	< 1.04E-07	---	< 1.75E-07	---	< 3.00E-07	---
Sb-125	< 6.08E-07	---	< 1.20E-07	---	< 9.60E-08	---	< 2.97E-07	---	< 1.73E-07	---
H-3	< 2.16E-05	---	< 2.17E-05	---	< 2.22E-05	---	< 2.33E-05	---	2.00E-04	2.90E-05
C-14	< 3.82E-05	---	< 2.78E-05	---	< 3.38E-05	---	< 3.27E-05	---	< 3.81E-05	---
Ni-59	< 6.86E-06	---	< 3.36E-06	---	< 3.64E-06	---	< 4.20E-06	---	< 1.02E-05	---
Ni-63	6.33E-05	9.64E-06	< 4.71E-06	---	< 4.88E-06	---	< 4.71E-06	---	8.39E-06	1.34E-06
Nb-94	< 9.61E-08	---	< 2.33E-08	---	< 3.25E-08	---	< 1.94E-08	---	< 5.18E-08	---
Tc-99	< 1.74E-06	---	< 2.30E-06	---	< 2.08E-06	---	< 1.43E-06	---	< 1.48E-06	---
I-129	< 3.68E-06	---	< 1.20E-06	---	< 1.32E-06	---	< 2.12E-06	---	< 1.77E-06	---
Gross Alpha	< 1.59E-06	---	< 1.68E-06	---	< 2.03E-06	---	< 2.20E-06	---	< 1.23E-06	---
Sr-90	NA		NA		NA		NA		NA	

GPU Saxton Results Summary Above H_2O B&W NESI, Nuclear Environmental Laboratories 12/06/95

	Area 6 – 5' Wall		Above H_2O Area 6 – 5' Wall		Area 6 Ceiling		Area 6 Ceiling		Area 6 Ceiling	
	SX822950147		SX822950148		SX841950149		SX841950150		SX841950151	
NEL ID	9510024-21		9510024-22		9510024-23		9510024-24		9510024-25	
NUCLIDE	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60	1.02E-07	2.74E-08	8.79E-07	1.29E-07	1.47E-06	2.12E-07	9.18E-07	1.38E-07	3.20E-07	5.68E-08
Ru-106	< 4.19E-07	---	< 6.87E-07	---	< 8.97E-07	---	< 7.17E-07	---	< 4.01E-07	---
Cs-134	2.89E-08	2.24E-08	< 8.15E-08	---	< 1.19E-07	---	< 9.23E-08	---	< 4.75E-08	---
Cs-137	3.21E-05	4.48E-06	1.49E-05	2.10E-06	6.47E-06	9.14E-07	1.62E-06	2.54E-07	1.08E-06	1.98E-07
Ce-144	< 2.00E-07	---	< 3.34E-07	---	< 4.09E-07	---	< 3.35E-07	---	< 2.24E-07	---
Am-241	< 9.22E-08	---	< 2.64E-07	---	< 4.11E-07	---	< 3.25E-07	---	< 2.00E-07	---
Ag-108m	< 4.25E-08	---	< 6.72E-08	---	< 8.98E-08	---	< 7.40E-08	---	< 4.29E-08	---
Eu-152	3.28E-07	2.26E-07	7.57E-06	1.18E-06	1.07E-05	1.70E-06	9.05E-06	1.38E-06	3.30E-06	6.00E-07
Eu-154	< 8.32E-08	---	3.68E-07	2.00E-07	6.35E-07	2.38E-07	6.10E-07	2.34E-07	< 1.37E-07	---
Eu-155	< 9.70E-08	---	< 1.33E-07	---	< 2.30E-07	---	< 2.00E-07	---	< 1.29E-07	---
Sb-125	< 1.68E-07	---	< 2.29E-07	---	< 2.39E-07	---	< 1.86E-07	---	< 1.14E-07	---
H-3	< 2.45E-05	---	7.54E-05	1.11E-05	1.39E-04	2.06E-05	< 1.91E-05	---	< 1.82E-05	---
C-14	< 2.84E-05	---	< 3.21E-05	---	< 3.17E-05	---	< 2.25E-05	---	< 2.29E-05	---
Ni-59	< 5.07E-06	---	< 3.03E-06	---	< 3.80E-06	---	< 3.89E-06	---	< 9.89E-06	---
Ni-63	< 4.36E-06	---	< 3.95E-06	---	< 5.09E-06	---	< 4.87E-06	---	< 8.11E-06	---
Nb-94	< 2.35E-08	---	< 8.86E-08	---	< 1.09E-07	---	< 9.80E-08	---	< 4.74E-08	---
Tc-99	< 1.56E-06	---	< 1.46E-06	---	< 1.48E-06	---	< 1.43E-06	---	< 1.48E-06	---
I-129	< 1.28E-06	---	< 2.60E-06	---	< 4.65E-06	---	< 1.34E-06	---	< 2.71E-06	---
Gross Alpha	< 1.54E-06	---	< 1.13E-06	---	< 2.58E-06	---	< 1.26E-06	---	< 1.86E-06	---
Sr-90	NA		NA		NA		NA		NA	

GPU Saxton Results Summary

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	Area 6 Ceiling		Area 6 779'-8" Floor		Area 6 779'-8" Floor		Area 6 S. Wall 5'		Area 6 S. Wall 5'	
	SX841950152		SX861950153		SX861950154		SX862950155		SX862950156	
NEL ID	9510024-26		9510024-27		9510024-28		9510024-29		9510024-30	
NUCLIDE	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60	7.64E-08	2.18E-08	1.18E-05	1.24E-06	1.27E-07	3.84E-08	8.81E-06	9.30E-07	1.25E-06	1.62E-07
Ru-106	< 2.12E-07	---	< 1.65E-06	---	< 2.90E-07	---	< 1.28E-06	---	< 8.95E-07	---
Cs-134	< 2.60E-08	---	< 9.88E-08	---	< 3.49E-08	---	< 1.08E-07	---	< 7.31E-08	---
Cs-137	1.89E-06	2.70E-07	5.13E-04	7.02E-05	3.66E-06	5.08E-07	1.19E-04	1.66E-05	4.87E-05	6.80E-06
Ce-144	< 1.04E-07	---	< 1.00E-06	---	< 1.03E-07	---	< 6.05E-07	---	< 4.22E-07	---
Am-241	< 8.75E-08	---	< 9.13E-07	---	< 1.47E-07	---	< 6.64E-08	---	< 3.29E-07	---
Ag-108m	< 2.31E-08	---	< 1.70E-07	---	< 3.04E-08	---	< 1.31E-07	---	< 9.19E-08	---
Eu-152	4.84E-07	1.91E-07	< 7.75E-07	---	< 2.58E-07	---	8.40E-06	1.33E-06	1.02E-05	1.28E-06
Eu-154	< 4.45E-08	---	< 1.32E-07	---	< 9.37E-08	---	5.93E-07	1.75E-07	3.66E-07	1.66E-07
Eu-155	< 1.05E-07	---	< 4.88E-07	---	< 4.36E-08	---	< 2.03E-07	---	< 2.24E-07	---
Sb-125	< 5.07E-08	---	< 8.34E-07	---	< 9.69E-08	---	< 4.91E-07	---	< 3.32E-07	---
H-3	< 1.94E-05	---	< 2.17E-05	---	< 2.25E-05	---	3.12E-04	4.38E-05	1.35E-04	1.94E-05
C-14	< 2.58E-05	---	< 2.50E-05	---	< 3.09E-05	---	< 2.69E-05	---	< 2.14E-05	---
Ni-59	< 4.13E-06	---	< 4.94E-06	---	< 3.00E-06	---	< 3.90E-06	---	< 3.62E-06	---
Ni-63	< 4.74E-06	---	6.62E-06	1.07E-06	< 4.73E-06	---	2.27E-05	3.56E-06	< 4.78E-06	---
Nb-94	< 2.18E-08	---	< 9.03E-08	---	< 3.51E-08	---	< 1.03E-07	---	< 7.28E-08	---
Tc-99	< 1.45E-06	---	< 1.82E-06	---	< 1.49E-06	---	< 1.91E-06	---	< 2.07E-06	---
I-129	< 1.39E-06	---	< 3.54E-06	---	< 2.08E-06	---	< 4.81E-06	---	< 1.29E-06	---
Gross Alpha	< 1.30E-06	---	< 3.55E-06	---	< 2.39E-06	---	< 2.65E-06	---	< 1.29E-06	---
Sr-90	NA		NA		NA		NA		NA	

GPU Saxton Results Summary

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	Area 6-5' Wall SX862950157		Area 6-5' Wall SX862950158		Area 6 - CV Outside Wall SX862950159		Area 6 - CV Outside Wall SX862950160		High Flux Area SX862950161	
NEL ID	9510024-31		9510024-32		9510024-33		9510024-34		9510024-35	
NUCLIDE	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60	1.57E-05	1.68E-06	1.70E-06	1.84E-07	1.09E-06	1.16E-07	1.15E-07	3.20E-08	9.02E-06	9.34E-07
Ru-106	< 1.97E-06	---	< 3.50E-07	---	< 2.98E-07	---	< 2.47E-07	---	< 1.13E-06	---
Cs-134	< 1.64E-07	---	< 4.54E-08	---	< 2.04E-08	---	3.46E-08	2.36E-08	< 1.16E-07	---
Cs-137	2.61E-04	3.58E-05	3.94E-06	6.78E-07	3.74E-05	6.40E-06	1.39E-06	2.00E-07	2.33E-04	3.98E-05
Ce-144	< 1.11E-06	---	< 1.89E-07	---	< 1.95E-07	---	< 1.28E-07	---	< 9.13E-07	---
Am-241	< 1.05E-06	---	< 1.56E-07	---	< 1.45E-07	---	< 1.27E-07	---	< 6.87E-07	---
Ag-108m	< 2.07E-07	---	< 3.58E-08	---	< 3.46E-08	---	< 2.78E-08	---	< 4.41E-07	---
Eu-152	7.81E-06	1.47E-06	1.06E-05	1.20E-06	< 1.62E-07	---	< 2.34E-07	---	3.15E-05	3.50E-06
Eu-154	5.55E-07	2.58E-07	5.25E-07	1.12E-07	< 4.66E-08	---	< 7.00E-08	---	1.94E-06	3.12E-07
Eu-155	< 5.52E-07	---	< 7.14E-08	---	< 4.57E-08	---	< 5.47E-08	---	< 4.82E-07	---
Sb-125	< 9.17E-07	---	< 1.20E-07	---	< 1.37E-07	---	< 7.61E-08	---	< 6.23E-07	---
H-3	1.37E-04	2.02E-05	1.11E-04	1.65E-05	< 2.54E-05	---	< 1.67E-05	---	6.93E-04	9.64E-05
C-14	< 2.31E-05	---	< 3.40E-05	---	< 2.66E-05	---	< 2.11E-05	---	< 2.44E-05	---
Ni-59	< 3.61E-05	---	< 4.86E-06	---	< 4.18E-06	---	< 4.90E-06	---	< 6.34E-06	---
Ni-63	1.44E-04	2.22E-05	< 5.96E-06	---	< 6.27E-06	---	< 6.15E-06	---	< 5.90E-06	---
Nb-94	< 1.55E-07	---	< 3.96E-08	---	9.01E-08	2.54E-08	< 2.60E-08	---	< 1.16E-07	---
Tc-99	< 1.97E-06	---	< 1.79E-06	---	< 1.90E-06	---	< 1.87E-06	---	< 1.86E-06	---
I-129	< 2.57E-06	---	< 6.74E-06	---	< 1.42E-06	---	< 2.04E-06	---	< 5.15E-06	---
Gross Alpha	< 2.42E-06	---	< 3.36E-06	---	< 2.00E-06	---	< 2.24E-06	---	< 2.99E-06	---
Sr-90	NA		NA		NA		NA		NA	

