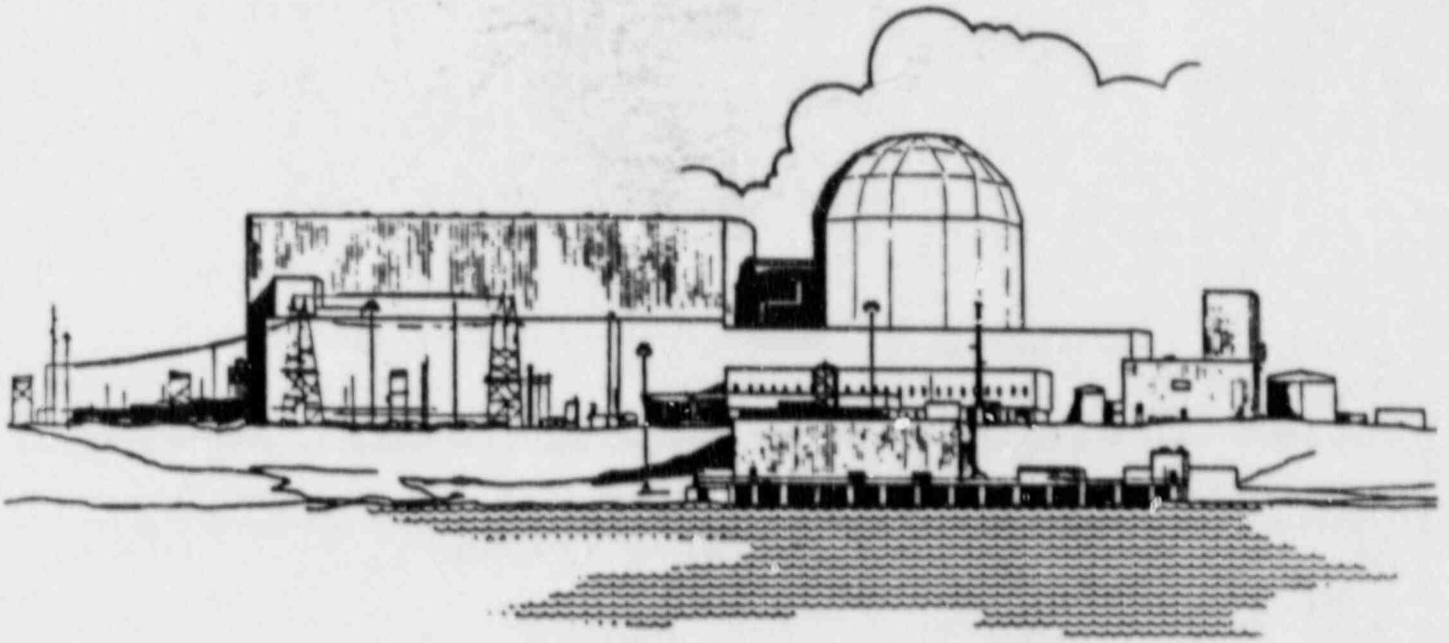
CLINTON POWER STATION

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

JANUARY 1, 1988 - JUNE 30, 1988



RADIOLOGICAL PROTECTION DEPARTMENT

ILLINOIS POWER COMPANY

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1.0 INTRODUCTION

The Semiannual Radioactive Effluent Release Report for January 1, 1988 through June 30, 1988, 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.

With the exception of one abnormal gaseous release, all liquid and gaseous radioactive releases to the environment during this reporting period were sampled, 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 first and second quarters of 1988. 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 define 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. 3 (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 the following limits are not exceeded:

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 the following limit is not exceeded:

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 the following limits are not exceeded:

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 the following limits are not exceeded:

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). One abnormal release occurred resulting in approximately a two minute release through a relief line on the roof of the Radwaste Building (See 2.4.2). Both HVAC and SGTS stacks were continuously monitored for gaseous radioactive material. Each of these release points has an integrating type sample collection device which concentrates particulates and iodine, and flow measurement devices which continuously record the flow rate of gaseous effluent released. In addition to the gaseous, particulate and iodine release measurements that are conducted, 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. Analyses 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 (normal) batch releases during this report period and one abnormal release (considered batch). 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 and 1C.

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 Abnormal Release

On May 16, 1988, at approximately 0200, auxiliary steam being utilized in plant Radwaste Processing Systems was inadvertently released to the environment from an overpressure relief vent line. This release occurred because a Radwaste Operator repositioned a valve which allowed the overpressure relief valve to vent to the environment instead of to the main condenser. This release constituted an unmonitored abnormal batch release.

