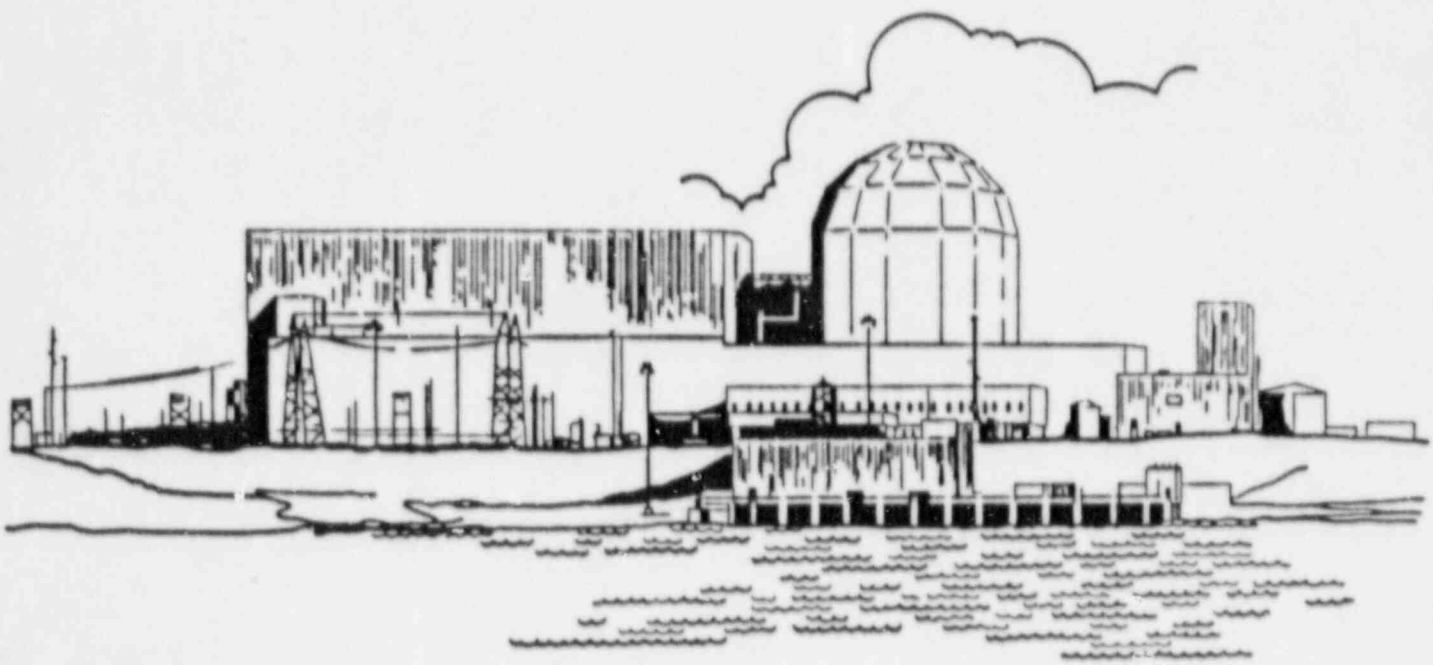
Illinois Power Company
Clinton Power Station

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

July 1, 1987 - December 31, 1987



RADIOLOGICAL
PROTECTION
DEPARTMENT

ILLINOIS POWER COMPANY

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1.0 INTRODUCTION

The Semiannual Radioactive Effluent Release Report for July 1, 1987 through December 31, 1987, is submitted in accordance with Section 6.9.1.7 of Appendix "A" (Technical Specifications) to License No. NPF-62. This report was prepared in accordance with Regulatory Guide 1.21, as applicable to the Clinton Power Station (CPS) Technical Specifications. Portions of the Technical Specifications applicable to this report, Sections 3/4.3.7.11, 3/4.3.7.12, 3/4.11, 3/4.12, 6.9.1.7, 6.13.2, 6.14.2, and 6.15.1, are herein referred to collectively as the Clinton Power Station Technical Specifications.

All liquid and gaseous radioactive releases to the environment during this reporting period were sampled and analyzed and monitored in accordance with the requirements of the CPS Technical Specifications. Measurable quantities of radioactivity were detected in the liquid and gaseous releases during the third and fourth quarters of 1987. All of the effluent releases were well within the concentration and release limits specified in the Clinton Power Station Technical Specifications.

For purposes of this report, any sample with measurable radioactivity that was greater than a Minimum Detectable Activity (MDA) was considered significant. If the measured radioactivity was not greater than the MDA value, then zero activity and no dose was reported. An MDA value is the minimum detectable amount of radioactivity in a sample above background levels at a given confidence level. All effluent sample MDA values for this report were well below the Lower Limit of Detection (LLD) required by Technical Specifications Table 4.11.1-1 and Table 4.11.2-1. Technical Specifications Table 4.11.1-1 and Table 4.11.2-1 defines LLD as an *a priori* (before the fact) detection limit representing the minimum capability of the measurement system.

Calculations and other terms utilized in this report are those outlined in the CPS Offsite Dose Calculation Manual Rev. 2 (ODCM).

2.0 GASEOUS EFFLUENTS

2.1 Regulatory Limits for Gaseous Effluents

Technical Specification 3/4.11.2 describes the requirements for release of radioactive gaseous effluents to areas at or beyond the site boundary. Concentrations of radioactive materials in gaseous effluents are limited by quarter/annual dose and dose rate values. These values limit the concentrations of radioactive materials in areas at or beyond the site boundary to less than those specified in Title 10 of the Code of Federal Regulation, Part 20 (10CFR20), Appendix B, Table II, Column 1. Additionally they limit the amount released to that which could deliver the dose objectives as specified in 10CFR50, Appendix I, Sections III.A and IV.A. The following is a list of the Technical Specification limits for radioactive gaseous effluents.

2.1.1 Technical Specification Dose Rate Limits - Gaseous Effluents

Fission and Activation Gases - Effluent dose rate limit at any time for noble gases to areas at or beyond the site boundary shall be such that:

500 mrem/year-to the total body

3000 mrem/year-to the skin

Radioiodines and Particulates - Effluent dose rate limit for the sampling period for all radioiodines, tritium and radioactive materials in particulate form with half-lives greater than 8 days shall be such that:

1500 mrem/year to any organ

2.1.2 Technical Specification Cumulative Dose Limits - Gaseous Effluents

Fission and Activation Gases - The dose in air from noble gases in gaseous effluents to areas at or beyond the site boundary shall be such that:

5 mrad/quarter - gamma air dose

10 mrad/year - gamma air dose

10 mrad/quarter - beta air dose

20 mrad/year - beta air dose

Radioiodines and Particulates - The dose from tritium, radioiodines and radioactive material in particulate form with half-lives greater than 8 days in gaseous effluents shall be such that:

7.5 mrem/quarter to any organ

15 mrem/year - to any organ

2.2 Maximum Permissible Concentrations

The Maximum Permissible Concentrations (MPC) for gaseous effluents are specified in 10CFR20, Appendix B, Table II, Column 1. Clinton Technical Specifications establish requirements to limit the release rate of effluents such that discharges of gaseous radioactive material will not result in the exposure of a MEMBER OF THE PUBLIC in an UNRESTRICTED AREA either within or outside the SITE BOUNDARY to average annual concentrations exceeding MPC limits.