GPU Saxton Results Summary

B&W NESI, Nuclear Environmental Laboratories

12/06/95

		High Flux Area SX862950162		High Flux Area SX862950163		High Flux Area SX862950164	
	NEL ID	9510024-36		9510024-37		9510024-38	
NUCLIDE		uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60		7.85E-06	8.18E-07	4.42E-06	4.74E-07	2.59E-06	2.82E-07
Ru-106	<	1.28E-06	---	< 1.08E-06	---	< 6.03E-07	---
Cs-134	<	1.64E-07	---	< 1.44E-07	---	< 8.08E-08	---
Cs-137		8.50E-06	1.47E-06	2.19E-06	4.06E-07	1.66E-06	2.48E-07
Ce-144	<	6.54E-07	---	< 5.83E-07	---	< 2.64E-07	---
Am-241	<	5.36E-07	---	< 3.43E-07	---	< 2.13E-07	---
Ag-108m	<	1.27E-07	---	< 1.13E-07	---	< 5.21E-08	---
Eu-152		6.85E-05	7.24E-06	6.08E-05	6.42E-06	3.20E-05	3.28E-06
Eu-154		3.88E-06	5.72E-07	2.67E-06	3.82E-07	1.32E-06	2.30E-07
Eu-155	<	4.20E-07	---	< 6.96E-07	---	< 1.32E-07	---
Sb-125	<	3.10E-07	---	< 2.64E-07	---	< 1.37E-07	---
H-3		2.10E-05	3.10E-05	1.89E-03	2.50E-04	4.55E-04	6.28E-05
C-14	<	1.41E-05	---	< 2.60E-05	---	< 2.83E-05	---
Ni-59	<	4.76E-06	---	< 9.11E-06	---	< 5.90E-06	---
Ni-63	<	6.94E-06	---	2.30E-05	3.60E-06	< 7.20E-06	---
Nb-94	<	1.75E-07	---	< 1.33E-07	---	< 9.05E-08	---
Tc-99	<	1.47E-06	---	< 1.80E-06	---	< 1.91E-06	---
I-129	<	1.12E-06	---	< 1.97E-06	---	< 1.77E-06	---
Gross Alpha	<	1.91E-06	---	< 2.63E-06	---	< 2.82E-06	---
Sr-90		NA		NA		NA	
		Slice Containing Rebar					

Total Grams
588.91

Hi-Flux Concrete Core-SX862950119

ISOTOPES	Activity Sum (uCi's)	% Of Total	Average pCi/g
Ag-108m	1.82E-04	0.0266%	0.31
Am-241	3.18E-04	0.0464%	0.54
Am-243	0.00E+00	0.0000%	0.00
Ba-137m	0.00E+00	0.0000%	0.00
Ce-144	6.33E-04	0.0924%	1.08
Cm-242	0.00E+00	0.0000%	0.00
Cm-243	0.00E+00	0.0000%	0.00
Cm-244	0.00E+00	0.0000%	0.00
Co-60	1.68E-02	2.4443%	28.46
Cs-134	1.46E-04	0.0213%	0.25
Cs-137	5.18E-02	7.5581%	88.00
C-14	1.60E-02	2.3263%	27.08
Eu-152	2.42E-02	3.5327%	41.13
Eu-154	1.37E-03	0.1996%	2.32
Eu-155	3.35E-04	0.0489%	0.57
Fe-55	0.00E+00	0.0000%	0.00
Fe-59	0.00E+00	0.0000%	0.00
H-3	4.35E-01	63.5044%	739.37
I-129	2.79E-03	0.4071%	4.74
Mn-54	0.00E+00	0.0000%	0.00
Nb-94	1.40E-04	0.0204%	0.24
Ni-59	4.83E-03	0.7042%	8.20
Ni-63	1.28E-01	18.6422%	217.05
Np-237	0.00E+00	0.0000%	0.00
Pr-144	0.00E+00	0.0000%	0.00
Pr-144m	0.00E+00	0.0000%	0.00
Pu-238	0.00E+00	0.0000%	0.00
Pu-239	0.00E+00	0.0000%	0.00
Pu-240	0.00E+00	0.0000%	0.00
Pu-241	0.00E+00	0.0000%	0.00
Pu-242	0.00E+00	0.0000%	0.00
Rh-106	0.00E+00	0.0000%	0.00
Ru-106	1.06E-03	0.1540%	1.79
Sb-125	3.47E-04	0.0506%	0.59
Sr-90	0.00E+00	0.0000%	0.00
Tc-99	1.51E-03	0.2206%	2.57
Te-125m	0.00E+00	0.0000%	0.00
U-234	0.00E+00	0.0000%	0.00
U-235	0.00E+00	0.0000%	0.00
U-238	0.00E+00	0.0000%	0.00
Y-90	0.00E+00	0.0000%	0.00
Zn-65	0.00E+00	0.0000%	0.00
TOTALS=>	6.86E-01	100.00%	1164.28

Total Grams		SX811950025,SX861950066	
1372.13		SX861950056,0057	
No-Flux Concrete Core -		SX841950016,0017,0018	
ISOTOPES	Activity Sum (uCi's)	% Of Total	Average pCi/g
Ag-108m	4.37E-04	0.0077%	0.32
Am-241	8.26E-04	0.0145%	0.60
Am-243	0.00E+00	0.0000%	0.00
Ba-137m	0.00E+00	0.0000%	0.00
Ce-144	4.21E-03	0.0738%	3.07
Cm-242	0.00E+00	0.0000%	0.00
Cm-243	0.00E+00	0.0000%	0.00
Cm-244	0.00E+00	0.0000%	0.00
Co-60	1.47E-02	0.2585%	10.75
Cs-134	7.96E-04	0.0140%	0.58
Cs-137	5.55E+00	97.3334%	4047.07
C-14	3.60E-02	0.6302%	26.20
Eu-152	2.24E-03	0.0392%	1.63
Eu-154	2.80E-04	0.0049%	0.20
Eu-155	2.08E-03	0.0365%	1.52
Fe-55	0.00E+00	0.0000%	0.00
Fe-59	0.00E+00	0.0000%	0.00
H-3	3.11E-02	0.5449%	22.66
I-129	2.76E-03	0.0484%	2.01
Mn-54	0.00E+00	0.0000%	0.00
Nb-94	2.05E-04	0.0036%	
Ni-59	8.04E-03	0.1409%	5.86
Ni-63	3.31E-02	0.5798%	24.11
Np-237	0.00E+00	0.0000%	0.00
Pr-144	0.00E+00	0.0000%	0.00
Pr-144m	0.00E+00	0.0000%	0.00
Pu-238	0.00E+00	0.0000%	0.00
Pu-239	0.00E+00	0.0000%	0.00
Pu-240	0.00E+00	0.0000%	0.00
Pu-241	0.00E+00	0.0000%	0.00
Pu-242	0.00E+00	0.0000%	0.00
Rh-106	0.00E+00	0.0000%	0.00
Ru-106	6.69E-03	0.1173%	4.88
Sb-125	3.54E-03	0.0620%	2.58
Sr-90	2.70E-03	0.0474%	1.97
Tc-99	2.46E-03	0.0431%	1.79
Te-125m	0.00E+00	0.0000%	0.00
U-234	0.00E+00	0.0000%	0.00
U-235	0.00E+00	0.0000%	0.00
U-238	0.00E+00	0.0000%	0.00
Y-90	0.00E+00	0.0000%	0.00
Zn-65	0.00E+00	0.0000%	0.00
TOTALS=>	5.71E+00	100.00%	4157.80

CORE BORE SLICES TO BE SENT FOR ANALYSIS

9/21/95

FISSION PRODUCT CONTAMINATED CORE BORES

	CORE BORE SAMPLE NUMBER	Core ~ Length (in)	Number of Slices to be Sent	Comments	AREA	SAMPLES TO BE SENT	"NEW" SAMPLE No.	Slice No.
1	SX801950091	3	2	TOP TWO SLICES	1	1	SX801950127	1 & 2
2	SX811950026	6	2	TOP TWO SLICES	1			
3	SX811950027	6	2	TOP TWO SLICES	1	1	SX811950128	1 & 2 ea core
4	SX821950032	6	2	TOP TWO SLICES	2			
5	SX821950033	6	2	TOP TWO SLICES	2	1	SX821950129	1 & 2 ea core
6	SX832950021	48	5	TOP 2 EACH END & DEEPEST FROM SW	3 & 6	3	SX832950130	1 & 2
							SX832950131	19 & 20
							SX832950132	15
7	SX841950016	6	2	TOP TWO SLICES	4			
8	SX841950017	6	2	TOP TWO SLICES	4			
9	SX841950018	6	2	TOP TWO SLICES	4	1	SX841950133	1 & 2 ea core
10	SX852950103	9	4	TOP 2 EACH END	5	1	SX852950134	1, 2, 8 & 9
11	SX861950056	6	3	TOP TWO SLICES + DEEP SLICE	6			
12	SX861950057	6	3	TOP TWO SLICES + DEEP SLICE	6	2	SX861950135	1 & 2 ea core
							SX861950136	7 & 9
					Total	10		

ACTIVATION PRODUCT
CONTAMINATED CORE BORES

	CORE BORE SAMPLE NUMBER	Core ~Length (in)	Number of Slices to be Sent	Comments	AREA	SAMPLES TO BE SENT	"NEW" SAMPLE No.	Slice No.
1	SX811950025	16	4	TOP THREE AND DEEPEST FROM RRF	1	4	SX811950137	1
							SX811950138	2
							SX811950139	4
							SX811950140	9
2	SX822950031	60	6	TOP 2 EACH END & 2 DEEPEST FROM RC	2 & 6	4	SX822950141	1 & 2
							SX822950142	19 & 20
							SX822950143	11
							SX822950144	13
3	SX822950037	60	6	TOP 2 EACH END & 2 DEEPEST FROM RC	2 & 6	4	SX822950145	1 & 2
							SX822950146	19 & 20
							SX822950147	12
							SX822950148	16
4	SX841950125	60	4	CLOSEST TO SW & NEXT 3 TO DEPTH OF ~2'	4 & 6	4	SX841950152	5
							SX841950151	9
							SX841950150	14
							SX841950149	15
5	SX861950066	6	3	TOP TWO AND DEEPEST	6	2	SX861950153	1 & 2
							SX861950154	6
6	SX862950062	6	3	TOP TWO AND DEEPEST	6	2	SX862950155	1 & 2
							SX862950156	7
7	SX862950063	6	3	TOP TWO AND DEEPEST	6	2	SX862950157	1 & 2
							SX862950158	5
8	SX862950065	6	3	TOP TWO AND DEEPEST	6	2	SX862950159	1 & 2
							SX862950160	6
9	SX862950119	9	5	TOP 2 AND 3 EVENLY SPACED TO DEEPEST	6	4	SX862950161	1 & 2
							SX862950162	6
							SX862950163	9
							SX862950164	13
					Total	28		

B&W NUCLEAR ENVIRONMENTAL SERVICES, INCORPORATED
NUCLEAR ENVIRONMENTAL LABORATORIES

DATA REPORT NUMBER 9511048

RADIOCHEMICAL ANALYSIS RESULTS

Submitted to

GPU Nuclear Corporation
Saxton Site - Decommissioning Project

December 22, 1995

Released by: James L. Clark 12/22/95

James L. Clark, Project Manager
Nuclear Environmental Laboratories

DATA REPORT SUMMARY

Laboratory Project Summary

- Plant Site: Saxton Decommissioning Project
- Shipment Number: 95-004
- Receipt Date: November 13, 1995
- NEL COC Number: SN-12973
- NEL SDG Number: 9511048, 9510024
- NEL Proposal: NEL5-1258
- Contract Number: 0397355
- Analysis Service: Routine
- Laboratory QC: Routine - Batch

Sample Delivery Group Summary

Customer ID	NEL Sample ID	Sample Type	Description
SX856950167-SD	9511048-01	Wet Sediment	Area-5 Tunnel
SX856950167-SD	9511048-01L	Wet Sediment	Liquid Phase
SX865950167-SD	9511048-01S	Wet Sediment	Solid Phase
SX865950165-SM	9511048-02	Swab Sample	RV Swab
SX815950168-SD	9511048-03	Dry Sediment	Tank Sludge
SX862950162	9510024-36R	Core Bore / 1	Rebar Metal

Sample Physical Characteristics Summary

NEL Sample ID	Sample Matrix	Mass / Volume	Density
9511048-01	Wet Sediment	293 g	1.26 g/cc
9511048-01L	Sedi / Liquid	73 mL	1.27 g/cc
9511048-01S	Sedi / Solids	201 g	0.85 g/cc
9511048-02	Swab / Metal	8.28 g (Note 1)	Note 1
9511048-03	Dry Solids	191 g	1.36 g/cc
9510024-36R	Rebar Metal	57.8 g	---

Note 1: Sample could not be removed from swab matrix as requested. Sample Mass is total of sample and swab matrix. Density determination was not possible.

Sample Analysis Summary

Customer ID	NEL Sample ID	Sample Matrix	Notes
SX856950167-SD	9511048-01L	Sedi / Liquid	---
SX856950167-SD	9511048-01S	Sedi / Solids	---
SX865950167-SM	9511048-02	Swab / Metal	(1)
SX815950168-SD	9511048-03	Dry Solids	---
SX862950162	9510024-36R	Rebar Metal	(2)

Note 1: Sample could not be removed from swab matrix as requested. Entire matrix placed into solution for analysis. Activities in units of μCi/g where mass is that of entire sample matrix.