As delineated in Section 7.0 of the Illinois Power Company Offsite Dose Calculation Manual, this release was determined to be a ground mode release. As determined by spectral analysis of a sample of the water used to produce the steam released, Mn-54 was released at a rate of 4.35E-01 uCi/sec for 120 seconds. This resulted in a total release of 5.2E-05 Curies. Meteorological conditions at the time of release are presented below. A summary of dose rates and total dose determined in accordance with the Illinois Power Company Offsite Dose Calculation Manual due to this release are presented below.

METEOROLOGICAL DATA

10 meter wind speed	5.33 miles per hour
10 meter temperature	16.19°C
10 meter wind direction	322.94°
60 meter wind speed	10.54 miles per hour
60 meter temperature	16.75°C
60 meter wind direction	327.59°

DOSE RATE/DOSE EQUIVALENT DATA

	Dose Rate (mrem/yr)	Dose Equivalent (mrem)
Bone	N/A	N/A
Total Body	1.12E-02	4.25E-08
Thyroid	N/A	N/A
Kidney	1.17E-02	4.47E-08
Liver	5.04E-10	1.92E-07
Lung	1.86E+00	7.06E-06
GI-LLI	2.69E-02	1.02E-07

2.4.3 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 radicactive 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 Radiological Effluent Technical Specifications (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:

$\leq$ 1.5 mrem/quarter - to the total body

$\leq$ 5.0 mrem/quarter - to any organ

$\leq$ 3.0 mrem/year - to the total body

$\leq$ 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 were then 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, the average diluted concentrations, and the 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

	1st Quarter 1988	2nd Quarter 1988
Number of Batch Releases	13	5
Total Time of Releases (min)	1.16E3	5.27E2
Maximum Time for a Release (min)	1.48E2	1.55E2
Average Time for a Release (min)	8.89E1	1.05E2
Minimum Time for a Release (min)	7.10E1	6.90E1
Average Effluent Stream Flow During Periods of Release (l/min)	4.09E4	3.99E4
Total Waste Volume (liter)	9.36E5	3.48E5
Total Dilution Volume (liter)	4.73E7	2.10E7

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 five (5) radioactive waste shipments and no irradiated fuel shipments from CPS as reported in Table 3. All waste shipped in this reporting period was classified as Class A. 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 and 11.6 cubic feet (2 different container sizes used).

2. Total curie quantity: 3.89E0 curies as determined by dose-to-curie methodology and sample concentration methodology estimates.

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

4. Source of waste and processing employed: Spent resins, filter sludges, and evaporator concentrates solidified in bitumen. Compacted and non-compacted dry active waste.

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

6. Solidification agent or absorbent: Bitumen

5.0 SITE METEOROLOGY

Cumulative joint frequency distributions of wind speed, wind direction and atmospheric stability for the quarterly periods January 1, 1988 through June 30, 1988 are normally presented in Table 4A. Clinton Power Station Technical Specification 6.9.1.7 allows this information to be kept on file and to be provided to the USNRC upon request. The first six months of meteorological information will be included as an annual summary within the semiannual report to be submitted after January 1, 1989.

The classification of atmospheric stability utilized in Table 4A is presented in Table 4B.

As per the Clinton Power Station Offsite Dose Calculation Manual, the site specific annual average dispersion factors (X/Q) are calculated as Mixed Release[1]. In utilizing the Regulatory Guide 1.21 format for gaseous releases, all gaseous releases are considered as mixed mode. Mixed mode represents a combination of the ground level and elevated level criteria as described in Section 7.2 of the Offsite Dose Calculation Manual.

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, and Technical Specifications limits. The dose estimates reported in this section utilize information from Tables 2.4, 3.4 and 3.5 of the Offsite Dose Calculation Manual. The dose calculation methodology corresponds to that of the Offsite Dose Calculation Manual and utilizes the limiting pathways as defined by the Offsite Dose Calculation Manual.

6.1 Dose to Maximum Individual from Liquid Effluent Pathway

TOTAL DOSE EQUIVALENT (mrem)

	1st Quarter 1988	2nd Quarter 1988
Total Body	2.09E-3	5.67E-03
Bone	2.63E-3	3.88E-02
Liver	7.36E-3	1.56E-02
Thyroid	8.32E-5	1.94E-05
Kidney	2.36E-3	4.38E-03
Lung	2.73E-4	9.51E-05
GI-LLI	2.84E-2	6.63E-02

[1] The CPS ODCM refers to "Mixed Release" as mixed mode.