The MPCs of 10CFR20 are not utilized directly for limiting gaseous effluents. (See Section 2.1.1, 10CFR20 Limits - Gaseous Effluents).

2.3 Measurements and Approximations of Total Radioactivity

Gaseous release at Clinton Power Station was confined to two release points: the Heating, Ventilation and Air Condition Stack (HVAC Stack) and the Standby Gas Treatment System Stack (SGTS Stack). Both HVAC and SGTS stacks were continuously monitored for gaseous radioactive material and each has an integrating type sample collection device which concentrates particulates and iodine. These release points also have flow measurement devices which continuously record the flow rate of gaseous effluent released. In addition to the gaseous, particulate and iodine release measurements, tritium, gross alpha, and gaseous isotopic measurements of each effluent stream are conducted according to Technical Specification Table 4.11.2-1 requirements. At the end of each semi-annual period a summary of the gaseous release for each quarterly period is compiled as described below.

2.3.1 Fission and Activation Gas

The total amount of activity, in curies, was determined for each individual release and then summed for all releases in the quarter. Analysis of specific radionuclides in effluent samples taken at the release points were utilized with the corresponding system flow rates to determine radionuclide composition and concentration of effluents. These results along with the volume of radioactive discharges were used to determine the cumulative amounts of material released.

2.3.2 Radioiodine Releases

Iodine releases were determined at least weekly for I-131 and I-133 for each release point. Sample collection media were analyzed using gamma spectroscopy to identify the radioiodines and quantity released. These results along with sample and effluent release volumes were used to determine cumulative amounts released.

2.3.3 Particulate Releases

Particulate releases were determined at least weekly for each release point. After each calendar quarter the particulate filters from each release point were combined and assayed for Strontium isotopes (Sr-89, Sr-90) by chemical separation techniques. Since sample flows and discharge stack flows are essentially constant over each monthly period, the filters from each release point were dissolved together. Decay corrections were made back to the middle of the quarterly collection period.

2.3.4 Gross Alpha Release

The gross alpha activity released was analyzed each month by counting the particulate filters for gross alpha activity in a proportional counter. These results were recorded on a data sheet and the activity was used to determine total activity released each month.

2.3.5 Tritium Release

Tritium samples were obtained at least monthly from each release point by passing a known volume of the sample stream through a gas washer containing a known quantity of demineralized water. The tritium samples were distilled and analyzed by liquid scintillation. From the measured tritium concentration, the volume of sample, the tritium collection efficiency, and the stack exhaust flow rates, the tritium release was calculated for each release point. The quarterly release summary was generated from the monthly release calculations.

2.4 Gaseous Effluent Releases

2.4.1 All gaseous effluents were continuously released via effluent stacks. There were no batch or abnormal releases during this report period. Summaries of the radionuclide total curie activities and average release rates are reported in Table 1A. The activity of specific radionuclides measured in gaseous effluents is reported in Table 1B.

As specified in the Illinois Power Company Offsite Dose Calculation Manual, the site specific annual average dispersion factors are calculated as Mixed Mode. In utilizing the Regulatory Guide 1.21 format for gaseous releases, all gaseous releases were considered as mixed mode. Mixed mode represents a combination of the ground level and elevated level release criteria as described in Section 7.0 of the ODCM.

2.4.2 Estimation of Errors

The estimate of overall error for gaseous effluents includes applicable random and systematic components of individual errors due to measurement of ventilation flow rates, measurement of sample, flow rates, non-steady state conditions, and errors involved in sample preparation and counting. The overall error for gaseous effluents is estimated to be 75%.

3.0 LIQUID EFFLUENTS

3.1 Regulatory Limits for Liquid Effluents

Technical Specifications 3.11.1.1. and 3.11.1.2 establish concentration and dose limits to a member of the public from radioactive material released in liquid effluents to the UNRESTRICTED AREA.

3.1.1 Technical Specification Concentration Limits - Liquid Effluents

Technical Specification 3.11.1.1 requires that the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS shall be limited to the concentrations specified in 10CFR20, Appendix B, Table II, Column 2 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2E-4 microcuries/ml total activity.

3.1.2 Technical Specification Cumulative Dose Limits - Liquid Effluents

CPS RETS 3.11.1.2 requires that the cumulative dose contributions to an individual from radioactive material in liquid effluents released to the UNRESTRICTED AREA be determined at least once per 31 days. The applicable dose limits are:

1.5 mrem/quarter - to the total body

5.0 mrem/quarter - to any organ

3.0 mrem/year - to the total body

10.0 mrem/year - to any organ

3.2 Maximum Permissible Concentrations

The Maximum Permissible Concentrations (MPC) of radioactive material in liquid effluents are limited by Technical Specifications to those values as specified by 10CFR20, Appendix B, Table II, Column 2. The MPC chosen was the most conservative value of (whether soluble or insoluble) MPC for each isotope.

3.3 Measurements and Approximations of Total Radioactivity

Representative pre-release grab samples were obtained and analyzed according to the Technical Specification Table 4.11.1-1 requirements. Isotopic analyses were performed using gamma spectroscopy. The results then are utilized with the actual discharge and dilution flows to calculate the total amount of material released and the corresponding dose to man. Aliquots of each grab sample, proportional to the waste volume released, were composited in accordance with Technical Specification 4.11.1-1. Strontium determinations were then made by performing a chemical separation and counting the separated strontium using a gas flow proportional counter. Tritium and Iron-55 concentrations were determined by using liquid scintillation techniques. The concentrations of dissolved and entrained gases were determined by gamma-ray spectroscopy.

The concentrations of composited isotopes and the volumes of the releases associated with these composites establish the proportional relationships that are then utilized for calculating the total activity released for these isotopes.

3.4 Liquid Effluent Releases

Summaries of the radionuclide total curie activities, average diluted concentrations, and concentrations as a percentage of MPC are reported in Table 2A and 2B. There were no continuous or abnormal releases of radioactive material in liquid effluents this report period.