Note 2: Rebar metal is that removed from NEL Sample 9510024-36, a Saxton Concrete Bore analyzed previously and reported in NEL Report Number 9510024. The entire piece of metal was dissolved and analyzed.

Activity Results

See Attached Report Sheet

NEL ID	9511048-01L		9511048-01S		9511048-02		9511048-03		9510024-36R	
NUCLIDE	uCi/mL	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S	uCi/g	+/- 2S
Co-60	1.16E-07	1.09E-07	< 6.39E-06	---	9.59E-02	8.92E-03	1.97E-04	6.40E-06	2.30E-04	2.22E-05
Ru-106	< 1.06E-06	---	< 4.59E-05	---	< 6.05E-04	---	< 2.87E-05	---	< 8.74E-06	---
Cs-134	< 1.23E-07	---	< 5.36E-06	---	< 8.84E-05	---	< 2.58E-06	---	< 1.40E-06	---
Cs-137	3.44E-07	1.26E-07	2.94E-04	9.44E-06	2.37E-02	3.18E-03	1.92E-03	1.14E-04	< 1.11E-06	---
Ce-144	< 5.11E-07	---	< 2.48E-05	---	< 1.96E-04	---	< 2.01E-05	---	< 4.85E-06	---
Am-241	< 1.11E-07	---	< 1.94E-05	---	1.71E-02	1.82E-03	< 1.17E-05	---	< 9.92E-07	---
Ag-108m	< 3.09E-07	---	< 4.67E-06	---	< 5.11E-05	---	< 2.87E-06	---	< 9.77E-07	---
Eu-152	< 8.89E-07	---	< 4.03E-05	---	< 7.70E-04	---	< 2.15E-05	---	< 1.23E-05	---
Eu-154	< 3.42E-07	---	< 1.35E-05	---	7.99E-04	1.58E-04	< 5.71E-06	---	< 2.48E-06	---
Eu-155	< 1.96E-07	---	< 1.21E-05	---	2.19E-04	6.84E-05	< 8.53E-06	---	< 1.72E-06	---
Sb-125	< 2.64E-07	---	< 1.31E-05	---	< 1.37E-04	---	< 1.04E-05	---	< 2.39E-06	---
H-3	< 4.44E-06	---	< 5.45E-06	---	4.87E-04	7.60E-05	< 9.64E-06	---	< 7.58E-05	---
C-14	< 4.02E-06	---	< 5.66E-06	---	< 5.06E-05	---	< 9.83E-06	---	< 5.79E-05	---
Ni-59	< 3.59E-07	---	< 5.99E-06	---	3.11E-03	4.56E-04	< 5.85E-06	---	2.33E-05	2.06E-05
Ni-63	< 7.74E-07	---	< 1.29E-05	---	2.56E-01	3.74E-02	< 2.77E-05	---	2.12E-03	3.16E-04
Nb-94	< 1.07E-07	---	< 4.38E-06	---	< 8.26E-05	---	< 2.37E-07	---	< 1.31E-06	---
Tc-99	< 8.35E-06	---	< 1.13E-05	---	< 1.90E-05	---	< 3.14E-05	---	< 9.73E-06	---
I-129	< 5.47E-07	---	< 4.97E-06	---	< 4.30E-05	---	< 9.22E-06	---	< 2.00E-05	---
Gross Alpha	NA		NA		NA		2.75E-07	6.76E-08	< 4.19E-08	---
Sr-90	< 6.94E-07	---	< 1.14E-05	---	2.35E-02	3.48E-04	2.55E-05	6.32E-06	NA	
Fe-55	< 4.59E-07	---	< 9.20E-06	---	7.54E-04	1.22E-04	NA		NA	
U-234	< 6.80E-09	---	4.60E-07	1.40E-07	1.22E-06	3.00E-07	NA		NA	
U-235	< 6.80E-09	---	< 2.00E-07	---	< 1.40E-07	---	NA		NA	
U-238	< 2.10E-08	---	5.10E-07	1.60E-07	< 6.20E-07	---	NA		NA	
Np-237	< 2.40E-08	---	< 9.68E-07	---	< 2.88E-06	---	NA		NA	
Pu-238	< 8.23E-09	---	< 1.14E-07	---	3.15E-03	1.60E-04	NA		NA	
Pu-239/240	< 1.16E-08	---	< 1.61E-07	---	7.23E-03	3.68E-04	NA		NA	
Pu-241	< 6.97E-08	---	< 2.24E-06	---	1.28E-01	8.08E-03	NA		NA	
Pu-242	< 1.72E-09	---	< 4.64E-08	---	< 5.40E-08	---	NA		NA	
Am-241	< 3.14E-07	---	< 3.82E-06	---	2.24E-02	1.11E-03	NA		NA	
Am-243	< 6.48E-09	---	< 2.52E-07	---	< 7.62E-08	---	NA		NA	
Cm-242	< 3.41E-08	---	< 1.07E-06	---	1.34E-04	7.26E-06	NA		NA	
Cm-243/244	< 3.78E-08	---	< 7.13E-07	---	3.87E-04	1.97E-05	NA		NA	

B & W RESULTS 12/18/95 – Saxton Samples

SYSTEM===> *Tunnel Sediment – AREA 5*

Saxton	B & W
Sample Number	Sample Number
SX856950167-SD	9511048-01L

Sample Type	Sediment

Description	Liquid Phase

0.0003
Total TRU Content (nCi/ml)

0.0000
Total Uranium Content (nCi/ml)

	Nuclide	Notes	Results uCi/ml	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	4.44E-06	18.3144%		
2	C-14	LESS THAN	4.02E-06	16.5819%		
3	Fe-55	LESS THAN	4.59E-07	1.8933%	Fe-55/Co-60	3.95690
4	Ni-59	LESS THAN	3.59E-07	1.4808%		
5	Ni-63	LESS THAN	7.74E-07	3.1926%		
6	Sr-89	Not Reported	0.00E+00	0.0000%		
7	Sr-90	LESS THAN	6.94E-07	2.8627%	Sr-90/Cs-137	2.01744
8	Nb-94	LESS THAN	1.07E-07	0.4414%		
9	Tc-99	LESS THAN	8.35E-06	34.4426%		
10	I-129	LESS THAN	5.47E-07	2.2563%		
11	Np-237	LESS THAN	2.40E-08	0.0990%		
12	Pu-238	LESS THAN	8.23E-09	0.0339%	Pu-238/Am-241	0.07414
13	Pu-239/240	LESS THAN	1.16E-08	0.0478%		
14	Pu-241	LESS THAN	6.97E-08	0.2875%	Pu-241/Am-241	0.62793
15	Pu-242	LESS THAN	1.72E-09	0.0071%		
16	Am-241	LESS THAN	1.11E-07	0.4579%	Am-241/Pu-238	13.48724
17	Am-243	LESS THAN	6.48E-09	0.0267%		
18	Cm-242	LESS THAN	3.41E-08	0.1407%		
19	Cm-243/244	LESS THAN	3.78E-08	0.1559%		
20	U-234	LESS THAN	6.80E-09	0.0280%		
21	U-235	LESS THAN	6.80E-09	0.0280%		
22	U-238	LESS THAN	2.10E-08	0.0866%	U-238/Am-241	0.18919
23	Co-60		1.16E-07	0.4785%	Am-241/U-238	5.28571
24	Ru-106	LESS THAN	1.06E-06	4.3724%		
25	Ag-108m	LESS THAN	3.09E-07	1.2746%		
26	Sb-125	LESS THAN	2.64E-07	1.0890%		
27	Cs-134	LESS THAN	1.23E-07	0.5074%	Cs-134/Cs-137	0.35756
28	Cs-137		3.44E-07	1.4190%	Co-60/Cs-137	0.33721
29	Ce-144	LESS THAN	5.11E-07	2.1078%	Cs-137/Co-60	2.96552
30	Eu-152	LESS THAN	8.89E-07	3.6670%		
31	Eu-154	LESS THAN	3.42E-07	1.4107%		
32	Eu-155	LESS THAN	1.96E-07	0.8085%		
		Totals===>	2.42E-05	100.00%		

B & W RESULTS 12/18/95 – Saxton Samples

SYSTEM= = = > *Tunnel Sediment – AREA 5*

Saxton	B & W
Sample Number	Sample Number
SX856950167-SD	9511048-01S

Sample Type	Sediment

Description	Solid Phase

0.0250

Total TRU Content (nCi/g)

0.0012

Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	5.45E-06	0.9776%		
2	C-14	LESS THAN	5.66E-06	1.0152%		
3	Fe-55	LESS THAN	9.20E-06	1.6502%	Fe-55/Co-60	1.43975
4	Ni-59	LESS THAN	5.99E-06	1.0744%		
5	Ni-63	LESS THAN	1.29E-05	2.3139%		
6	Sr-89	Not Reported	0.00E+00	0.0000%		
7	Sr-90	LESS THAN	1.14E-05	2.0448%	Sr-90/Cs-137	0.03878
8	Nb-94	LESS THAN	4.38E-06	0.7856%		
9	Tc-99	LESS THAN	1.13E-05	2.0269%		
10	I-129	LESS THAN	4.97E-06	0.8915%		
11	Np-237	LESS THAN	9.68E-07	0.1736%		
12	Pu-238	LESS THAN	1.14E-07	0.0204%	Pu-238/Am-241	0.00588
13	Pu-239/240	LESS THAN	1.61E-07	0.0289%		
14	Pu-241	LESS THAN	2.24E-06	0.4018%	Pu-241/Am-241	0.11546
15	Pu-242	LESS THAN	4.64E-08	0.0083%		
16	Am-241	LESS THAN	1.94E-05	3.4798%	Am-241/Pu-238	170.17544
17	Am-243	LESS THAN	2.52E-07	0.0452%		
18	Cm-242	LESS THAN	1.07E-06	0.1919%		
19	Cm-243/244	LESS THAN	7.13E-07	0.1279%		
20	U-234	LESS THAN	4.60E-07	0.0825%		
21	U-235	LESS THAN	2.00E-07	0.0359%		
22	U-238	LESS THAN	5.10E-07	0.0915%	U-238/Am-241	0.02629
23	Co-60		6.39E-06	1.1462%	Am-241/U-238	38.03922
24	Ru-106	LESS THAN	4.59E-05	8.2331%		
25	Ag-108m	LESS THAN	4.67E-06	0.8377%		
26	Sb-125	LESS THAN	1.31E-05	2.3498%		
27	Cs-134	LESS THAN	5.36E-06	0.9614%	Cs-134/Cs-137	0.01823
28	Cs-137		2.94E-04	52.7350%	Co-60/Cs-137	0.02173
29	Ce-144	LESS THAN	2.48E-05	4.4484%	Cs-137/Co-60	46.00939
30	Eu-152	LESS THAN	4.03E-05	7.2286%		
31	Eu-154	LESS THAN	1.35E-05	2.4215%		
32	Eu-155	LESS THAN	1.21E-05	2.1704%		
		Totals= = >	5.58E-04	100.00%		

B & W RESULTS 12/15/95 – Saxton Samples

SYSTEM= = = > *Bob's RV SWAB*

Saxton	*B & W*
Sample Number	*Sample Number*
SX865950165-SW	9511048-02

Sample Type	GUN SWAB

Description	Rx Vessel

161.3040
Total TRU Content (nCi/g)

0.0020
Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	*H-3*		4.8[illegible]E-04	0.0858%		
2	*C-14*	LESS THAN	5.06E-05	0.0089%		
3	*Fe-55*		7.54E-04	0.1328%	Fe-55/Co-60	0.00786
4	*Ni-59*		3.11E-03	0.5477%		
5	*Ni-63*		2.56E-01	45.0849%		
6	*Sr-89*	Not Reported	0.00E+00	0.0000%		
7	*Sr-90*		2.35E-02	4.1387%	Sr-90/Cs-137	0.99156
8	*Nb-94*	LESS THAN	8.26E-05	0.0145%		
9	*Tc-99*		1.90E-05	0.0033%		
10	*I-129*	LESS THAN	4.30E-05	0.0076%		
11	*Np-237*	LESS THAN	2.88E-06	0.0005%		
12	*Pu-238*		3.15E-03	0.5548%	Pu-238/Am-241	0.14063
13	*Pu-239/240*		7.23E-03	1.2733%		
14	*Pu-241*		1.28E-01	22.5424%	Pu-241/Am-241	5.71429
15	*Pu-242*	LESS THAN	5.40E-08	0.0000%		
16	*Am-241*		2.24E-02	3.9449%	Am-241/Pu-238	7.11111
17	*Am-243*	LESS THAN	7.62E-08	0.0000%		
18	*Cm-242*		1.34E-04	0.0236%		
19	*Cm-243/244*		3.87E-04	0.0682%		
20	*U-234*		1.22E-06	0.0002%		
21	*U-235*	LESS THAN	1.40E-07	0.0000%		
22	*U-238*	LESS THAN	6.20E-07	0.0001%	U-238/Am-241	0.00003
23	*Co-60*		9.59E-02	16.8892%	Am-241/U-238	36129.03226
24	*Ru-106*	LESS THAN	6.05E-04	0.1065%		
25	*Ag-108m*	LESS THAN	5.11E-05	0.0090%		
26	*Sb-125*	LESS THAN	1.37E-04	0.0241%		
27	*Cs-134*	LESS THAN	8.84E-05	0.0156%	Cs-134/Cs-137	0.00373
28	*Cs-137*		2.37E-02	4.1739%	Co-60/Cs-137	4.04641
29	*Ce-144*	LESS THAN	1.96E-04	0.0345%	Cs-137/Co-60	0.24713
30	*Eu-152*	LESS THAN	7.70E-04	0.1356%		
31	*Eu-154*		7.99E-04	0.1407%		
32	*Eu-155*		2.19E-04	0.0386%		
		Totals= = = >	5.68E-01	100.00%		