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

The following assessment of doses to the Maximum Individual At and Beyond the Site Boundary was performed utilizing the annual Average Relative Concentration (X/Q) and Radioiodine and Particulate Relative Disposition (D/Q) at the controlling sector as identified in the Clinton Power Station Offsite Dose Calculation Manual. In accordance with Technical Specification 6.9.1.7, an assessment of doses to the Maximum Individual At and Beyond the Site Boundary utilizing meteorological conditions concurrent with time of release will be provided as an annual summary within the semiannual report to be submitted after January 1, 1989. Doses from the abnormal gaseous release described in Section 2.4.2 are included in this assessment.

Fission and Activation Gases	1st Quarter	2nd Quarter
Gamma Air Dose (mrad)	1.29E-4	1.24E-4
Beta Air Dose (mrad)	1.65E-4	1.58E-4

Particulate, Radioiodine and Tritium	1st Quarter	2nd Quarter
Bone (mrem)	2.92E-5	3.51E-5
Liver (mrem)	1.62E-4	5.21E-5
Total Body (mrem)	1.61E-4	5.17E-5
Thyroid (mrem)	2.04E-4	5.74E-5
Kidney (mrem)	1.62E-4	5.18E-5
Lung (mrem)	1.66E-4	6.45E-5
GI-LLI (mrem)	1.62E-4	5.28E-5

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 the Semiannual Radioactive Effluent Release Report.

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	:	337 Days 6 Hours (as of June 30, 1988)

7.1.1.2 Explanation:

The cause of this Limiting Condition for Operation was presented in the Illinois Power Company Clinton Power Station Semiannual Radioactive Effluent Release Report for the period July 1, 1987 through December 31, 1987.

As of June 30, 1988 the proposed amendment to Facility Operating License NPF-62 had not been approved. The Liquid Radwaste Discharge Process Radiation Monitor (0RIX-PR040) was calibrated by Clinton Power Station procedure CPS No. 9437.63 on May 26, 1988. Upon approval of the proposed amendment, the Liquid Radwaste Discharge monitor will have a channel Functional Test performed and be declared operational.

7.1.2 LCO Event: 88-03-53

7.1.2.1 Information:

Operability Requirement	:	Table 3.3.7.11-1-3b
Date Entered	:	3/28/88 @ 0600
Date Restored	:	4/28/88 @ 0824
Time Period of LCO	:	31 days 2.4 hours

7.1.2.2 Explanation:

On March 17, 1988 the Plant Service Water Effluent Line Monitor (0UIX-PR052 channel 3) was declared inoperable due to failure of its channel calibration procedure. Maintenance Work Request (MWR) C53518 was written to troubleshoot and repair the cause of failure.

On March 26, 1988 partial instrument loop calibration was performed satisfactorily per Clinton Power Station procedure CPS No. 9432.45, and the loop was restored without any repair work being required. On March 27, 1988 a partial calibration was satisfactorily performed on the flow transmitter per CPS No. 9432.45. On March 29, 1988 a Heise Gage used as measuring and test equipment during the calibration failed its post calibration check. Control and Instrumentation supervision evaluated the impact of the failed post calibration check on the instrument calibration and

determined the calibration to be valid. On April 2, 1988 a Post Adjustment Loop Calibration was performed per CPS No. 9432.45 to verify calibration following the failure of post calibration check by the Heise Gage. This calibration revealed that at low Plant Service Water flow rates the square root transmitter portion of the flow instrument is inaccurate.

Field Problem Report 201,965 was generated on April 13, 1988 to evaluate the inaccuracy at low Plant Service Water flow rates and to recommend corrective action. Based on the results of this evaluation, it was determined on April 20, 1988 that the benefits of installing a low flow element to provide more accurate flow data at low flow rates is not cost effective compared to the needs that require only conservative estimates of flow. On April 28, 1988 a channel check was performed satisfactorily per Clinton Power Station procedure CPS 9911.24 and the monitor was returned to service.

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. The following is a list of revised pages and a summary of revision 3 to the ODCM. The first part of this revision became effective on January 8, 1988 and the second part became effective on February 8, 1988. Attachment A contains copies of the changed pages and the documentation of required reviews.

PAGE	SUMMARY OF REVISION
2-7	Revised setpoint determination criteria for Plant Service Water Process Radiation Monitor to allow calculation of setpoints based on observed background count rates with sufficient margin to detect and alarm on inadvertent releases of radioactive material.
3-12	Revised Table 3.4-3 to add annual dose information at residences identified by the 1987 Land Use Census.
5-9	Revised Table 5.0-1 to delete a garden located 2.5 miles from the main ventilation exhaust in the east sector and establish a new garden located 0.9 miles from the main ventilation exhaust in the north sector.
5-13	Revised Figure 5.0-1 to be consistent with change on Table 5.0-1 (added location CL-117).
5-14	Revised Figure 5.0-2 to be consistent with change on Table 5.0-1 (added location CL-18).