3.4.1 Batch Releases

LIQUID RELEASES

	3rd Quarter 1987	4th Quarter 1987
Number of Batch Releases	56	23
Total Time of Releases (min)	5.02E3	1.88E3
Maximum Time for a Release (min)	1.15E2	1.09E2
Average Time for a Release (min)	8.96E1	8.17E1
Minimum Time for a Release (min)	7.00E1	5.00E1
Average Effluent Stream Flow During Periods of Release (l/min)	1.50E5	6.06E4
Total Waste Volume (liter)	4.90E6	1.92E6
Total Dilution Volume (liter)	7.50E8	1.12E8

3.4.2 Estimation of Errors

The estimate of overall error for liquid effluents includes individual errors due to measurement of flow rates, tank volumes, non-homogeneous samples and errors involved in sample preparation and counting. The overall error for liquid effluents is estimated to be 75%.

4.0 SOLID WASTE

4.1 Regulatory Specifications

Regulatory Specifications for solid waste are governed by the CPS Technical Specifications, the Process Control Program (PCP), by the NRC regulations of Title 10, Part 20, 61 and 71 and the Department of Transportation (DOT) regulations of Title 49 Part 171 through 178 of the Code of Federal Regulations. These specifications require that the waste being shipped from the site for burial be classified, monitored, accounted for, and packaged for proper disposal.

4.2 Solid Waste and Irradiated Fuel Shipments

During this reporting period there were two (2) radioactive waste shipments and no irradiated fuel shipments from CPS as reported in Table 3. In addition, CPS Technical Specifications, section 6.9.1.7 requires reporting of the following information for solid waste shipped offsite during the report period.

1. Container volume: 7.50 cubic feet.

2. Total curie quantity: 1.40E-1 curies as determined by dose-to-curie methodology.

3. Principle radionuclides: See Table 3, A.2.b. for listing measured radionuclides.

4. Source of waste and processing employed: compacted and non-compacted dry active waste.

5. Type of container: 17H, 55-gallon drum.

6. Solidification agent or absorbent: none.

5.0 SITE METEOROLOGY

As required by Technical Specification 6.9.1.7, the cumulative joint frequency distributions of wind speed, wind direction and atmospheric stability for the annual period of January 1, 1987, through December 31, 1987, are presented in Table 4A. The classification of atmospheric stability utilized in Table 4A is presented in Table 4B.

6.0 RADIOLOGICAL IMPACT ON MAN

Dose calculations for radioactive material in liquid and gaseous effluents for this reporting period were well below 10CFR20, 10CFR50, Technical Specifications limits. The dose estimates reported in this section utilize information from Tables 2.4, 3.4 and 3.5 of the ODCM. The dose calculation methodology corresponds to that of the ODCM and utilizes the limiting pathways as defined by the ODCM.

Because there are no other nearby uranium fuel cycle sources, the calculated dose for radioactive effluent releases and environmental dosimetry measurements confirm that Clinton Power Station operated in compliance with 40CFR190. Sections 6.1 and 6.3 provides the assessment of radiation dose to the most likely exposed Member of the Public from Clinton Power Station effluent releases. Direct radiation resulting from plant operation did not contribute any measurable dose to a Member of the Public within unrestricted areas based upon statistical evaluation of preoperational versus 1987 environmental thermoluminescent dosimeters (TLDs) data.

6.1 Dose to Maximum Individual from Liquid Effluent Pathway

Because liquid effluents were released to an unrestricted area, the following dose to the maximum individual from the liquid effluent pathway also represents an assessment of the maximum dose to a Member of the Public due to their activities in unrestricted areas within the Clinton Power Station Site Boundary.

Total Dose Equivalent (mrem)

	3rd Quarter 1987	4th Quarter 1987	Annual Summary
Total Body	1.43E-3	1.58E-3	3.02E-3
Bone	5.30E-3	8.89E-3	1.42E-2
Liver	5.55E-4	1.08E-3	1.65E-3
Thyroid	2.75E-5	5.59E-5	8.35E-5
Kidney	7.90E-5	3.31E-4	4.13E-4
Lung	5.50E-5	8.24E-5	1.39E-4
GI-LLI	9.91E-4	4.55E-3	5.61E-3

6.2 Dose to Maximum Individual At and Beyond Site Boundary From Gaseous Effluent Pathway

As required by Technical Specification 6.9.1.7, the following assessment of doses to the Maximum Individual At and Beyond the Site Boundary was performed utilizing meteorological conditions concurrent with time of release.

Fission and Activation Gases	3rd Quarter	4th Quarter	Annual Summary
Gamma Air Dose (mrad)	7.00E-6	1.17E-4	2.39E-4
Beta Air Dose (mrad)	2.47E-6	1.50E-4	1.93E-4

Particulate, Radioiodine and Tritium	3rd Quarter	4th Quarter	Annual Summary
Bone (mrem)	4.72E-6	2.48E-5	2.95E-5
Liver (mrem)	5.32E-6	2.95E-5	3.49E-5
Total Body (mrem)	3.29E-6	1.73E-5	2.06E-5
Thyroid (mrem)	1.11E-3	7.04E-3	8.14E-3
Kidney (mrem)	5.90E-6	3.31E-5	3.90E-5
Lung (mrem)	1.81E-6	8.25E-6	1.01E-5
GI-LLI (mrem)	1.87E-6	8.73E-6	1.07E-5

6.3 Dose to Members of the Public within the Site Boundary from Gaseous Effluent Pathway

As required by Technical Specification 6.9.1.7, the following is an assessment of doses from gaseous effluents to Members of the Public due to their activities inside the Site Boundary (i.e., Unrestricted Areas). The locations and assumptions used for this dose assessment are listed in the ODCM Table 3.4-3.

	Annual Average
Total Body (mrem/yr)	1.28E-4
Skin (mrem/yr)	2.11E-4
Organ (mrem/yr)[1]	1.75E-6

7.0 TECHNICAL SPECIFICATION REPORTS

Per the Clinton Power Station Technical Specifications, certain reportable items, changes to Technical Specification referenced documents, and findings are reportable in Semiannual Radioactive Effluent Release Report.

1. Organ dose rate equal to the sum of the dose rates obtained for the maximum exposed organ for each release.

7.1 Limiting Condition for Operation Reports

These reports are provided pursuant to the Clinton Power Station Technical Specifications, Section 3.3.7.11. Limiting Conditions for Operation (LCO) are defined in the CPS Technical Specifications.

7.1.1 LCO Event: 87-07-74

7.1.1.1 Information:

Operability Requirement:		Table 3.3.7.11-1-1A
Date Entered	:	7/29/87 @ 1745
Date Restored	:	(To be restored upon approval of proposed Facility Operation License Change)
Time Period of LCO	:	155 Days 6 Hours (as of December 31, 1987)

7.1.1.2 Explanation:

On July 29, 1987, the radwaste liquid discharge monitor (ORIX-PR040) was declared inoperable due to system design that precluded channel functional testing required by Technical Specification 4.3.7.11-1. Upon investigation of this condition it was also determined that the liquid monitor had not been calibrated "over its intended range of energy and measurement range" as required by Technical Specification 4.3.7.11-1. This condition was reported in Licensing Event Report (LER) 87-46.