B & W RESULTS 12/15/95 – Saxton Samples

SYSTEM===> *Condensate Pump & Tank Sample*

Saxton	B & W
Sample Number	Sample Number
SX815950168-SD	9511048-03

Sample Type	Dry Sediment

Description	Solids

0.0117 Total TRU Content (nCi/g)

0.0000 Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	9.64E-06	0.4105%		
2	C-14	LESS THAN	9.83E-06	0.4186%		
3	Fe-55	Not Reported		0.0000%	Fe-55/Co-60	0.00000
4	Ni-59	LESS THAN	5.85E-06	0.2491%		
5	Ni-63	LESS THAN	2.77E-05	1.1795%		
6	Sr-89	Not Reported		0.0000%		
7	Sr-90		2.55E-05	1.0858%	Sr-90/Cs-137	0.01328
8	Nb-94	LESS THAN	2.37E-07	0.0101%		
9	Tc-99	LESS THAN	3.14E-05	1.3370%		
10	I-129	LESS THAN	9.22E-06	0.3926%		
11	Np-237	Not Reported		0.0000%		
12	Pu-238	Not Reported		0.0000%	Pu-238/Am-241	0.00000
13	Pu-239/240	Not Reported		0.0000%		
14	Pu-241	Not Reported		0.0000%	Pu-241/Am-241	0.00000
15	Pu-242	Not Reported		0.0000%		
16	Am-241	LESS THAN	1.17E-05	0.4982%	Am-241/Pu-238	ERR
17	Am-243	Not Reported		0.0000%		
18	Cm-242	Not Reported		0.0000%		
19	Cm-243/244	Not Reported		0.0000%		
20	U-234	Not Reported		0.0000%		
21	U-235	Not Reported		0.0000%		
22	U-238	Not Reported		0.0000%	U-238/Am-241	0.00000
23	Co-60		1.97E-04	8.3885%	Am-241/U-238	ERR
24	Ru-106	LESS THAN	2.87E-05	1.2221%		
25	Ag-108m	LESS THAN	2.87E-06	0.1222%		
26	Sb-125	LESS THAN	1.04E-05	0.4428%		
27	Cs-134	LESS THAN	2.58E-03	0.1099%	Cs-134/Cs-137	0.00134
28	Cs-137		1.92E-03	81.7555%	Co-60/Cs-137	0.10260
29	Ce-144	LESS THAN	2.01E-05	0.8559%	Cs-137/Co-60	9.74619
30	Eu-152	LESS THAN	2.15E-05	0.9155%		
31	Eu-154	LESS THAN	5.71E-06	0.2431%		
32	Eu-155	LESS THAN	8.53E-06	0.3632%		
		Totals===>	2.35E-03	100.00%		

Gross Alpha Activity

2.75E-07 uCi/g

B & W RESULTS 12/15/95 – Saxton Samples

SYSTEM===> *Concrete Re-Bar From Core Sample SX862950119*

Saxton	B & W
Sample Number	Sample Number
SX862950162	9510024-36R

Sample Type	Core Bore

Description	Steel Re-Bar

0.0010

Total TRU Content (nCi/g)

0.0000

Total Uranium Content (nCi/g)

	Nuclide	Notes	Results uCi/g	Normalized to 100 %	Nuclides	RATIOS
1	H-3	LESS THAN	7.58E-05	2.9437%		
2	C-14	LESS THAN	5.79E-05	2.2485%		
3	Fe-55	Not Reported	0.00E+00	0.0000%	Fe-55/Co-60	0.00000
4	Ni-59		2.33E-05	0.9049%		
5	Ni-63		2.12E-03	82.3301%		
6	Sr-89	Not Reported	0.00E+00	0.0000%		
7	Sr-90	Not Reported	0.00E+00	0.0000%	Sr-90/Cs-137	0.00000
8	Nb-94	LESS THAN	1.31E-06	0.0509%		
9	Tc-99	LESS THAN	9.73E-06	0.3779%		
10	I-129	LESS THAN	2.00E-05	0.7767%		
11	Np-237	Not Reported	0.00E+00	0.0000%		
12	Pu-238	Not Reported	0.00E+00	0.0000%	Pu-238/Am-241	0.00000
13	Pu-239/240	Not Reported	0.00E+00	0.0000%		
14	Pu-241	Not Reported	0.00E+00	0.0000%	Pu-241/Am-241	0.00000
15	Pu-242	Not Reported	0.00E+00	0.0000%		
16	Am-241	LESS THAN	9.92E-07	0.0385%	Am-241/Pu-238	ERR
17	Am-243	Not Reported	0.00E+00	0.0000%		
18	Cm-242	Not Reported	0.00E+00	0.0000%		
19	Cm-243/244	Not Reported	0.00E+00	0.0000%		
20	U-234	Not Reported	0.00E+00	0.0000%		
21	U-235	Not Reported	0.00E+00	0.0000%		
22	U-238	Not Reported	0.00E+00	0.0000%	U-238/Am-241	0.00000
23	Co-60		2.30E-04	8.9320%	Am-241/U-238	ERR
24	Ru-106	LESS THAN	8.74E-06	0.3394%		
25	Ag-108m	LESS THAN	9.77E-07	0.0379%		
26	Sb-125	LESS THAN	2.39E-06	0.0928%		
27	Cs-134	LESS THAN	1.40E-06	0.0544%	Cs-134/Cs-137	1.26126
28	Cs-137	LESS THAN	1.11E-06	0.0431%	Co-60/Cs-137	207.20721
29	Ce-144	LESS THAN	4.85E-06	0.1883%	Cs-137/Co-60	0.00483
30	Eu-152	LESS THAN	1.23E-05	0.4777%		
31	Eu-154	LESS THAN	2.48E-06	0.0963%		
32	Eu-155	LESS THAN	1.72E-06	0.0668%		
		Totals===>	2.57E-03	100.00%		

Gross Alpha Activity

4.19E-08	uCi/g

TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

REPORT OF ANALYSIS

REVISED 09/26/95
RUN DATE 02/09/95

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
3-5243		01/10/95	02/01/95	1

J PATRICK DONNACHIE JR ERL MANAGER
GPU NUCLEAR CORPORATION
PO BOX 480
MIDDLETOWN PA 17057-0480

SWIPES

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (TOTAL UCI)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
73504	GR SXTN-SMR-A1	0	01/0R				GR-A	4.6 +-0.6 E-04		02/02			3
							GR-B	2.9 +-0.1 E-01		02/01			3
							C-14	L.T. 3. E-05		02/07			3
							NI-59	L.T. 3. E-04		02/02			3
							SR-89	L.T. 1. E-04		02/03			3
							SR-90	6.8 +-0.6 E-04		02/03			3
							FE-55	L.T. 3. E-04		02/01			3
							TC-99	L.T. 4. E-05		01/29			3
							I-129	L.T. 5. E-05		02/05			3
							BE-7	L.T. 7. E-03		01/19			4
							K-40	L.T. 3. E-04		01/19			4
							MN-54	L.T. 1. E-04		01/19			4
							CO-58	L.T. 1. E-04		01/19			4
							FE-59	L.T. 3. E-04		01/19			4
							CO-60	2.87+-0.29E-03		01/19			4
							ZN-65	L.T. 3. E-04		01/19			4
							ZR-95	L.T. 3. E-04		01/19			4
							NB-95	L.T. 2. E-04		01/19			4
							RU-103	L.T. 7. E-04		01/19			4
							RU-106	L.T. 3. E-03		01/19			4
							I-131	L.T. 1. E-03		01/19			4
							CS-134	L.T. 2. E-04		01/19			4
							CS-137	3.56+-0.36E-01		01/19			4
							BA-140	L.T. 2. E-03		01/19			4
							LA-140	L.T. 1. E-04		01/19			4
							CE-141	L.T. 5. E-04		01/19			4
							CE-144	L.T. 2. E-03		01/19			4
							RA-226	L.T. 7. E-03		01/19			4
							TH-228	L.T. 6. E-04		01/19			4
							H-3	L.T. 5. E-04		01/31			5
							NI-63	1.2 +-0.1 E-03		02/08			5
							PU-238	4.6 +-0.7 E-05		02/01			6
							U-234	L.T. 1.1 E-06		02/01			6

This sample had high Cs-137 activity so it was counted for 5 minutes in order to keep the Cs-137 counts in the peak channel from "over flowing". A consequence was that there were no counts in the K-40 region. In order to have a non zero L.T. result, the K-40 calculation was performed with 1 (one) as the background count. The result is as reported above. JM Martin 9-26-95

TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

REPORT OF ANALYSIS

RUN DATE 02/09/95

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
3-5243		01/10/95	02/01/95	2

J PATRICK DONNACH[illegible] JR ERL MANAGER
GPU NUCLEAR CORPL ION
PO BOX 480
MIDDLETOWN PA 17057-0480

SWIPES

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (TOTAL UCI)	NUCL-UNIT-% U/M ◊	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% ◊	LAB.
73504	GR SXTN-SMR-A1	0	01/0R				U-235	L.T. 1.1 E-06		02/01			6
							U-238	L.T. 1.1 E-06		02/01			6
							AM-241	1.8 +-0.2 E-04		02/01			6
							CM-242	L.T. 1.3 E-06		02/01			6
							CM-244	L.T. 2.2 E-06		02/01			6
							PU-239	1.0 +-0.1 E-04		02/01			6
							PU-241	6.1 +-1.6 E-04		02/08			6
							PU-242	L.T. 9.9 E-07		02/08			6
73505	GR SXTN-SMR-A2	0	01/0R				GR-A	3.4 +-0.5 E-04		02/02			3
							GR-B	1.0 +-0.1 E-01		02/01			3
							C-14	L.T. 2. E-05		02/07			3
							NI-59	L.T. 3. E-04		02/02			3
							SR-89	L.T. 2. E-04		02/03			3
							SR-90	1.0 +-0.1 E-03		02/03			3
							FE-55	L.T. 4. E-04		02/01			3
							TC-99	L.T. 3. E-05		01/29			3
							I-129	L.T. 4. E-05		02/06			3
							BE-7	L.T. 2. E-03		01/19			4
							K-40	L.T. 2. E-04		01/19			4
							MN-54	L.T. 3. E-05		01/19			4
							CO-58	L.T. 4. E-05		01/19			4
							FE-59	L.T. 9. E-05		01/19			4
							CO-60	8.31+-0.85E-04		01/19			4
							ZN-65	L.T. 8. E-05		01/19			4
							ZR-95	L.T. 7. E-05		01/19			4
							NB-95	L.T. 3. E-05		01/19			4
							RU-103	L.T. 2. E-04		01/19			4
							RU-106	L.T. 1. E-03		01/19			4
							I-131	L.T. 3. E-04		01/19			4
							CS-134	L.T. 4. E-05		01/19			4
							CS-137	7.66+-0.77E-02		01/19			4
							BA-140	L.T. 5. E-04		01/19			4

TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

REPORT OF ANALYSIS

RUN DATE 02/09/95

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
3-5243		01/10/95	02/01/95	3