PAGE	SUMMARY OF REVISION
7-16	Revised Table 7.2-5 to be consistent with change on Table 5.0-1.

These changes do not affect the methodology of dose calculations or setpoint determinations during discharges. Dose calculation and setpoint determination accuracy or reliability is not affected by these changes.

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. 5, dated February 23, 1988. 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 February 23, 1988:

Section No. Rev. 4	Rev. 5	Brief Description of Change
3.2.2	2.2.2	A clarification was added to distinguish between free water and bound water.
3.4.6	2.4.6	Words were added to indicate that distillate must meet quality specifications of the contract.
4.1.1	3.1.1	The description of the bitumen used was changed to reflect the current practice of using only an oxidized bitumen.
-	3.1.4	A requirement to obtain bitumen certification was added.
4.2.5	3.2.5	A clarification was added to allow for the occasional presence of limited amounts of powdered resins and activated carbon in waste sludge waste streams.
-	3.2.6	A new waste stream description was added to provide for processing the activated carbon and the mixture of anthracite and clay generated by the distillate filter system.
-	3.3.1	A statement was added to identify the quality requirements for process chemicals.

Section No. Rev. 4	Rev. 5	Brief Description of Change
4.3.6	3.3.7	A statement was added to clarify the purpose for adding potassium permanganate to certain concentrate wastes.
4.4.3	3.4.3	A clarification was added which indicates that filter media containing absorbed oil can be processed successfully.
5.1.1 5.2.1	4.1.1 4.2.1	These paragraphs were rewritten to more clearly describe the available waste stream sampling options.
5.2.2	4.2.2	A section was added which describes the methods of adjusting the waste analysis results to correct for dilution of the CPS Concentrate Waste Tank during transfers to the waste batch tank.
6.1	5.1	This section was modified to include waste sludge, rather than having a separate section for waste sludge alone, thus eliminating Section 6.3 of Rev. 4.
6.2.1	5.2.1	Because the salt concentration in the waste can vary, a curve was added to optimize use of the waste batch tank.
6.2.2	5.2.2	The limit for reducing agents was increased from 0.025 Normal to 0.04 Normal, based on additional information from SGN. A requirement for allowing a one hour reaction after the addition of the potassium permanganate was added based upon new information from SGN.
6.2.3	5.2.3	The weight of Reagent 3 was increased to prevent crystallization of solids on the internal surfaces of the evaporator to prevent resultant mechanical problems.
-	5.3	A new section was added to provide for processing the activated carbon and the mixture of anthracite and clay generated by the distillate filter system.
7.1.1 7.2.1	6.1.1 6.2.1	These sections were expanded to provide for the processing of the activated carbon and the mixture of anthracite and clay generated by the distillate filter system.

Section No. Rev. 4	Rev. 5	Brief Description of Change
10.0	8.0	This section was rewritten to clearly differentiate between requirements for solidification and requirements for stabilization.
11.0	9.0	This section was rewritten to clarify responsibilities related to waste characterization.
12.2	10.2	This section was expanded to provide for processing of the activated carbon and the mixture of anthracite and clay generated by the distillate filter system.
12.5	10.5	This section was expanded to reflect the inclusion of requiring bitumen certification.

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 B 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. As of June 30, 1988, Land Use Census had not begun. Results of the 1988 Land Use Census will be provided within the semiannual report to be submitted after January 1, 1989.

SECTION 8.0 TABLES

TABLE 1A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1988)

GASEOUS EFFLUENTS - SUMMATION OF ALL RELEASES

	UNIT	QUARTER 1	QUARTER 2	EST. TOTAL ERROR, %
A. FISSION & ACTIVATION GASES				
1. Total release	Ci	2.21E0	2.13E0	7.50E1
2. Average release rate for period	uCi/sec	2.81E-1	2.71E-1	
3. Percent of Technical Specification limit	%	< 0.1	< 0.1	
B. IODINES				
1. Total iodine-131	Ci	5.72E-5	9.48E-6	7.50E1
2. Average release rate for period	uCi/sec	7.28E-6	6.03E-7	
3. Percent of Technical Specification limit	%	< 0.1	< 0.1	
C. PARTICULATES				
1. Particulates with half-life greater than 8 days	Ci	2.06E-3	2.46E-3	7.50E1
2. Average release rate for period	uCi/sec	1.21E-6	3.13E-4	
3. Percent of Technical Specification limit	%	< 0.1	< 0.1	
4. Gross alpha radioactivity	Ci	7.65E-6	3.66E-6	
D. TRITIUM				
1. Total release	Ci	2.75E0	3.45E-1	7.50E1
2. Average release rate for period	uCi/sec	3.50E-1	4.39E-2	
3. Percent of Technical Specification limit	%	< 0.1	< 0.1	