Procedure CPS No. 9910.77, Calibration of Liquid Radwaste Discharge Process Radiation Monitor is being revised to perform required source calibration over the intended energy range of the liquid monitor. A proposed amendment to Facility Operating License NPF-62 was submitted October 30, 1987 to delete the Channel Functional Test requirement to demonstrate automatic isolation of the release pathway with the monitor controls not set in the OPERATE mode. Upon approval of the proposed amendment, the radwaste liquid discharge monitor will be calibrated and declared operational.

7.2 Off-Site Dose Calculation Manual Changes

Technical Specification 6.14.2 requires that revisions to the CPS ODCM be reported in the Semiannual Radioactive Effluent Release Report. There were no changes made to the ODCM during this report period.

7.3 Solid Waste Process Control Program Changes

Technical Specification 6.13.2 requires that all changes to the Solid Waste Process Control Program (PCP) be reported in the Semiannual Radioactive Effluent Release Report. The following is a list of those PCP changes that occurred during this report period.

The reference document is: "Process Control Program - ATI Transportable Volume Reduction System (TVR) III," Rev. 4, dated July 31, 1987. This document is proprietary to Associated Technologies Incorporated (ATI). The following ATI originated changes were made and implemented as applicable to Clinton Power Station on August 10, 1987:

1. Section 4.2 of the PCP provides a brief description of the major waste streams processed. The description of the waste sludge waste stream (4.2.5) was expanded to include the presence of activated carbon together with cellulose fiber filter material. This change was made to assure that the description of the waste stream is consistent with variations in operational practices.

2. Section 4.3 of the PCP provides a description of reagents used in the solidification process. Reagent 3 (4.3.3) was changed from a 50% aqueous slurry of barium nitrate to a 70% aqueous slurry of calcium nitrate tetrahydrate. Reagent 3 is added to sodium sulfate concentrates to help prevent hydration of the coated product in the presence of water. The new Reagent 3 offers the added benefit of preventing the crystallization of solids on the evaporator heat transfer surfaces.

3. The statement of purpose for the use of potassium permanganante (4.3.6) was generalized by removing the phrase which described only a more specialized use of the material.

4. Section 4.4 describes certain boundary conditions for wastes which are to be processed. The chemical constituent's section (4.4.3) lists certain wastes which are not to be processed in the TVR III. The restriction against nitrate wastes containing reducing agents in excess of 0.025 Normal was removed as this condition is prevented by administrative controls.

5. The wording of the restriction against organics was changed to more clearly express the intent.

6. Section 5.0 of the PCP addresses Waste Sampling and Analysis. Editorial changes were made to the section dealing with the sampling of CPS waste storage tanks (5.1.1). Also, a change was made to recognize the plant capability to use an installed Isolok sampler.

7. The specified settling time of 30 minutes for the determination of settled solids (5.1.2) was expanded to apply to Ecodex as well as Ecocote.

8. Editorial changes were made to the section dealing with the sampling of CPS concentrate monitor tanks (5.2.1). Also, a change was made to allow use of a plant Isolok sampler.

9. Determinations of chemical reducing power and sulfate content were added to the list of analyses required for all concentrate samples. The corresponding equations, which correct for flush water dilution when using the TVR III Isolok sampler, were added.

10. The section dealing with Class B and Class C concentrates (5.2.3) was removed. The changes described above provide for treating all concentrates in a consistent manner. The additional parameter measurements, previously only required for Class B and Class C concentrates, are now performed for all concentrate samples.

11. The old section dealing with waste class projection for concentrates (6.0) was removed. This section and the related Figure 1 were no longer needed because all concentrates are now treated the same (assuming all could be greater than Class A).

12. Minor changes were made to the waste pretreatment section (6.0) as follows. The wording for settling time was expanded to clearly indicate the longer settling time required for Ecodex relative to bead resin. These changes allow for more operational flexibility - specification of the pipe to be used for decanting was removed; specification of the methods for acid and hydroxide additions were removed; and, specification of the agitator speed was removed.

13. The pretreatment section for concentrates (6.2) is no longer separated into one section for Class A and a separate section for Class B or Class C concentrates. This change was made to match the change discussed earlier whereby all concentrates are treated uniformly. A minor correction was made to change "an indicated 68% level" to read "a corrected level of 63%." This change, and related wording changes, was necessary to reflect the previously discussed change from barium nitrate to calcium nitrate tetrahydrate. Corresponding formula changes were also incorporated. And, the allowable adjusted pH range was changed to 7-9 based on recommendations of Societe Generale Pour Les Techniques Novelles.

14. The total organic carbon (TOC) limit was removed from the distillate quality section (8.0). (This parameter was negotiated as part of the vendor service agreement and is administratively controlled.)

15. The process control section (9.0) and the product quality control section (10.0) was modified to reflect the change from barium nitrate to calcium nitrate tetrahydrate.

16. The administrative procedures section (12.0) was changed to reflect the uniform treatment of all concentrates (no longer treating Class A differently from Class B or Class c).

17. A requirement for maintaining daily computer log printouts and operator machinery logs was added to the administrative procedures section (12.0).

None of the changes made to the Process Control Program reduces the overall conformance of the solidified waste product to existing criteria for solid waste.

Attachment A provides documentation of Facility Review Group (i.e. Safety Review Committee) review and approval in the form of CPS No. 1913.03F001, "Solidification Vendor Procedure/Document Approval Cover Sheet".

7.4 Major Changes to Radioactive Waste Treatment Systems

Technical Specification 6.15 requires that major changes to the Effluent and Waste Treatment Systems be reported in the Semiannual Radioactive Effluent Release Report. No major changes to the Waste Treatment Systems were reviewed and approved by the Facility Review Group during this reporting period.

7.5 Land Use Census

In accordance with Technical Specification 6.9.1.7, a listing of new locations for dose calculations and environmental sampling identified by the annual land use census shall be reported in the Semiannual Radioactive Effluent Release Report pursuant to performance of Technical Specification 3.12.2 Land Use Census. The 1987 Land Use Census identified the following new locations. Attachment B contains a figure and a page from ODCM Table 5.0-1 that identifies the new sampling locations.

7.5.1 New locations for dose calculations - None

7.5.2 New locations for environmental sampling -

1. New vegetation sample site CL-117 was established at 0.9 miles in the North Sector. Sample site CL-18 was subsequently deleted.