J PATRICK DONNACHIE JR ERL MANAGER
GPU NUCLEAR CORPORATION
PO BOX 480
MIDDLETOWN PA 17057-0480

SWIPES

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (TOTAL UCI)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
73505	GR SXTN-SMR-A2	0	01/0R				LA-140	L.T. 2. E-05		01/19			4
							CE-141	L.T. 1. E-04		01/19			4
							CE-144	L.T. 5. E-04		01/19			4
							RA-226	L.T. 2. E-03		01/19			4
							TH-228	L.T. 2. E-04		01/19			4
							H-3	L.T. 5. E-04		01/31			5
							NI-63	5.4 +-0.5 E-04		02/08			5
							PU-238	3.1 +-0.5 E-05		02/01			6
							U-234	L.T. 1.0 E-06		01/30			6
							U-235	L.T. 1.0 E-06		01/30			6
							U-238	L.T. 1.0 E-06		01/30			6
							AM-241	1.3 +-0.1 E-04		02/01			6
							CM-242	2.6 +-1.7 E-06		02/01			6
							CM-244	L.T. 1.0 E-06		02/01			6
							PU-239	8.3 +-0.9 E-05		02/01			6
							PU-241	5.5 +-1.3 E-04		02/08			6
							PU-242	L.T. 1.2 E-06		02/08			6
73506	SXTN-SMR-A3&A4O		01/0R				GR-A	5.8 +-2.4 E-05		02/01			3
							GR-B	8.3 +-0.2 E-03		02/01			3
							C-14	L.T. 2. E-05		02/07			3
							NI-59	L.T. 3. E-04		02/02			3
							SR-89	L.T. 1. E-02		02/03			3
							SR-90	L.T. 3. E-05		02/03			3
							FE-55	L.T. 3. E-04		02/01			3
							TC-99	L.T. 4. E-05		01/29			3
							I-129	L.T. 7. E-05		02/06			3
							BE-7	L.T. 2. E-04		01/19			4
							K-40	L.T. 3. E-05		01/19			4
							MN-54	L.T. 5. E-06		01/19			4
							CO-58	L.T. 6. E-06		01/19			4
							FE-59	L.T. 1. E-05		01/19			4
							CO-60	2.59+-0.26E-04		01/19			4

TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

REPORT OF ANALYSIS

RUN DATE 02/09/95

	WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
J PATRICK DONNACHIE JR ERL MANAGER GPU NUCLEAR CORPORATION PO BOX 480 MIDDLETOWN PA 17057-0480	3-5243		01/10/95	02/01/95	4

SWIPES

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (TOTAL UCI)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
73506	SXTN-SMR-A3&A40		01/OR				ZN-65	L.T. 1. E-05		01/19			4
							ZR-95	L.T. 1. E-05		01/19			4
							NB-95	L.T. 6. E-06		01/19			4
							RU-103	L.T. 2. E-05		01/19			4
							RU-106	L.T. 9. E-05		01/19			4
							I-131	L.T. 3. E-05		01/19			4
							CS-134	L.T. 6. E-06		01/19			4
							CS-137	6.26+-0.63E-03		01/19			4
							BA-140	L.T. 5. E-05		01/19			4
							LA-140	L.T. 6. E-06		01/19			4
							CE-141	L.T. 1. E-05		01/19			4
							CE-144	L.T. 4. E-05		01/19			4
							RA-226	L.T. 1. E-04		01/19			4
							TH-228	L.T. 1. E-05		01/19			4
							H-3	L.T. 8. E-04		01/27			5
							NI-63	8.9 +-5.0 E-05		02/08			5
							PU-238	4.0 +-2.1 E-06		02/01			6
							U-234	L.T. 1.1 E-06		02/02			6
							U-235	L.T. 1.1 E-06		02/02			6
							U-238	L.T. 1.1 E-06		02/02			6
							AM-241	1.2 +-0.3 E-05		02/03			6
							CM-242	L.T. 1.3 E-06		02/03			6
							CM-244	L.T. 9.5 E-07		02/03			6
							PU-239	8.6 +-3.1 E-06		02/01			6
							PU-241	L.T. 2.8 E-04		02/08			6
							PU-242	L.T. 1.2 E-06		02/08			6

LAST PAGE OF REPORT

J Guenther

APPROVED BY J. GUENTHER 02/09/95

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2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GE(LI) GAMMA SPEC LAB. 5 - TRITIUM GAS./L.S. LAB. 6 - ALPHA SPEC LAB.

TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

REPORT OF ANALYSIS

REVISED 10/05/95
RUN DATE 07/26/95

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
3-1127		06/27/95	07/26/95	1

J PATRICK DONNACHIE JR ERL MANAGER
GPU NUCLEAR CORPORATION
PO BOX 480
MIDDLETOWN PA 17057-0480

SWIPES

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (TOTAL UCI)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
89209	SX821950052-AREA2		06/26				GR-A	2.4 +-0.2 E-03		07/21			3
							GR-B	6.9 +-0.1 E-01		07/20			3
							C-14	1.1 +-0.4 E-05		07/26			3
							NI-59	L.T. 1. E-03		07/19			3
							SR-89	L.T. 1. E-03		10/04			3
							SR-90	1.2 +-0.1 E-02		07/26			3
							FE-55	L.T. 5. E-04		07/20			3
							TC-99	3.2 +-2.2 E-05		07/21			3
							I-129	L.T. 2. E-05		07/26			3
							BE-7	L.T. 1. E-02		07/13			4
							K-40	L.T. 9. E-04		07/13			4
							CR-51	L.T. 8. E-03		07/13			4
							MN-54	L.T. 3. E-04		07/13			4
							CO-58	L.T. 3. E-04		07/13			4
							FE-59	L.T. 7. E-04		07/13			4
							CO-60	1.49+-0.15E-02		07/13			4
							ZN-65	L.T. 7. E-04		07/13			4
							NB-94	L.T. 3. E-04		07/13			4
							ZR-95	L.T. 5. E-04		07/13			4
							NB-95	L.T. 3. E-04		07/13			4
							MO-99	L.T. 2. E-02		07/13			4
							RU-103	L.T. 1. E-03		07/13			4
							RU-106	L.T. 5. E-03		07/13			4
							AG-110M	L.T. 4. E-04		07/13			4
							SB-124	L.T. 1. E-04		07/13			4
							SB-125	L.T. 3. E-03		07/13			4
							I-131	L.T. 3. E-03		07/13			4
							CS-134	L.T. 3. E-04		07/13			4
							CS-137	5.63+-0.56E-01		07/13			4
							BA-140	L.T. 4. E-03		07/13			4
							LA-140	L.T. 2. E-04		07/13			4
							CE-141	L.T. 9. E-04		07/13			4
							CE-144	L.T. 3. E-03		07/13			4

Reanalysis of these samples for Sr-89 did not confirm the original results, thus this revision. We surmise that in the original analysis there was incomplete separation of the high Sr-90 activity from the Sr-89 planchet and consequently the remaining Sr-90 was interpreted as Sr-89.

JD Martin 10-5-95

TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

REPORT OF ANALYSIS

REVISED 10/05/95
RUN DATE 07/28/95

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
3-1127		06/27/95	07/26/95	2

J PATRICK DONNACHIE JR ERL MANAGER
GPU NUCLEAR CORPORATION
PO BOX 480
MIDDLETOWN PA 17057-0480

SWIPES

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (TOTAL UCI)	NUCL-UNIT-% U/M *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
89209	SX821950052-AREA2		06/26				RA-226	L.T. 1. E-02		07/13			4
							TH-228	L.T. 8. E-04		07/13			4
							NP-237	L.T. 1. E-03		07/13			4
							H-3	L.T. 6. E-04		07/19			5
							NI-63	1.9 +-0.1 E-02		07/25			5
							PU-238	3.5 +-0.3 E-04		07/22			6
							U-234	L.T. 1. E-06		07/22			6
							U-235	L.T. 1. E-06		07/22			6
							U-238	L.T. 1. E-06		07/22			6
							AM-241	8.5 +-0.5 E-04		07/22			6
							CM-242	7.4 +-2.2 E-06		07/22			6
							CM-244	1.9 +-0.4 E-05		07/22			6
							PU-239	8.9 +-0.6 E-04		07/22			6
							PU-241	3.7 +-0.4 E-03		07/25			6
							PU-242	4.8 +-2.5 E-06		07/20			6
89210	SX861950051-AREA 6		06/26				GR-A	3.4 +-0.1 E-02		07/21			3
							GR-B	3.3 +-0.1 E 00		07/20			3
							C-14	1.1 +-0.4 E-05		07/26			3
							NI-59	1.7 +-0.5 E-03		07/19			3
							SR-89	L.T. 2. E-03		10/04			3
							SR-90	2.3 +-0.1 E-02		07/26			3
							FE-55	2.5 +-0.1 E-02		07/20			3
							TC-99	6.2 +-0.6 E-04		07/21			3
							I-129	L.T. 2. E-05		07/26			3
							BE-7	L.T. 5. E-01		07/13			4
							K-40	L.T. 6. E-02		07/13			4
							CR-51	L.T. 4. E-01		07/13			4
							MN-54	L.T. 4. E-02		07/13			4
							CO-58	L.T. 5. E-02		07/13			4
							FE-59	L.T. 1. E-01		07/13			4
							CO-60	7.18+-0.72E 00		07/13			4
							ZN-65	L.T. 1. E-01		07/13			4

TELEDYNE BROWN ENGINEERING ENVIRONMENTAL SERVICES

REPORT OF ANALYSIS — RUN DATE 07/28/95

WORK ORDER NUMBER	CUSTOMER P.O. NUMBER	DATE RECEIVED	DELIVERY DATE	PAGE
3-1127		06/27/95	07/26/95	3

J PATRICK DONNACHIE JR ERL MANAGER
GPU NUCLEAR CORPORATION
PO BOX 480
MIDDLETOWN PA 17057-0480

SWIPES

TELEDYNE SAMPLE NUMBER	CUSTOMER'S IDENTIFICATION	STA NUM	COLLECTION-DATE START DATE	START TIME	STOP DATE	STOP TIME	NUCLIDE	ACTIVITY (TOTAL UCI)	NUCL-UNIT-% U/F *	MID-COUNT TIME DATE	MID-COUNT TIME TIME	VOLUME - UNITS ASH-WGHT-% *	LAB.
89210	SX861950051-AREA 6		06/26				NB-94	L.T. 5. E-02		07/13			4
							ZR-95	L.T. 9. E-02		07/13			4
							NB-95	L.T. 4. E-02		07/13			4
							MO-99	L.T. 2. E 00		07/13			4
							RU-103	L.T. 5. E-02		07/13			4
							RU-106	L.T. 4. E-01		07/13			4
							AG-110M	L.T. 7. E-02		07/13			4
							SB-124	L.T. 2. E-02		07/13			4
							SB-125	L.T. 1. E-01		07/13			4
							I-131	L.T. 2. E-01		07/13			4
							CS-134	L.T. 5. E-02		07/13			4
							CS-137	9.03+-0.90E 00		07/13			4
							BA-140	L.T. 2. E-01		07/13			4
							LA-140	L.T. 2. E-02		07/13			4
							CE-141	L.T. 8. E-02		07/13			4
							CE-144	L.T. 3. E-01		07/13			4
							RA-226	L.T. 7. E-01		07/13			4
							TH-228	L.T. 6. E-02		07/13			4
							NP-237	L.T. 8. E-02		07/13			4
							H-3	3.0 +-0.4 E-03		07/20			5
							NI-63	1.3 +-0.1 E-01		07/25			5
							PU-238	3.1 +-0.2 E-03		07/22			6
							U-234	L.T. 9. E-07		07/22			6
							U-235	L.T. 9. E-07		07/22			6
							U-238	L.T. 9. E-07		07/22			6
							AM-241	1.3 +-0.1 E-02		07/22			6
							CM-242	1.0 +-0.1 E-04		07/22			6
							CM-244	5.0 +-0.2 E-04		07/22			6
							PU-239	8.2 +-0.5 E-03		07/25			6
							PU-241	2.8 +-0.1 E-02		07/20			6
							PU-242	2.4 +-0.6 E-05					

LAST PAGE OF REPORT

APPROVED BY J. GUENTHER 07/28/95

SEND 1 COPIES TO ME7915 J PATRICK DONNACHIE JR ERL MANAGER

2 - GAS LAB. 3 - RADIO CHEMISTRY LAB. 4 - GE(LI) GAMMA SPEC LAB. 5 - TRITIUM GAS/L.S. LAB. 6 - ALPHA SPEC LAB.

AUG 0 . ...