TABLE 1B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1978)

GASEOUS EFFLUENTS - MIXED RELEASES[1]

Nuclides Released	Unit	CONTINUOUS MODE Quarter 1	CONTINUOUS MODE Quarter 2	BATCH MODE Quarter 1	BATCH MODE Quarter 2
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	0.00E0	0.00E0		
Xenon-135	Ci	2.21E0	2.13E0		
Xenon-135m	Ci	0.00E0	0.00E0		
Xenon-138	Ci	0.00E0	0.00E0		
Others Argon-41	Ci	0.00E0	0.00E0		
Total for Period	Ci	2.21E0	2.13E0		
2. Iodines					
Iodine-131	Ci	5.72E-5	9.48E-6		
Iodine-133	Ci	1.13E-4	0.00E0		
Iodine-135	Ci	0.00E0	0.00E0		
Total for Period	Ci	1.70E-4	9.48E-6		
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	1.96E-3	7.83E-4		
Cerium-143	Ci	0.00E0	0.00E0		
Chromium-51	Ci	1.98E-3	2.30E-3		
Manganese-54	Ci	7.95E-5	1.13E-4		
Technetium-99m	Ci	4.26E-4	3.91E-5		
Cesium-138	Ci	7.99E-4	0.00E0		
Barium-139	Ci	1.55E-4	0.00E0		
Yttrium-91m	Ci	2.61E-5	0.00E0		
Arsenic-76	Ci	3.27E-5	0.00E0		

1 See Section 5.0 for Definition of Mixed Release.

TABLE 1C

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1988)

GASEOUS EFFLUENTS - GROUND-LEVEL RELEASES

Nuclides Released	Unit	CONTINUOUS MODE Quarter 1	CONTINUOUS MODE Quarter 2	BATCH MODE Quarter 1	BATCH MODE Quarter 2
1. Fission Gases			[None this period]		
Krypton-85	Ci				0.00E0
Krypton-85m	Ci				0.00E0
Krypton-87	Ci				0.00E0
Krypton-88	Ci				0.00E0
Xenon-133	Ci				0.00E0
Xenon-135	Ci				0.00E0
Xenon-135m	Ci				0.00E0
Xenon-138	Ci				0.00E0
Others: Argon-41	Ci				0.00E0
Total for Period	Ci				0.00E0
2. Iodines					
Iodine-131	Ci				0.00E0
Iodine-133	Ci				0.00E0
Iodine-135	Ci				0.00E0
Total for Period	Ci				0.00E0
3. Particulates					
Strontium-89	Ci				0.00E0
Strontium-90	Ci				0.00E0
Cesium-137	Ci				0.00E0
Barium-Lanthanum-140	Ci				0.00E0
Others: Manganese-54	Ci				5.20E-5

TABLE 2A

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1988)

LIQUID EFFLUENTS - SUMMATION OF ALL RELEASES

	Unit	Quarter 1	Quarter 2	Est. Total Error, %
A. Fission and Activation Products				
1. Total release (not including tritium, gases, alpha)	Ci	9.47E-3	1.80E-2	7.50E1
2. Average diluted concentration during period	uCi/ml	1.96E-7	8.43E-7	
3. Percent of applicable limit	%	<0.4	<7.6	
B. Tritium				
1. Total release	Ci	7.14E-1	2.03E-1	7.50E1
2. Average diluted concentration during period	uCi/ml	1.48E-5	9.51E-6	
3. Percent of applicable limit	%	<0.5	<0.4	
C. Dissolved and entrained gases				
1. Total Release	Ci	0.00E0	0.00E0	7.50E1
2. Average diluted concentration during period	uCi/ml	0.00E0	0.00E0	
3. Percent of applicable limit	%	NA	NA	
D. Gross alpha radioactivity				
1. Total Release	Ci	5.94E-6	0.00E0	7.50E1
E. Volume of waste released (prior to dilution)	liters	9.36E5	3.48E5	1.50E1
F. Volume of dilution water used during period	liters	4.73E7	2.10E7	1.50E1

TABLE 2B

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1988)