2. New cow milk sample site was identified at 3.2 miles in the Northeast Sector. As an alternate, samples of vegetation at sample site CL-115 were identified to be taken in accordance with the ODCM requirements due to unavailable milk samples.

SECTION 8.0 TABLES

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1987)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 3	QUARTER 4	EST. TOTAL ERROR, %
A. FISSION & ACTIVATION GASES				
1. Total release	Ci	1.08E0	4.72E0	7.50E1
2. Average release rate for period	uCi/sec	1.36E-1	5.94E-1	
3. Percent of Technical Specification limit	%	<0.1	<0.1	
B. IODINES				
1. Total iodine-131	Ci	2.09E-5	1.99E-5	7.50E1
2. Average release rate for period	uCi/sec	2.63E-6	2.50E-6	
3. Percent of Technical Specification limit	%	<0.1	<0.1	
C. PARTICULATES				
1. Particulates with half-life greater than 8 days	Ci	5.68E-5	1.24E-4	7.50E1
2. Average release rate for period	uCi/sec	7.15E-6	1.56E-5	
3. Percent of Technical Specification limit	%	<0.1	<0.1	
4. Gross alpha radioactivity	Ci	0.00E0	6.04E-6	
D. TRITIUM				
1. Total release	Ci	0.00E0	2.62E-1	7.50E1
2. Average release rate for period	uCi/sec	0.00E0	3.30E-2	
3. Percent of Technical Specification limit	%	NA	<0.1	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1987)

GASEOUS EFFLUENTS - MIXED RELEASES[1]

Nuclides Released	Unit	CONTINUOUS MODE Quarter 3	CONTINUOUS MODE Quarter 4	BATCH MODE Quarter 3	BATCH MODE Quarter 4
1. Fission Gases				[None this period]	
Krypton-85	Ci	0.00E0	0.00E0		
Krypton-85m	Ci	0.00E0	0.00E0		
Krypton-87	Ci	0.00E0	0.00E0		
Krypton-88	Ci	0.00E0	0.00E0		
Xenon-133	Ci	4.91E-1	0.00E0		
Xenon-135	Ci	3.62E-1	4.72E0		
Xenon-135m	Ci	0.00E0	0.00E0		
Xenon-138	Ci	0.00E0	0.00E0		
Others Argon-41	Ci	2.30E-1	0.00E0		
Total for Period	Ci	1.08E0	4.72E0		
2. Iodines					
Iodine-131	Ci	2.09E-5	1.99E-5		
Iodine-133	Ci	4.67E-5	1.77E-5		
Iodine-135	Ci	0.00E0	0.00E0		
Total for Period	Ci	6.76E-5	3.76E-5		
3. Particulates					
Strontium-89	Ci	0.00E0	0.00E0		
Strontium-90	Ci	0.00E0	0.00E0		
Cesium-137	Ci	0.00E0	0.00E0		
Barium-Lanthanum-140	Ci	0.00E0	0.00E0		
Others: Sodium 24	Ci	7.71E-4	4.73E-4		
Cerium-143	Ci	0.00E0	6.32E-7		
Chromium-51	Ci	4.41E-5	1.01E-4		
Manganese-54	Ci	1.27E-5	2.30E-5		
Technetium-99m	Ci	2.51E-5	7.62E-5		
Cesium-138	Ci	2.41E-3	1.70E-3		
Barium-139	Ci	3.96E-5	1.89E-4		
Yttrium-91m	Ci	0.00E0	1.22E-5		
Arsenic-76	Ci	1.45E-5	7.52E-6		

1 See Section 5.0 for Definition of Mixed Release.

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1987)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	Quarter 3	Quarter 4	Est. Total Error, %
A. Fission and Activation Products				
1. Total release (not including tritium, gases, alpha)	Ci	1.01E-2	4.97E-3	7.50E1
2. Average diluted concentration during period	uCi/ml	1.34E-8	4.36E-8	
3. Percent of applicable limit	%	< 0.1	< 0.1	
B. Tritium				
1. Total release	Ci	9.71E-1	8.98E-1	7.50E1
2. Average diluted concentration during period	uCi/ml	1.29E-6	7.89E-6	
3. Percent of applicable limit	%	< 0.1	< 0.1	
C. Dissolved and entrained gases				
1. Total Release	Ci	0.00E0	2.21E-6	7.50E1
2. Average diluted concentration during period	uCi/ml	0.00E0		
3. Percent of applicable limit	%	NA	< 0.1	
D. Gross alpha radioactivity				
1. Total Release	Ci	5.96E-6	6.62E-6	7.50E1
E. Volume of waste released (prior to dilution)	liters	4.90E6	1.92E6	1.50E1
F. Volume of dilution water used during period	liters	7.50E8	1.12E8	1.50E1

TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1987)

LIQUID EFFLUENTS

Nuclides Released	Unit	CONTINUOUS MODE Quarter 3	CONTINUOUS MODE Quarter 4	BATCH MODE Quarter 3	BATCH MODE Quarter 4
Strontium-89	Ci			0.00E0	6.73E-4
Strontium-90	Ci			8.82E-5	3.27E-5
Cesium-134	Ci			0.00E0	0.00E0
Cesium-137	Ci			0.00E0	0.00E0
Iodine-131	Ci			0.00E0	0.00E0
Cobalt-58	Ci			2.21E-4	1.04E-4
Cobalt-60	Ci			1.98E-5	5.77E-5
Iron-59	Ci			0.00E0	9.13E-5
Manganese-54	Ci			8.57E-4	5.97E-4
Chromium-51	Ci			7.76E-3	3.41E-3
Zirconium-Niobium-95	Ci			0.00E0	0.00E0
Molybdenum-99	Ci			0.00E0	0.00E0
Technetium-99m	Ci			7.14E-5	0.00E0
Barium-Lanthanum-140	Ci			0.00E0	0.00E0
Cerium-141	Ci			0.00E0	0.00E0
Other: Iron-55	Ci			9.80E-4	0.00E0
Sodium 24	Ci			5.61E-5	0.00E0
Tritium	Ci			9.71E-1	8.98E-1
Total for period (above)	Ci			9.81E-1	9.03E-01
Xenon-133	Ci			0.00E0	0.00E0
Xenon-135	Ci			0.00E0	2.21E-6

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1987)

SOLID WASTE AND IRRADIATED FUEL SHIPMENTS

A. SOLID WASTE SHIPPED OFFSITE FOR BURIAL OR DISPOSAL (Not irradiated fuel)

1. Type of Waste		Unit	6-month Period	Est. Total Error, %
a.	Spent resins, filter sludges, evaporator bottoms, etc.	m^3	0.00E0	
		Ci	0.00E0	0.0
b.	Dry compressible waste, contaminated equip, etc.	m^3	5.10E1	
		Ci	1.41E-1	30.0
c.	Irradiated components, control rods, etc.	m^3	0.00E0	
		Ci	0.00E0	0.0
d.	Other (describe)	m^3	0.00 E0	
		Ci	0.00 E0	0.0