APPENDIX E

SAXTON COMBINED PIPING SECTIONS – LENGTHS (ft) & ESTIMATED WEIGHTS

PIPING SIZE (in) = = >	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	10"	12 3/4"	14"	No. of feet Insulated	Total System Footage	Percent Insulated
Auxiliary Steam Piping (AS)	0.0	1.9	32.0	0.0	0.0	0.0	0.0	22.1	0.0	0.0	0.0	0.0	0.0	56.0	56.0	100.0%
Schedule	--	40	40	--	--	--	--	40	--	--	--	--	--			
Material/Type	--	CS	CS	--	--	--	--	CS	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	31.1	39.5	--	--	--	--	115.7	--	--	--	--	--	System Internal (in ^ 2) = = >		3880.61
Blow Down – 2nd Side of S/G (BL)	0.0	0.0	0.0	0.0	10.3	22.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	32.3	0.0%
Schedule	--	--	--	--	80	80	--	--	--	--	--	--	--			
Material/Type	--	--	--	--	CS	CS	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	--	--	56.5	73.1	--	--	--	--	--	--	--	System Internal (in ^ 2) = = >		2190.62
Chemical Addition (CA)	0.0	28.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	N/A	28.0	0.0%
Schedule	--	80	--	--	--	--	--	--	--	--	--	--	--			
Material/Type	--	CS	--	--	--	--	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	28.0	--	--	--	--	--	--	--	--	--	--	--	System Internal (in ^ 2) = = >		783.24
Component Cooling (CC)	0.0	0.0	0.0	0.0	38.3	0.0	0.0	226.6	0.0	0.0	0.0	0.0	0.0	N/A	264.9	0.0%
Schedule	--	--	--	--	40	--	--	40	--	--	--	--	--			
Material/Type	--	--	--	--	CS	--	--	CS	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	--	--	60.7	--	--	115.7	--	--	--	--	--	System Internal (in ^ 2) = = >		28533.39
Condensate Drain Piping (CD)	0.0	4.0	73.9	4.3	50.6	13.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	146.3	146.3	100.0%
Schedule	--	40	40	40	40	40	--	--	--	--	--	--	--			
Material/Type	--	CS	CS	CS	CS	CS	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	31.1	39.5	52.0	60.7	77.9	--	--	--	--	--	--	--	System Internal (in ^ 2) = = >		7393.61
Drain Lines – Liquid (DL)	77.5	75.8	145.6	88.2	116.9	51.0	6.8	34.0	0.0	0.0	0.0	0.0	0.0	N/A	695.8	0.0%
Schedule	40	40	40	40	40	40	40	40	--	--	--	--	--			
Material/Type	CS	CS	CS	CS	CS	CS	CS	CS	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	23.4	31.1	39.5	52.0	60.7	77.9	93.1	115.7	--	--	--	--	--	System Internal (in ^ 2) = = >		41719.41
Feed Water (FW)	0.0	0.0	9.4	0.0	0.0	0.0	0.0	0.0	8.9	0.0	0.0	0.0	0.0	18.3	18.3	100.0%
Schedule	--	--	80	--	--	--	--	--	80	--	--	--	--			
Material/Type	--	--	CS	--	--	--	--	--	CS	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	36.1	--	--	--	--	--	144.2	--	--	--	--	System Internal (in ^ 2) = = >		1622.84
Main Coolant Piping (MC)	0.0	0.0	61.5	0.0	9.7	0.0	0.0	27.3	0.0	0.0	0.0	35.3	23.2	157.0	157.0	100.0%
Schedule	--	--	160S	--	160S	--	--	160S	--	--	--	~120	~120			
Material/Type	--	--	SS	--	SS	--	--	SS	--	--	--	~13S	~13S			
Internal Surface Area ((in ^ 2)/ft)	--	--	30.7	--	50.4	--	--	99.0	--	--	--	405.3	445.4	System Internal (in ^ 2) = = >		29720.12
Main Steam Piping (MS)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.9	0.0	0.0	0.0	11.9	11.9	100.0%
Schedule	--	--	--	--	--	--	--	--	--	80	--	--	--			
Material/Type	--	--	--	--	--	--	--	--	--	CS	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	--	--	--	--	--	--	--	217.2	--	--	--	System Internal (in ^ 2) = = >		2584.50
Make – up and Purification (MU)	0.0	36.5	3.8	0.0	89.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.0	130.0	10.0%
Schedule	--	10S	10S	--	10S	--	--	--	--	--	--	--	--			
Material/Type	--	SS	SS	--	SS	--	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	33.3	41.4	--	63.4	--	--	--	--	--	--	--	--	System Internal (in ^ 2) = = >		7061.42
Plant Air System (PA)	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	41.5	32.8	0.0	0.0	N/A	86.3	0.0%
Schedule	--	--	40	--	--	--	--	--	--	40	40	--	--			
Material/Type	--	--	CS	--	--	--	--	--	--	CS	CS	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	39.5	--	--	--	--	--	--	228.6	377.7	--	--	System Internal (in ^ 2) = = >		22353.37
Pressure Relief Lines (PR)	0.0	0.0	0.0	0.0	0.0	77.5	32.4	0.0	55.0	0.0	0.0	0.0	0.0	10.0	164.9	6.1%
Schedule	--	--	--	--	--	40	40	--	40	--	--	--	--			
Material/Type	--	--	--	--	--	CS	CS	--	CS	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	--	--	--	77.9	93.1	--	151.8	--	--	--	--	System Internal (in ^ 2) = = >		17402.59

SAXTON COMBINED PIPING SECTIONS–LENGTHS (ft) & ESTIMATED WEIGHTS

PIPING SIZE (in) = = >	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	6"	10"	12 3/4"	14"	No. of feet Insulated	Total System Footage	Percent Insulated
Purification Piping (PU)	64.6	0.0	105.0	0.0	315.4	65.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	550.7	550.7	100.0%
Schedule	10S	--	10S/160S	--	10S	10S	--	--	--	--	--	--	--			
Material/Type	SS	--	SS	--	SS	SS	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	25.4	--	41.4	--	63.4	81.3	--	--	--	--	--	--	--			
Resin Sluice Lines (RS)	0.0	0.0	39.1	0.0	91.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	System Internal (in ^ 2) = = >		31314.84
Schedule	--	--	10S	--	10S	--	--	--	--	--	--	--	--	N/A	130.6	0.0%
Material/Type	--	--	SS	--	SS	--	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	41.4	--	63.4	--	--	--	--	--	--	--	--			
River Water Piping (RW)	0.0	0.0	218.2	13.2	88.9	0.0	277.0	0.0	116.5	0.0	0.0	0.0	0.0	System Internal (in ^ 2) = = >		7419.02
Schedule	--	--	40	40	40	--	40	--	40	--	--	--	--	713.8	713.8	100.0%
Material/Type	--	--	CS	CS	CS	--	CS	--	CS	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	39.5	52.0	60.7	--	93.1	--	151.8	--	--	--	--			
Shut Down Cooling Piping (SC)	4.0	0.0	0.0	0.0	116.9	82.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	System Internal (in ^ 2) = = >		58176.47
Schedule	10S	--	--	--	10S/160S	10S	--	--	--	--	--	--	--	197.1	203.6	96.8%
Material/Type	SS	--	--	--	SS	SS	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	25.4	--	--	--	63.4	81.3	--	--	--	--	--	--	--			
Safety Injection Piping (SI)	0.0	12.7	0.0	0.0	0.0	68.0	0.0	89.1	12.5	0.0	0.0	0.0	0.0	System Internal (in ^ 2) = = >		14239.17
Schedule	--	160S	--	--	--	160S	--	160S	160S	--	--	--	--	N/A	182.3	0.0%
Material/Type	--	SS	--	--	--	SS	--	SS	SS	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	23.1	--	--	--	63.7	--	99.0	129.6	--	--	--	--			
Sampling System & Inst. Lines, SL	854.7	1426.9	391.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	System Internal (in ^ 2) = = >		15064.62
Schedule	.065"W	10S	10S	--	--	--	--	--	--	--	--	--	--	N/A	2672.7	0.0%
Material/Type	SS	SS	SS	--	--	--	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	18.8	33.3	41.4	--	--	--	--	--	--	--	--	--	--			
Storage Well Piping (SW)	24.3	0.0	183.4	0.0	0.0	0.0	0.0	72.1	122.3	19.4	0.0	0.0	0.0	System Internal (in ^ 2) = = >		79837.91
Schedule	10S	--	10S	--	--	--	--	10S	10S	10S	--	--	--	20.5	421.5	4.9%
Material/Type	SS	--	SS	--	--	--	--	SS	SS	SS	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	25.4	--	41.4	--	--	--	--	122.9	160.6	239.7	--	--	--			
Vent System Piping (VL)	72.1	92.4	67.7	0.0	127.7	12.2	3.0	0.0	15.9	51.6	0.0	0.0	0.0	System Internal (in ^ 2) = = >		41353.58
Schedule	40	40	40	--	40	40	40	--	40	40	--	--	--	N/A	442.6	0.0%
Material/Type	CS	CS	CS	--	CS	CS	CS	--	CS	CS	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	23.4	31.1	39.5	--	60.7	77.9	93.1	--	151.8	228.6	--	--	--			
Waste Liquid Piping (WL)	0.0	0.0	0.0	0.0	74.0	40.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	System Internal (in ^ 2) = = >		30430.34
Schedule	--	--	--	--	40	40	--	--	--	--	--	--	--	27.0	114.2	23.6%
Material/Type	--	--	--	--	CS	CS	--	--	--	--	--	--	--			
Internal Surface Area ((in ^ 2)/ft)	--	--	--	--	60.7	77.9	--	--	--	--	--	--	--			
														System Internal (in ^ 2) = = >		7624.02
PIPE FOOTAGE, EACH SIZE = >	1097.4	1678.2	1342.7	105.7	1129.9	432.6	319.2	571.2	331.1	124.4	32.6	35.3	23.2	No. feet INSULATED **1921.6**	PIPING TOTAL (in ft) **7223.7**	
PIPING WEIGHT (lbs/ft) (Assuming SCHDL 40, see Note) = >	0.851	1.131	1.679	2.273	2.718	3.653	5.793	7.576	10.79	18.97	40.48	125.5	150.7			
PIPING Volume (ft ^ 3) = = = = = >	4.22	10.09	12.66	1.59	22.25	13.31	14.39	38.16	36.57	29.78	20.67	31.30	24.80	**TOTAL = = >**	**259.8 ft ^ 3**	
PIPING WEIGHT (lbs) = = = = = >	933.9	1898.0	2254.4	240.3	3071.1	1580.3	1849.1	4327.4	3572.6	2359.9	1327.7	4430.2	3496.2	**TOTAL = = >**	**31341.0 lbs**	
															15.7 tons	

Note For weight estimate, pipe less than 10" in diameter is assumed to be SCHDL 40.

PIPING SYSTEM INTERNAL SURFACE AREA = = > **450705 in ^ 2**

APPENDIX F

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	71	95	0001	CB	5/22/95	13:35	Concrete Outside CV - under Personnel hatch (airlock)	CV Locker #6		CTI	~6" core, 2.75 lb.
SX8	72	95	0002	CB	5/22/95	13:50	Concrete Outside CV - West side Shield Wall	CV Locker #6		CTI	Section (Slice 2) used as "blank" core ~6" core, 3.0 lb.
SX8	71	95	0003	CB	5/22/95	14:05	Concrete Outside CV - Northeast Shield Wall Ledge	CV Locker #6		CTI	~6" core, 2.75 lb.
SX8	71	95	0004	CB	5/22/95	14:35	Concrete Pad Outside CV - (former) Plant HEPA Pad	CV Locker #6		CTI	~6" core, 3.12 lb.
SX8	15	95	0005	SS	5/17/95	15:30	CV Sump Sludge (basement)	N/A	6/26/95	RC	17.1 grams - sent to B&W
SX8	15	95	0006	SD	5/17/95	15:45	Instrument Rack #1 - West rack, adj. to Discharge Tank (695' el.)	N/A	6/26/95	RC	59.1 g. - sent to B&W
SX8	15	95	0007	SD	5/17/95	16:00	Instrument Rack #2 - East rack, SE of CV Sump (695' el.)	N/A	6/26/95	RC	56.5g. - sent to B&W
SX8	41	95	0008	CB	5/23/95	8:45	CV Concrete Floor (818') - West side	CV Locker #6		CTI	2 lb. 2 oz., 4.75 inch
SX8	41	95	0009	CB	5/23/95	9:05	CV Concrete Floor (818') several feet East of #0008 (above)	CV Locker #6		CTI	2 lb. 2 oz., 4.62 inch
SX8	15	95	0010	PS	5/17/95	13:00	Sump/Discharge Tank	N/A	6/26/95	MH	4 lb. 8 oz., B&W
SX8	25	95	0011	PS	5/18/95	10:00	Demin Water Line	N/A	6/26/95	MH	~6" core, 2 lb. 4 oz., B&W
SX8	41	95	0012	CB	5/23/95	9:35	CV Concrete Floor Plug (818')	CV Locker #6		CTI	2 lb. 14oz., 5.75 inch
SX8	42	95	0013	CB	5/23/95	13:30	CV Concrete wall between 818' & 812' - East side	CV Locker #6		CTI	2 lb. 12oz., 5.62 inch
SX8	42	95	0014	CB	5/23/95	13:50	CV Concrete wall between 818' & 812' - East side by steps	CV Locker #6		CTI	2 lb. 14oz., 5.75 inch
SX8	42	95	0015	CB	5/23/95	14:10	CV Concrete wall between 818' & 812' - North side	CV Locker #6		CTI	2 lb. 12oz., 5.88 inch
SX8	41	95	0016	CB	5/23/95	15:30	CV Concrete floor (812' el.) - West side, under platform	CV Locker #6		CTI	~6" core, 2 lb. 8oz.
SX8	41	95	0017	CB	5/23/95	15:15	CV Concrete floor (812' el.) - NE of Rx Cavity	CV Locker #6		CTI	2 lb. 14oz., 5.75 inch