LIQUID EFFLUENTS

Nuclides Released	Unit	CONTINUOUS MODE		BATCH MODE	
		Quarter 1	Quarter 2	Quarter 1	Quarter 2
Strontium-89	Ci			2.21E-4	4.21E-3
Strontium-90	Ci			0.00E0	0.00E0
Cesium-134	Ci			0.00E0	0.00E0
Cesium-137	Ci			0.00E0	0.00E0
Iodine-131	Ci			0.00E0	0.00E0
Cobalt-58	Ci			1.04E-3	4.69E-3
Cobalt-60	Ci			8.77E-4	2.98E-3
Iron-59	Ci			3.63E-4	1.36E-4
Manganese-54	Ci			3.27E-3	5.30E-3
Chromium-51	Ci			2.73E-3	5.07E-4
Zirconium-Niobium-95	Ci			6.68E-6	0.00E0
Molybdenum-99	Ci			0.00E0	0.00E0
Technetium-99m	Ci			1.15E-4	0.00E0
Barium-Lanthanum-140	Ci			0.00E0	0.00E0
Cerium-141	Ci			0.00E0	0.00E0
Other: Iron-55	Ci			7.51E-4	1.43E-4
Sodium 24	Ci			7.99E-5	0.00E0
Tritium	Ci			7.14EE-1	2.03E-1
Zinc-65	Ci			2.04E-5	0.00E0
Total for period (above)	Ci			7.23E-1	2.21E-1
Xenon-133	Ci			0.00E0	0.00E0
Xenon-135	Ci			0.00E0	0.00E0

TABLE 3

EFFLUENT AND WASTE DISPOSAL SEMIANNUAL REPORT (1988)

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	2.55E1	
		Ci	3.32E0	30.0
b.	Dry compressible waste, contaminated equip, etc.	m^3	3.40E1	
		Ci	5.79E-1	30.0
c.	Irradiated components, control rods, etc.	m^3	0.00E0	
		Ci	0.00E0	0.0
d.	Other (describe)	m^3	0.00E0	
		Ci	0.00E0	0.0

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

a.	Fe-55	26.2%	8.69E-1Ci
	Mn-54	39.7%	1.32E0Ci
	Cr-51	14.6%	4.84E-1Ci
	Co-58	5.9%	1.95E-1Ci
	Co-60	9.3%	3.07E-1Ci
	Fe-59	3.0%	9.81E-2Ci
	Other	1.3%	4.29E-2Ci
b.	Cr-51	48.7%	2.82E-1Ci
	Mn-54	24.6%	1.42E-1Ci
	Fe-55	16.6%	9.63E-2Ci
	Co-58	4.7%	2.74E-2Ci
	Co-60	4.0%	2.34E-2Ci
	Fe-59	1.2%	6.67E-3Ci
	Other	0.2%	1.28E-3Ci
c.	None	N/A	N/A
d.	None	N/A	N/A

3. Solid Waste Disposition

Number of Shipments	Mode of Transportation	Destination
5	Truck	Richland, Washington

B. IRRADIATED FUEL SHIPMENTS (Disposition)

Number of Shipments	Mode of Transportation	Destination
None	N/A	N/A

C. TECHNICAL SPECIFICATIONS CLASSIFICATION REQUIREMENTS - NA

TABLE 4A

JOINT FREQUENCY DISTRIBUTION OF

METEOROLOGICAL PARAMETERS[1]

---

[1] Not submitted this period; see Section 5.0.

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

January 1, 1988 - June 30, 1988

ATTACHMENT A

ODCM REVISION 3, AFFECTED PAGES

SAFETY EVALUATION FORM

Document Evaluated: ODCM Section 2.3.2 Revision L&S Log #: 87-216702

References: Tech Spec 6.14.2, 3.3.7.11

NSED memo Y-84177 (4/22/87)

FSAR 11.5.2.2.5(.7)(.8), 11.5.1.1.1, 11.5.1.1.2.1.c(.e), 7.6.1.

CCT #46303

NOTE: Each block (including the lines provided for a written response following the YES/NO questions) must be completed.

Describe the basic document or system and the changes being made. Include the interface/impact on other systems.

Section 2.3.2 of the ODCM provides instructions for determining setpoints for liquid radioactivity monitors. The proposed revision relaxes setpoint determination criteria to allow calculation of setpoints based on observed background countrates with sufficient margin to detect and alarm inadvertent release of radioactive material. Current setpoint criteria is arbitrary and result in an unacceptable frequency of invalid alarm states. There are no impact on other systems as a result of the proposed revision.

BLOCK A - 10CFR50.59 APPLICABILITY

Answer the question corresponding to the type of change being made (i.e., question "a" for modifications; question "b" for procedures; question "c" for tests; and question "d" for experiments). Mark all other questions "N/A". For any question(s) not marked "N/A", provide an explanation for your answer.