2. Estimate of major nuclide composition (by type of waste)

a.	None	NA
b.	Cr-51	58%
	Co-60	13%
	Mn-54	12%
	Co-58	10%
	Fe-59	3%
	Zn-65	1%
	H-3	1%
	Other	2%
c.	None	NA
d.	None	NA

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
2	Westinghouse Hittman Nuclear, Incorporated	Richland, Washington

B. IRRADIATED FUEL SHIPMENTS (Dispo ition)

Number of Shipments	Mode of Transportation	Destination
None		

C. TECHNICAL SPECIFICATIONS CLASSIFICATION REQUIREMENTS - NA

TABLE 4A
ANNUAL JOINT FREQUENCY DISTRIBUTION OF METEOROLOGICAL PARAMETERS - 1987

STABILITY CLASS A

WIND SPEED (MPH) AT 10 METER LEVEL

Direction	1-3	4-7	8-12	13-18	19-24	+ 24	TOTAL
N	8.00E00	2.60E01	4.00E01	6.00E00	0.00E-01	0.00E-01	8.00E01
NNE	6.00E00	2.10E01	1.80E01	4.00E00	0.00E-01	0.00E-01	4.90E01
NE	2.60E01	6.50E01	1.60E01	6.00E00	0.00E-01	0.00E-01	1.13E02
ENE	1.40E01	3.80E01	3.60E01	8.00E00	1.00E00	2.00E00	9.90E01
E	2.10E01	3.70E01	2.40E01	3.00E00	0.00E-01	0.00E-01	8.50E01
ESE	3.00E01	4.10E01	2.10E01	0.00E-01	1.00E00	0.00E-01	9.30E01
SE	1.80E01	5.20E01	1.20E01	0.00E-01	0.00E-01	0.00E-01	8.20E01
SSE	2.40E01	9.40E01	1.30E01	6.00E00	0.00E-01	0.00E-01	1.37E02
S	2.70E01	1.41E02	8.30E01	2.10E01	0.00E-01	0.00E-01	2.72E02
SSW	1.70E01	7.20E01	8.60E01	1.70E01	0.00E-01	0.00E-01	1.92E02
SW	9.00E00	5.30E01	4.80E01	1.80E01	3.00E00	0.00E-01	1.31E02
WSW	7.00E00	4.10E01	3.50E01	3.60E01	1.30E01	5.00E00	1.37E02
W	9.00E00	1.50E01	3.10E01	4.70E01	5.00E00	1.40E01	1.21E02
WNW	1.30E01	2.50E01	4.60E01	3.30E01	6.00E00	3.00E00	1.26E02
NW	1.30E01	6.60E01	3.90E01	4.20E01	1.20E01	0.00E-01	1.72E02
NNW	5.00E00	4.50E01	3.50E01	2.30E01	2.00E00	0.00E-01	1.10E02
Total	2.47E02	8.32E02	5.83E02	2.70E02	4.30E01	2.40E01	2.00E03

STABILITY CLASS B

WIND SPEED (MPH) AT 10 METER LEVEL

Direction	1-3	4-7	8-12	13-18	19-24	+ 24	TOTAL
N	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01	0.00E-01
NNE	0.00E-01	2.00E00	1.00E00	2.00E00	0.00E-01	0.00E-01	5.00E00
NE	0.00E-01	0.00E-01	4.00E00	4.00E00	0.00E-01	0.00E-01	8.00E00
ENE	0.00E-01	0.00E-01	4.00E00	0.00E-01	0.00E-01	0.00E-01	4.00E00
E	0.00E-01	4.00E00	0.00E-01	0.00E-01	0.00E-01	0.00E-01	4.00E00
ESE	0.00E-01	5.00E00	2.00E00	0.00E-01	0.00E-01	0.00E-01	7.00E00
SE	0.00E-01	7.00E00	3.00E00	0.00E-01	0.00E-01	0.00E-01	1.00E01
SSE	0.00E-01	2.00E00	2.00E00	0.00E-01	0.00E-01	0.00E-01	4.00E00
S	0.00E-01	4.00E00	7.00E00	4.00E00	0.00E-01	0.00E-01	1.50E01
SSW	0.00E-01	1.00E00	1.70E01	0.00E-01	4.00E00	0.00E-01	2.20E01
SW	0.00E-01	2.00E00	1.00E01	1.00E00	0.00E-01	0.00E-01	1.30E01
WSW	0.00E-01	1.00E00	1.10E01	1.20E01	0.00E-01	0.00E-01	2.40E01
W	0.00E-01	2.00E00	9.00E00	4.00E00	2.00E00	0.00E-01	1.70E01
WNW	0.00E-01	2.00E00	7.00E00	6.00E00	1.00E00	0.00E-01	1.60E01
NW	0.00E-01	3.00E00	1.10E01	1.00E01	1.00E00	0.00E-01	2.50E01
NNW	0.00E-01	1.00E00	6.00E00	2.00E00	0.00E-01	0.00E-01	9.00E00
Total	0.00E-01	3.60E01	9.40E01	4.50E01	8.00E00	0.00E-01	1.83E02

TABLE 4A
ANNUAL JOINT FREQUENCY DISTRIBUTION OF METEOROLOGICAL PARAMETERS - 1987

STABILITY CLASS C

WIND SPEED (MPH) AT 10 METER LEVEL

Direction	1-3	4-7	8-12	13-18	19-24	+ 24	TOTAL
N	0.00E-01	2.00E00	3.00E00	0.00E-01	1.00E00	0.00E-01	6.00E00
NNE	0.00E-01	1.00E00	3.00E00	1.00E00	0.00E-01	1.00E00	6.00E00
NE	0.00E-01	3.00E00	1.10E01	0.00E-01	1.00E00	0.00E-01	1.50E01
ENE	0.00E-01	4.00E00	6.00E00	0.00E-01	0.00E-01	0.00E-01	1.00E01
E	0.00E-01	4.00E00	1.00E00	0.00E-01	0.00E-01	0.00E-01	5.00E00
ESE	0.00E-01	8.00E00	3.00E00	0.00E-01	0.00E-01	0.00E-01	1.10E01
SE	1.00E00	1.20E01	2.00E00	0.00E-01	0.00E-01	0.00E-01	1.50E01
SSE	0.00E-01	1.00E00	2.00E00	2.00E00	0.00E-01	0.00E-01	5.00E00
S	0.00E-01	4.00E00	7.00E00	3.00E00	1.00E00	0.00E-01	1.50E01
SSW	1.00E00	1.00E00	1.30E01	2.00E00	0.00E-01	0.00E-01	1.70E01
SW	0.00E-01	3.00E00	9.00E00	5.00E00	0.00E-01	0.00E-01	1.70E01
WSW	0.00E-01	7.00E00	8.00E00	5.00E00	0.00E-01	0.00E-01	2.00E01
W	1.00E00	2.00E00	1.30E01	6.00E00	0.00E-01	0.00E-01	2.20E01
WNW	1.00E00	1.00E00	2.00E00	1.20E01	0.00E-01	0.00E-01	1.60E01
NW	1.00E00	3.00E00	1.20E01	4.00E00	0.00E-01	0.00E-01	2.00E01
NNW	0.00E-01	0.00E00	8.00E00	2.00E00	0.00E-01	0.00E-01	1.00E01
Total	5.00E00	5.60E01	1.03E02	4.20E01	3.00E00	1.00E00	2.10E02