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	41	95	0018	CB	5/23/95	15:00	CV Concrete floor (812') - W. side under Pltfm. by outer wall	CV Locker #6		CTI	3 lb., 6.25 inch
SX8	32	95	0019	CB	5/23/95	15:45	CV Concrete Wall	CV Locker #6		CTI	4' through-wall core, ~800' el. (above Storage Well water line)
SX8	32	95	0020	CB	5/24/95	9:00	CV Outer Concrete Wall	CV Locker #6		CTI	~6" core, 3 lb. 2 oz. (~7' above 795' el.)
SX8	32	95	0021	CB	5/24/95	10:30	CV Concrete	CV Locker #6		CTI	4' through-wall core, ~792' el. (below Storage Well water line)
SX8	32	95	0022	CB	5/24/95	11:00	CV Concrete - North Wall	CV Locker #6		CTI	2 lb. 14 oz., 5.62 inch (~784' el.)
SX8	32	95	0023	CB	5/24/95	13:00	CV Concrete - North Wall	CV Locker #6		CTI	3 lb., 5.88 inch (~784' el.)
SX8	12	95	0024	CB	5/24/95	13:45	CV Concrete - Rod Room WNW Wall by Air Handling Unit	CV Locker #6		CTI	3 lb., 5.88 inch
SX8	11	95	0025	CB	5/24/95	14:30	CV Concrete Floor - Rod Room	CV Locker #6		CTI	Directly under Rx Vessel. Through CV floor, ~16" core (18" cut was planned)
SX8	11	95	0026	CB	5/24/95	15:00	CV Concrete Floor @ SE corner of Sump	CV Locker #6		CTI	~6" core, 2 lb. 10 oz.
SX8	11	95	0027	CB	5/25/95	7:30	CV Concrete Floor between Drain Pumps	CV Locker #6		CTI	3 lb., 5.88 inch
SX8	11	95	0028	CB	5/25/95	8:15	CV Concrete Ledge West of Drain Tank	CV Locker #6		CTI	3 lb. 4 oz., 6.5 inch
SX8	12	95	0029	CB	5/25/95	9:15	CV Concrete (outer) Wall West of Drain tank	CV Locker #6		CTI	~6" core, 3 lb.
SX8	12	95	0030	CB	8/8/95	10:30	CV Concrete (outer) Wall - South of Filter Cubicle	CV Locker #6		DS/CTI	~6" core
SX8	22	95	0031	CB	5/25/95	15:30	CV Concrete Wall ~10' East of Hot Leg Pipe Penetration	CV Locker #6		CTI	~5' core
SX8	21	95	0032	CB	8/9/95	10:00	CV Concrete floor under Steam Generator (779' 8" el.)	CV Locker #6		WS/CTI	~6" core
SX8	21	95	0033	CB	8/9/95	10:20	CV Concrete floor under Steam Generator (779' 8" el.)	CV Locker #6		DS/CTI	~6" core
SX8	22	95	0034	CB	8/9/95	10:35	CV Concrete Wall East of Regenerative Heat Exchanger	CV Locker #6		DS/CTI	~6" core

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	22	95	0035	CB	8/9/95	10:50	CV Concrete Wall NW of S/G	CV Locker #6		CTI	~6" core
SX8	22	95	0036	CB	8/9/95	11:30	CV Concrete Wall adjacent to Hot Leg	CV Locker #6		WS/CTI	~5' through-wall core
SX8	22	95	0037	CB	8/9/95	13:00	CV Concrete Wall ~8' 3" East of Hot Leg	CV Locker #6		WS/CTI	~5' through-wall core near centerline of Reactor (~3' above water line)
SX8	25	95	0038	AP	6/5/95	10:00	Primary Compart. Air Handler (Furnace filter sample)	CV Locker #6	6/26/95	MH	Item #1, SWI #94-003 - sent to B&W
SX8	35	95	0039	AP	6/5/95	10:20	Aux. Air Handler (Furnace filter sample)	CV Locker #6	6/26/95	MH	Sample sent to B&W
SX8	25	95	0040	PS	6/6/95	15:30	Purification System Pipe sample	CV Locker #6	6/26/95	MH	Item #6, SWI #94-003 - 3.12 lb., sample sent to B&W
SX8	25	95	0041	PS	6/6/95	16:00	PZR Spray Line Pipe sample	CV Locker #6	6/26/95	MH	Item #3, SWI #94-003 - 1.75 lb., sample sent to B&W
SX8	25	95	0042	PS	6/7/95	14:00	Shutdown Cooling System Pipe sample	CV Locker #6	6/26/95	TL	Item #7, SWI #94-003 - 8.25 lb., sample sent to B&W
SX8	25	95	0043	PS	6/7/95	10:00	PZR Surge Line Pipe sample	CV Locker #6	6/26/95	TL	Item #2, SWI #94-003 - 15.25 lb., sample sent to B&W
SX8	25	95	0044	PS	6/7/95	14:00	PZR Relief (to Discharge Tank) Pipe sample	CV Locker #6	6/26/95	WS	Item #4, SWI #94-003 - 11 lb., sample sent to B&W
SX8	35	95	0045	PS	5/16/95	10:00	Component Cooling Water System Pipe sample	CV Locker #6	6/26/95	WS	Table B-4 of SCP, Test cut - 7.75 lb., sample sent to B&W
SX8	15	95	0046	PS	6/8/95	14:15	Storage Well System Pipe sample	CV Locker #6	6/26/95	RC	Item #9, SWI #94-003 - 5.75 lb., sample sent to B&W
SX8	15	95	0047	PS	6/8/95	14:45	Vent & Drain Header Pipe sample	CV Locker #6	6/26/95	RC	Item #13, SWI #94-003 - 7.75 lb., sample sent to B&W
SX8	85	95	0048	SD	5/23/95	13:30	Septic Tank 'A' Sediment	CV Locker #6	6/26/95	AP	sample sent to B&W
SX8	85	95	0049	SD	5/23/95	13:45	Septic Tank 'B' Sediment	CV Locker #6	6/26/95	AP	sample sent to B&W
SX8	15	95	0050	AP	5/13/95	10:15	Scraped from inside Rod Room Air handler	CV Locker #6	6/26/95	TL	Rod Rm Air Handler, sample sent to B&W
SX8	61	95	0051	SM	6/20/95	15:30	Smears	CV Locker #6	6/26/95	RC	Area 6 - smears/sent to Teledyne

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	21	95	0052	SM	6/20/95	15:00	Smears	CV Locker #6	6/26/95	WS	Area 2 - smears/Sent to Teledyne
SX8	65	95	0053	PS	6/21/95	14:30	Safety Injection System Pipe Sample	B & W	9/12/95	MH	shipped to B&W Item #8, SWI #94-003
SX8	15	95	0054	PS	6/22/95	13:30	Resin Sluice Line Pipe Sample	CV Locker #6		WS	Item #10, SWI #94-003
SX8	86	95	0055	SD	6/22/95	9:00	Chlorinator Pump Well	CV Locker #6		DB	
SX8	61	95	0056	CB	8/14/95	15:00	Storage Well Floor Core Bore	CV Locker #6		TL/CTI	~6" core - area where Lining separated
SX8	61	95	0057	CB	8/14/95	15:00	Storage Well Floor Core Bore	CV Locker #6		CTI	~6" core - area where Lining intact
SX8	62	95	0058	CB	8/14/95	15:00	Storage Well NE Wall Core Bore	CV Locker #6		TL/CTI	~6" core
SX8	62	95	0059	CB	8/14/95	15:00	Storage Well NE Wall Core Bore	CV Locker #6		CTI	~6" core
SX8	62	95	0060	CB	8/14/95	15:00	West Storage Well Wall Core	CV Locker #6		CTI	~6" core, East of and below Reactor
SX8	62	95	0061	CB	8/14/95	15:00	West Storage Well Wall Core	CV Locker #6		CTI	~6" core, East of and below Reactor
SX8	62	95	0062	CB	8/15/95	10:00	Rx Cavity South Wall Core Bore	CV		CTI	~6" core
SX8	62	95	0063	CB	8/15/95	10:00	Rx Cavity South Wall Core Bore	CV		CTI	~6" core
SX8	62	95	0064	CB	8/15/95	10:00	Shield Wall West of Reactor - Core Bore	CV		CTI	~6" core
SX8	62	95	0065	CB	8/15/95	10:00	Rx Cavity Core Bore	CV		CTI	~6" core
SX8	61	95	0066	CB	8/15/95	10:00	Rx Cavity Core Bore	CV		CTI	~6" core (add-on sample)
SX8	--	95	0067	---	N/A	N/A	~~Rx Cavity Core Bore~~	N/A	N/A	N/A	Not Performed per Structural Engineering Analysis ~~Special Joint~~
SX8	15	95	0068	SD	6/27/95	14:00	Discharge Tank Sediment	B & W	9/12/95	RC	Item #5 SWI #94-003 - 2 samples (#1=125 ml/#2=500ml) shipped to B&W

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	65	95	0069	PS	7/5/95	14:00	Safety Injection	B & W	9/12/95	WS	Table B-6 of SCP
SX8	25	95	0070	ST	7/5/95	17:00	S/G Secondary Side	CV Locker #6		RC	Table B-10 of SCP - Handhole Cover
SX8	25	95	0071	SD	7/5/95	16:45	S/G Secondary Side	B & W	9/12/95	RC	shipped to B&W Table B-10 of SCP
SX8	16	95	0072	PB	7/12/95	11:40	Lead Scrapings	CV Locker #6		WS	~776' above M/U Filter Cubicle
SX8	46	95	0073	PB	7/12/95	11:55	Lead Scrapings	CV Locker #6		WS	812' North
SX8	26	95	0074	PB	7/12/95	11:30	Lead Scrapings	CV Locker #6		RC	795' Bricks
SX8	26	95	0075	PB	7/12/95	11:30	Lead Scrapings	CV Locker #6		RC	781' Sheets on NRHX
SX8	36	95	0076	PB	7/12/95	11:30	Lead Scrapings	CV Locker #6		RC	795' bricks South of open crane hatch
SX8	36	95	0077	PB	7/12/95	11:30	Lead Scrapings	CV Locker #6		RC	793' bricks under Closed Cooling HX
SX8	36	95	0078	PB	7/12/95	11:30	Lead Scrapings	CV Locker #6		RC	781' bricks South of crane hatch, around Reg. valve
SX8	36	95	0079	PB	7/12/95	11:30	Lead Scrapings	CV Locker #6		RC	795' sheets East of crane hatch
SX8	86	95	0080	SD	7/18/95	13:45	Septic Tank 'A' Sediment	CV Locker #6		GT	1000 ml. Marinelli
SX8	86	95	0081	SD	7/18/95	14:15	Septic Tank 'B' Sediment	CV Locker #6		GT	1000 ml. Marinelli
SX8	86	95	0082	SD	7/18/95	14:40	Chlorinator Pump Well Sediment	CV Locker #6		GT	1000 ml. Marinelli
SX8	C6	95	0083	PC	7/20/95	14:30	Paint Chip Composite Sample	B & W	9/12/95	WS/DS	Composite Sample from numerous locations throughout CV (125 ml. bottle)
SX8	C6	95	0084	PC	7/20/95	14:30	Paint Chip Composite Sample	B & W	9/12/95	WS/DS	Composite Sample from numerous locations throughout CV (125 ml. bottle)
SX8	35	95	0085	PS	7/28/95	10:00	Component Cooling River H_2O Pipe Section	B & W	9/12/95	RC/WS	Table B-4 of SCP