___YES___NO_✓_N/A a. Is this a change to the facility as described in the FSAR?

___YES_✓_NO___N/A b. Is this a new procedure or a change to a procedure as described in the FSAR?

___YES___NO_✓_N/A c. Is this a test not described in the FSAR?

___YES___NO_✓_N/A d. Is this an experiment not described in the FSAR?

SAFETY EVALUATION FORM (Con't)

BLOCK A - 10CFR50.59 APPLICABILITY (Con't)

Explain the reason for the YES/NO Answer:

The FSAR does not address the ODCM; specifically, the referenced FSAR sections do not discuss liquid monitor setpoint determination criteria.

NOTE: If any of the questions in Block A is checked YES, then 10CFR50.59 applies to the change or activity, and it will be reported to the NRC in the annual report.

BLOCK B - RADWASTE TREATMENT SYSTEMS

___YES ✓ NO The proposed activity involves a modification to the Radiological Waste Treatment Systems described in Chapter 11 of the FSAR.

Because: This ODCM revision changes radiation monitor setpoint determinat criteria which does not constitute a modification to the Radwaste Treatment System(s) installed at CPS.

If the above statement was answered YES, complete CNP 1.09 Attachment 3, "Safety Evaluation for Changes to Radioactive Waste Treatment System"

BLOCK C - TECH. SPEC. / LICENSE IMPACT

___YES ✓ NO The proposed activity involves a change to any part of the Operating License, including the Technical Specification and Appendix B.

Because: The ODCM is a station document referenced by, but not specifically contained in any text of, the CPS Tech Specs. ODCM changes are allowed without prior USNRC concurrence per Tech Spec 6.14.2.

_OCK D - UNREVIEWED SAFETY QUESTION

Implementation or performance of the proposed activity will:

___YES ✓ NO a. Increase the probability of occurrence of an accident previously evaluated in the FSAR.

___YES ✓ NO b. Increase the consequences of an accident previously evaluated in the FSAR.

SAFETY EVALUATION FORM (Con't)

BLOCK D - UNREVIEWED SAFETY QUESTION (Con't)

___YES ✓NO	c.	Create the possibility of an accident of a different type than any already evaluated in the FSAR.
___YES ✓NO	d.	Increase the probability of a malfunction of equipment important to safety previously evaluated in the FSAR.
___YES ✓NO	e.	Increase the consequences of a malfunction of equipment important to safety previously evaluation in the FSAR.
___YES ✓NO	f.	Create the possibility of a malfunction of equipment important to safety different than previously evaluated in the FSAR.
___YES ✓NO	g.	Reduce the margin of safety as defined in the basis for any technical specification.

Provide the written bases for your answers to the YES/NO questions. Include discussions of the system/procedural functions and the effect of the change on these functions, operating characteristics, hazards analyses, radioactive releases, and interfacing systems. (Use additional pages if necessary)

The proposed ODCM revision affects the determination of setpoints for the following liquid radioactivity monitors: Plant Service Water, Shutdown Service Water, Fuel Pool Heat Exchanger Service Water. These monitors are not designated as being instrumentation required to maintain plant safety and the release pathways which they monitor are normally uncontaminated. Since the monitors have no control function ~~are~~ RTO 11-23-8 and are passive devices, this revision cannot increase the probability, or create the possibility, of any accident or equipment malfunction. The consequences of any accident or equipment malfunction are not increased by this revision since the revised setpoint determination criteria allow for the detection of contamination above background should an inadvertent release occur. When a valid alarm exists, operator intervention is required to evaluate and, if necessary, mitigate the alarming condition. The revision does not reduce the margin of safety (cont'd (p.5)

If any statement in this block was answered YES, the action described in the evaluated document involves an Unreviewed Safety Question.

SAFETY EVALUATION FORM (Con't)

BLOCK E - SUMMARY

Check the applicable boxes:

[✓] The evaluated document does not involve a change to the Technical Specifications, Operating License, or an Unreviewed Safety Question. Proceed with implementation.

[ ] The evaluated document involves a change to the Technical Specifications or the Operating License. NRC approval is required before implementation.

[ ] The evaluated document involves Unreviewed Safety Question. NRC approval is required before implementation.