STABILITY CLASS D

WIND SPEED (MPH) AT 10 METER LEVEL

Direction	1-3	4-7	8-12	13-18	19-24	+ 24	TOTAL
N	8.00E00	2.70E01	9.50E01	2.30E01	6.00E00	1.00E00	1.60E02
NNE	8.00E00	2.70E01	3.70E01	3.60E01	1.90E01	7.00E00	1.34E02
NE	9.00E00	2.20E01	5.00E01	6.30E01	8.00E00	0.00E-01	1.52E02
ENE	5.00E00	1.40E01	1.00E01	0.00E-01	0.00E-01	0.00E-01	2.90E01
E	6.00E00	1.80E01	4.00E00	0.00E-01	0.00E-01	0.00E-01	2.80E01
ESE	7.00E00	2.70E01	2.00E01	1.50E01	1.00E00	0.00E-01	7.00E01
SE	1.00E01	5.10E01	3.80E01	1.30E01	1.00E00	0.00E-01	1.13E02
SSE	5.00E00	3.50E01	3.50E01	1.60E01	0.00E-01	0.00E-01	9.10E01
S	5.00E00	2.10E01	7.30E01	2.00E01	1.00E00	0.00E-01	1.20E02
SSW	4.00E00	4.70E01	7.70E01	2.00E01	6.00E00	0.00E-01	1.54E02
SW	8.00E00	2.00E01	4.80E01	1.50E01	0.00E-01	0.00E-01	9.10E01
WSW	2.00E00	2.90E01	2.70E01	6.00E00	0.00E-01	0.00E-01	6.40E01
W	5.00E00	2.40E01	6.80E01	3.60E01	1.50E01	0.00E-01	1.48E02
WNW	3.00E00	1.70E01	8.40E01	3.90E01	8.00E00	0.00E-01	1.51E02
NW	3.00E00	2.20E01	6.80E01	2.10E01	3.00E00	0.00E-01	1.17E02
NNW	4.00E00	2.20E01	3.00E01	1.00E00	0.00E-01	0.00E-01	5.70E01
Total	9.20E01	4.23E02	7.64E02	3.24E02	6.80E01	8.00E00	1.68E03

TABLE 4A
ANNUAL JOINT FREQUENCY DISTRIBUTION OF METEOROLOGICAL PARAMETERS - 1987

STABILITY CLASS E

Wind SPEED (MPH) AT 10 METER LEVEL

Direction	1-3	4-7	8-12	13-18	19-24	+ 24	TOTAL
N	7.00E00	2.70E01	5.20E01	1.30E01	5.00E00	0.00E-01	1.04E02
NNE	7.00E00	2.50E01	3.90E01	1.50E01	4.00E00	0.00E-01	9.00E01
NE	9.00E00	5.30E01	7.40E01	2.90E01	6.00E00	0.00E-01	1.71E02
ENE	8.00E00	3.60E01	2.60E01	1.00E01	7.00E00	0.00E-01	8.70E01
E	1.10E01	2.20E01	4.00E00	0.00E-01	0.00E-01	0.00E-01	3.70E01
ESE	1.80E01	7.40E01	3.60E01	5.00E00	0.00E-01	0.00E-01	1.33E02
SE	1.70E01	7.20E01	2.60E01	4.00E00	0.00E-01	0.00E-01	1.19E02
SSE	1.50E01	7.60E01	6.50E01	4.00E00	0.00E-01	0.00E-01	1.60E02
S	1.30E01	1.09E02	1.23E02	1.70E01	2.00E00	0.00E-01	2.64E02
SSW	9.00E00	8.10E01	1.61E02	4.40E01	2.00E00	0.00E-01	2.97E02
SW	1.40E01	2.80E01	5.80E01	2.30E01	0.00E-01	0.00E-01	1.23E02
WSW	5.00E00	3.90E01	3.40E01	4.00E00	0.00E-01	0.00E-01	8.20E01
W	1.40E01	3.10E01	7.10E01	3.40E01	3.00E00	0.00E-01	1.53E02
WNW	1.30E01	3.80E01	4.20E01	1.90E01	3.00E00	0.00E-01	1.15E02
NW	7.00E00	3.90E01	3.90E01	2.80E01	3.00E00	1.00E00	1.17E02
NNW	3.00E00	2.30E01	3.00E01	2.80E01	7.00E00	2.00E00	9.30E01
Total	1.70E02	7.73E02	8.80E02	2.77E02	4.20E01	3.00E00	2.15E03

STABILITY CLASS F

WIND SPEED (MPH) AT 10 METER LEVEL

Direction	1-3	4-7	8-12	13-18	19-24.	+ 24	TOTAL
N	1.90E01	1.70E01	7.00E00	0.00E-01	0.00E-01	0.00E-01	4.30E01
NNE	1.00E01	2.00E01	5.00E00	1.00E00	0.00E-01	0.00E-01	3.60E01
NE	6.00E00	4.70E01	7.00E00	0.00E-01	0.00E-01	0.00E-01	6.00E01
ENE	1.00E01	3.90E01	3.30E01	4.70E01	6.00E00	0.00E-01	1.35E02
E	2.10E01	3.90E01	3.10E01	1.60E01	0.00E-01	0.00E-01	1.07E02
ESE	1.70E01	3.50E01	3.00E00	1.00E00	0.00E-01	0.00E-01	5.60E01
SE	1.10E01	3.90E01	2.00E00	0.00E-01	0.00E-01	0.00E-01	5.20E01
SSE	1.50E01	6.60E01	6.00E00	0.00E-01	0.00E-01	0.00E-01	8.70E01
S	1.10E01	8.10E01	2.70E01	2.00E00	0.00E-01	0.00E-01	1.21E02
SSW	1.40E01	4.80E01	5.40E01	2.00E00	0.00E-01	0.00E-01	1.18E02
SW	1.60E01	5.80E01	5.60E01	3.00E01	0.00E-01	0.00E-01	1.60E02
WSW	1.00R01	2.50E01	2.50E01	1.70E01	4.00E00	0.00E-01	8.10E01
W	1.20E01	2.20E01	1.60E01	3.00E00	1.00E00	0.00E-01	5.40E01
WNW	1.40E01	2.70E01	6.00E00	0.00E-01	0.00E-01	0.00E-01	4.70E01
NW	1.00E01	2.90E01	7.00E00	1.00E00	1.00E00	0.00E-01	4.80E01
NNW	5.00E00	7.00E00	8.00E00	6.00E00	8.00E00	5.00E00	3.90E01
Total	2.01E02	5.99E02	2.93E02	1.26E02	2.00E01	5.00E00	1.24E03