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	25	95	0086	PS	7/28/95	10:15	S/G Bottom Blowdown Line	B & W	9/12/95	RC/WS	Item #2, Table B-10 of SCP - 2" pipe section
SX8	25	95	0087	PS	7/28/95	10:30	S/G Surface Blowdown Line	B & W	9/12/95	RC/WS	Item #1, Table B-10 of SCP - 1 1/2" pipe section
SX8	86	95	0088	SD	8/1/95	10:10	Weir - East side Sediment	CV Locker #6		GT/RC	
SX8	86	95	0089	SD	8/1/95	10:20	Weir - West side Sediment	CV Locker #6		GT/RC	
SX8	01	95	0090	CB	8/7/95	10:00	Saxton IGA Supermarket - front sidewalk West	Radcon Trlr		RC/GT	Background determination core
SX8	01	95	0091	CB	8/7/95	10:15	Saxton IGA Supermarket - front sidewalk East	Radcon Trlr		RC/GT	Background determination core
SX8	01	95	0092	CB	8/7/95	10:45	Tussey Mtn. High School - front sidewalk West	Radcon Trlr		RC/GT	Background determination core
SX8	01	95	0093	CB	8/7/95	11:15	Tussey Mtn. High School - front sidewalk East	Radcon Trlr		RC/GT	Background determination core
SX8	01	95	0094	SM	8/7/95	11:15	Smears	ERL (Hinkel)	8/7/95	RC	Pre-drill smears for samples #0090-0093
SX8	01	95	0095	CB	8/7/95	13:00	Cement slab #1, SE area of PENELEC Property	Radcon Trlr		TL	Background determination core
SX8	01	95	0096	CB	8/7/95	13:15	Cement slab #2, SE area of PENELEC Property	Radcon Trlr		TL	Background determination core
SX8	01	95	0097	CB	8/7/95	13:40	Westinghouse A/S Station Pad NE PENELEC Property	Radcon Trlr		TL	Background determination core
SX8	01	95	0098	CB	8/7/95	14:00	PENELEC Line Dept. Building Sidewalk - North	Radcon Trlr		TL	Background determination core
SX8	01	95	0099	CB	8/7/95	14:15	PENELEC Line Dept. Building Sidewalk - South	Radcon Trlr		TL	Background determination core
SX8	01	95	0100	SM	8/7/95	14:15	Smears	Radcon Trlr		TL	Pre-drill smears for samples #0095-0099
SX8	81	95	0101	CB	8/8/95	10:30	Weir Floor - West side	CV Locker #6		WS/CTI	~6" core
SX8	82	95	0102	CB	8/8/95	11:00	Weir - Divider Wall	CV Locker #6		WS/CTI	Horizontal thru-wall core

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	52	95	0103	CB	8/8/95	9:00	Tunnel - Wall around East Entrance Hatch	Radcon Trailer		WS/CTI	
SX8	53	95	0104	CB	8/8/95	9:30	Tunnel - Ceiling South of East Entrance Hatch	CV Locker #6		WS/CTI	
SX8	52	95	0105	CB	8/8/95	10:00	Tunnel - South Wall, South of East entrance Hatch	CV Locker #6		WS/CTI	
SX8	01	95	0106	CB	8/8/95	12:45	Westinghouse Pad Cement Core Bore samples	Radcon Trlr		WS/CTI	
SX8	01	95	0107	CB	8/8/95	13:00	Westinghouse Pad Cement Core Bore samples	Radcon Trlr		WS/CTI	
SX8	72	95	0108	CB	8/8/95	8:30	CV Outer Concrete Shield Wall NNW side	Radcon Trlr		TL/CTI	
SX8	35	95	0109	AP	7/31/95	10:00	CV Operating Floor Air handler	CV Locker #6		RC	Unit below 812' grating
SX8	25	95	0110	SD	7/31/95	17:00	S/G - back of Cold Leg Manway	B & W	9/12/95	WS	shipped to B&W Item #1, SWI #94-003 - scraping sample
SX8	25	95	0111	SM	7/26/95	11:30	S/G Primary side Bowl - Cold Leg	B & W	9/12/95	RC	shipped to B&W Item #1, SWI #94-003 - smears
SX8	25	95	0112	LQ	7/26/95	11:30	Liquid collected during Cold Leg manway removal	CV Locker #6		RC	Item #1, SWI #94-003 - ~100 ml. spray mist water collected during manway
SX8	35	95	0113	SD	7/20/95	15:00	Component Cooling Water System Surge Tank	CV		RC	to be shipped
SX8	66	95	0114	PB	8/16/95	10:00	Cavity Lead Scrapings	CV Locker #6		RC	
SX8	66	95	0115	RS	7/7/95	14:00	Storage Well resin	B & W	9/12/95	DS	shipped to B&W #1 - ~125 ML. #2 - ~500 ml.
SX8	66	95	0116	ST	8/16/95	10:00	Steel Components from adjacent to Reactor	B & W	9/12/95	RC	shipped to B&W Irradiation specimens
SX8	45	95	0117	CP	7/6/95	10:00	Lighting Ballast	Radcon Trailer		RC	To be sent to PENELEC for PCB analysis
SX8	65	95	0118	PS	8/2/95	10:30	MAKEUP DEMIN PIPING	B & W	9/12/95	TL	shipped to B&W From Bag - #10
SX8		95	0119	CB	9/11/95	13:00	Storage Well Concrete Core - high Flux area North of Reactor	CV Locker #6		WS	

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	41	95	0120	CB	8/14/95	10:30	CV Concrete - Cavity Shield Block #1	CV Locker #7		CTI	~ 5' core from the Western-most Reactor Cavity Shield Block
SX8	41	95	0121	CB	8/10/95	11:00	CV Concrete - Cavity Shield Block #2	CV Locker #7		CTI	~ 5' core from the second Reactor Cavity Shield Block from the West side
SX8	41	95	0122	CB	8/14/95	15:30	CV Concrete - Cavity Shield Block #3	CV Locker #7		CTI	~ 5' core from third Reactor Cavity Shield Block from the East side
SX8	41	95	0123	CB	8/14/95	16:00	CV Concrete - Cavity Shield Block #4	CV Locker #7		CTI	~ 5' core from the second Reactor cavity Shield Block from the East side
SX8	41	95	0124	CB	8/10/95	13:35	CV Concrete - Cavity Shield Block #5	CV Locker #7		CTI	~ 5' core from the Eastern-most Reactor Cavity Shield Block
SX8	41	95	0125	CB	8/14/95	11:30	CV Concrete - Cavity Shield Block #6	CV Locker #7		CTI	5' core from the top Reactor Cavity Shield Block (now stacked on 818' el.)
SX8	63	95	0126	SM	9/20/95	8:30	Smears from bottom of Rx Cavity Shield Plugs	CV Locker #6		WS	
SX8	01	95	0127	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-01-95-0091-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	11	95	0128	CB	9/26/95	12:00	(4) Slices #1 & 2 from SX8-11-95-0026/0027-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	21	95	0129	CB	9/26/95	12:00	(4) Slices #1 & 2 from SX8-21-95-0032/0033-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	32	95	0130	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-32-95-0021-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	32	95	0131	CB	9/26/95	12:00	(2) Slices #19 & 20 from SX8-32-95-0021-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	32	95	0132	CB	9/26/95	12:00	(1) Slice #15 from SX8-32-95-0021-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	41	95	0133	CB	9/26/95	12:00	(6) Slices #1 & 2 from SX8-41-95-0016/0017/0018-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	52	95	0134	CB	9/26/95	12:00	(4) Slices #1, 2, 8, & 9 from SX8-52-95-0103-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	61	95	0135	CB	9/26/95	12:00	(4) Slices #1, 2 from SX8-61-95-0056/0057-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	61	95	0136	CB	9/26/95	12:00	(2)Slices: #9 - SX8-61-95-0056-CB #7 - SX8-61-95-0057-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	11	95	0137	CB	9/26/95	12:00	(1) Slice #1 from SX8-11-95-0025-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	11	95	0138	CB	9/26/95	12:00	(1) Slice #2 from SX8-11-95-0025-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	11	95	0139	CB	9/26/95	12:00	(1) Slice #4 from SX8-11-95-0025-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	11	95	0140	CB	9/26/95	12:00	(1) Slice #9 from SX8-11-95-0025-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	22	95	0141	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-22-95-0031-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	22	95	0142	CB	9/26/95	12:00	(2) Slices #19 & 20 from SX8-22-95-0031-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	22	95	0143	CB	9/26/95	12:00	(1) Slice #11 from SX8-22-95-0031-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	22	95	0144	CB	9/26/95	12:00	(1) Slice #13 from SX8-22-95-0031-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	22	95	0145	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-22-95-0037-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	22	95	0146	CB	9/26/95	12:00	(2) Slices #19 & 20 from SX8-22-95-0037-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	22	95	0147	CB	9/26/95	12:00	(1) Slice #12 from SX8-22-95-0037-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	22	95	0148	CB	9/26/95	12:00	(1) Slice #16 from SX8-22-95-0037-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	41	95	0149	CB	9/26/95	12:00	(1) Slice #15 from SX8-41-95-0125-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	41	95	0150	CB	9/26/95	12:00	(1) Slice #14 from SX8-41-95-0125-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	41	95	0151	CB	9/26/95	12:00	(1) Slice #9 from SX8-41-95-0125-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	41	95	0152	CB	9/26/95	12:00	(1) Slice #5 from SX8-41-95-0125-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	61	95	0153	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-61-95-0066-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis

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SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	61	95	0154	CB	9/26/95	12:00	(1) Slice #6 from SX8-61-95-0066-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0155	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-62-95-0062-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0156	CB	9/26/95	12:00	(1) Slice #7 from SX8-62-95-0062-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0157	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-62-95-0063-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0158	CB	9/26/95	12:00	(1) Slice #5 from SX8-62-95-0063-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0159	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-62-95-0065-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0160	CB	9/26/95	12:00	(1) Slice #6 from SX8-62-95-0065-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0161	CB	9/26/95	12:00	(2) Slices #1 & 2 from SX8-62-95-0119-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0162	CB	9/26/95	12:00	(1) Slice #6 from SX8-62-95-0119-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0163	CB	9/26/95	12:00	(1) Slice #9 from SX8-62-95-0119-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	62	95	0164	CB	9/26/95	12:00	(1) Slice #13 from SX8-62-95-0119-CB	B & W	10/4/95	GET	Composite sample to be sent to B&W for further (destructive) analysis
SX8	65	95	0165	SM	10/12/95	13:00	Smear (swab) Inside Rx Vessel	B & W	11/9/95	RCC	shipped to B&W
SX8	62	95	0166	SM	10/12/95	13:00	Reactor Cavity Smears	CV Locker #6		RCC	
SX8	56	95	0167	SD	10/17/95	10:00	CV Tunnel Sludge Sample	B & W	11/9/95	DS	250 ml.
SX8	15	95	0168	SD	10/19/95	9:00	CV Bsmt. - Condensate Tank	B & W	11/9/95	WS	tank sediment
SX8	15	95	0169	SM	10/19/95	9:00	CV Bsmt. - Condensate Pump	CV Locker #6		WS	tape smear of pump internals
SX8	81	95	0170	SD	11/21/95	11:00	Septic tank 'A' Sediment	RadCon Trailer		MH	2 samples (split) - for SEG

SNEC CHARACTERIZATION / DECOMMISSIONING SAMPLE LOG

SURVEY AREA		YEAR	SEQUENCE NUMBER	SAMPLE TYPE	SAMPLE DATE	SAMPLE TIME	SAMPLE DESCRIPTION	STORAGE LOCATION	TRANSFER DATE	SAMPLER INITIALS	COMMENTS OR TRANSFER LOCATION
SX8	06	95	0171	RS	11/21/95	11:10	Resin Liner resin sample - from SE Penelec Garage	RadCon Trailer		MH	2 samples (split) - for SEG
SX8	11	95	0172	WA	11/9/95	14:00	1Liter H_2O sample from Core Bore # 0025 (CV hole/breech) in Rod Rm.	RadCon Trailer		DS	1Liter sample from 5 gal. carboy
SX8		95	0173								
SX8		95	0174								
SX8		95	0175								
SX8		95	0176								
SX8		95	0177								
SX8		95	0178								
SX8		95	0179								
SX8		95	0180								
SX8		95	0181								
SX8		95	0182								
SX8		95	0183								
SX8		95	0184								
SX8		95	0185								
SX8		95	0186								
SX8		95	0187								