TABLE 4A
Annual Joint Frequency Distribution of Meteorological Parameters - 1987

STABILITY CLASS G

WIND SPEED (MPH) AT 10 METER LEVEL

Direction	1-3	4-7	8-12	13-18	19-24	+ 24	TOTAL
N	7.00E00	5.00E00	2.00E00	0.00E-01	0.00E-01	0.00E-01	1.40E01
NNE	1.00E01	1.00E01	2.00E00	0.00E-01	0.00E-01	0.00E-01	2.20E01
NE	2.50E01	7.10E01	3.00E00	0.00E-01	0.00E-01	0.00E-01	9.90E01
ENE	1.80E01	3.10E01	9.00E00	2.00E01	2.00E00	0.00E-01	8.00E01
E	1.00E01	1.30E01	1.50E01	4.10E01	3.00E00	0.00E-01	8.20E01
ESE	1.50E01	4.00E00	0.00E-01	0.00E-01	0.00E-01	0.00E-01	1.90E01
SE	8.00E00	2.70E01	1.00E00	0.00E-01	0.00E-01	0.00E-01	3.60E01
SSE	2.10E01	2.70E01	0.00E-01	0.00E-01	0.00E-01	0.00E-01	4.80E01
S	1.90E01	2.90E01	4.00E00	4.00E00	0.00E-01	0.00E-01	5.60E01
SSW	9.00E00	1.70E01	5.00E00	0.00E-01	0.00E-01	0.00E-01	3.10E01
SW	9.00E00	3.80E01	3.00E00	6.00E00	2.00E00	0.00E-01	5.80E01
WSW	1.10E01	1.90E01	1.10E01	1.40E01	0.00E-01	0.00E-01	5.50E01
W	9.00E00	7.00E00	1.00E00	0.00E-01	0.00E-01	0.00E-01	1.70E01
WNW	2.10E01	1.10E01	0.00E-01	0.00E-01	0.00E-01	0.00E-01	3.20E01
NW	1.20E01	1.00E01	1.00E00	0.00E-01	0.00E-01	0.00E-01	2.30E01
NNW	1.00E01	0.00E-01	0.00E-01	1.00E00	0.00E-01	0.00E-01	1.10E01
Total	2.14E02	3.19E02	5.70E01	8.60E01	7.00E00	0.00E-01	6.83E02

PERIODS OF CALM(HOURS): 3.000E00
HOURS OF INVALID DATA : 0.000E-01
HOURS OF GOOD DATA : 8.196E3 = 93.6% OF TOTAL HOURS

TABLE 4B

CLASSIFICATION OF ATMOSPHERIC STABILITY

Stability Classification	Pasquill Categories	1 Std. Dev. (degrees)	Temperature change with height (°C/100m)
Extremely unstable	A	25.0	-1.9
Moderately unstable	B	20.0	-1.9 to -1.7
Slightly unstable	C	15.0	-1.7 to -1.5
Neutral	D	10.0	-1.5 to -0.5
Slightly stable	E	5.0	-0.5 to 1.5
Moderately stable	F	2.5	1.5 to 4.0
Extremely stable	G	1.7	4.0

1 Standard deviation of horizontal wind direction over a period of 15 minutes to 1 hour. The values shown are average for each stability classification.

CLINTON POWER STATION
SEMIANNUAL RADIOACTIVE
EFFLUENT RELEASE REPORT

July 1, 1987 - December 31, 1987

ATTACHMENT A

SOLIDIFICATION VENDOR PROCEDURE/DOCUMENT APPROVAL
COVER SHEET

ATTACHMENT A

CLASS CODE: SNQD1
CPS No.1913.03F001
(Rev. 1)

SOLIDIFICATION VENDOR PROCEDURE/DOCUMENT APPROVAL COVER SHEET

TITLE: Process Control Program
ATI Transportable Volume Reduction System TVR III
for
Clinton Power Station
Illinois Power Company
Rev. 4

	Signature	Date
MAINTENANCE DEPARTMENT	N/A	
CHEMISTRY GROUP.....	[signature]	8/7/87
TECHNICAL DEPARTMENT	N/A	
NUCLEAR STATION ENGINEERING DEPARTMENT.....	[signature]	8/6/87
RADIATION PROTECTION DEPARTMENT .	N/A	
QUALITY ASSURANCE DEPARTMENT	[signature]	8-6-87
RADWASTE GROUP.....	[signature]	8-6-87
FACILITY REVIEW GROUP.....	[signature]	8-10-87

CLINTON POWER STATION
SEMIANNUAL RADIOACTIVE
EFFLUENT RELEASE REPORT

July 1, 1987 - December 31, 1987

ATTACHMENT 2

LAND USE CENSUS - NEW SAMPLE SITES

LAND USE CENSUS - NEW SAMPLE SITES
(Excerpt from Table 5.0-1, Page 5-9 of CPS-ODCM)

EXPOSURE PATHWAY AND/OR SAMPLE TYPE	REQUIRED NUMBER OF REPRESENTATIVE SAMPLES AND SAMPLE LOCATIONS	REQUIRED SAMPLING AND COLLECTION FREQUENCY	REQUIRED TYPES AND FREQUENCY OF ANALYSIS
e. Food Products (Cont.)	Samples of 3 different kinds of broad leaf vegetation (such as lettuce, cabbage, and swiss chard) grown nearest each of two different offsite locations of highest predicted annual average ground-level D/Q if milk sampling is not performed.	Monthly when available	Gamma isotopic and I-131 analysis

SECTOR	CODE	DISTANCE from station (miles)
NE	CL-115[1]	0.9
N	CL-117[1]	0.9

1 sample of each of the similar broad leaf vegetation grown 15-30 km distant in the least prevalent wind direction if milk sampling is not performed.

SECTOR	CODE	DISTANCE from station (miles)
SSE (Control)	CL-114	12.5

1 New sample site identified by 1987 Land Use Census.

LAND USE CENSUS - NEW SAMPLE SITES