	Print Name	Signature/Date
ORIGINATOR	R.F. ORTHEN	12.23.87
DEPT. HEAD	D.W. Hillyer	12-23-87
MANAGER NSED	R.P. BHAT	12-29-87
MANAGER L&S	D.L. Holtzscher	D.L. Holtzscher for FAS 12/31/87
FRG	Russell B Bedford	1/8/88
NRAG		NA 12/31/87

BLOCK D - UNREVIEWED SAFETY QUESTION (cont'd)

as defined in the basis for any Tech Spec since the applicable Limiting Condition for Operation and surveillance requirements remain implemented and supported. Once approved, the revision will be implemented in accordance with CPS No. 7410.80, AR/PR SETPOINT MODIFICATION, and a CCT entered to track the reporting requirements of Tech Spec 6.14.2.a.

SAFETY EVALUATION FORM

Rev. 3 dtd 2-5-88

Document Evaluated: ODCM Section 5.0 Figure 5.0-1, 5.0-2; Table 5.0-1 L&S Log #: 88-0043

References: Tech. Spec. 3.12.2(b), 3.12.1(b), Table 3.12-1

CGT# 046347, Letter DWH-293-87

CPS 9911.75 Annual Land Use Census

Radiological Assessment Branch Technical Position, Rev. 1, November 1979

NOTE: Each block (including the lines provided for a written response following the YES/NO questions) must be completed.

Describe the basic document or system and the changes being made. Include the interface/impact on other systems.

Based on the results of the annual land use census Technical Specification 3.12.2(b) provides instructions for identifying and reporting any new location(s) to the radiological environmental monitoring program. ~~First~~ Any new location will be included in the Semiannual Radioactive Effluent Release Report including the revised figure(s) and table(s) from the ODCM reflecting these changes. There are no impacts on any systems as a result of the proposed changes.

BLOCK A - 10CFR50.59 APPLICABILITY

Answer the question corresponding to the type of change being made (i.e., question "a" for modifications; question "b" for procedures; question "c" for tests; and question "d" for experiments). Mark all other questions "N/A". For any question(s) not marked "N/A", provide an explanation for your answer.

___YES___NO ✓ N/A a. Is this a change to the facility as described in the FSAR?

___YES ✓ NO___N/A b. Is this a new procedure or a change to a procedure as described in the FSAR?

___YES___NO ✓ N/A c. Is this a test not described in the FSAR?

___YES___NO ✓ N/A d. Is this an experiment not described in the FSAR?

SAFETY EVALUATION FORM (Con't)

BLOCK A - 10CFR50.59 APPLICABILITY (Con't)

Explain the reason for the YES/NO Answer:

The FSAR does not address the ODCM; specific sections of the FSAR refer to calculations made in accordance with the ODCM but the ODCM is not part of the FSAR.

NOTE: If any of the questions in Block A is checked YES, then 10CFR50.59 applies to the change or activity, and it will be reported to the NRC in the annual report.

BLOCK B - RADWASTE TREATMENT SYSTEMS

___YES ✓NO The proposed activity involves a modification to the Radiological Waste Treatment Systems described in Chapter 11 of the FSAR.

Because: These ODCM changes do not constitute a modification to the Radwaste Treatment System at CPS.

If the above statement was answered YES, complete CNP 1.09 Attachment 3, "Safety Evaluation for Changes to Radioactive Waste Treatment System"

BLOCK C - TECH. SPEC. / LICENSE IMPACT

___YES ✓NO The proposed activity involves a change to any part of the Operating License, including the Technical Specification and Appendix B.

Because: The ODCM is a station document used to demostrate compliance with the CPS Tech. Specs, and ODCM changes are allowed without prior USNRC concurrance per Tech. Spec. 6.14.2

BLOCK D - UNREVIEWED SAFETY QUESTION

Implementation or performance of the proposed activity will:

___YES ✓NO a. Increase the probability of occurrence of an accident previously evaluated in the FSAR.

___YES ✓NO b. Increase the consequences of an accident previously evaluated in the FSAR.

SAFETY EVALUATION FORM (Con't)

BLOCK D - UNREVIEWED SAFETY QUESTION (Con't)

___YES ✓ NO	c.	Create the possibility of an accident of a different type than any already evaluated in he FSAR.
___YES ✓ NO	d.	Increase the probability of a malfunction of equipment important to safety previously evaluated in the FSAR.
___YES ✓ NO	e.	Increase the consequences of a malfunction of equipment important to safety previously evaluation in the FSAR.
___YES ✓ NO	f.	Create the possibility of a malfunction of equipment important to safety different than previously evaluated in the FSAR.
___YES ✓ NO	g.	Reduce the margin of safety as defined in the basis for any technical specification.

Provide the written bases for your answers to the YES/NO questions. Include discussions of the system/procedural functions and the effect of the change on these functions, operating characteristics, hazards analyses, radioactive releases, and interfacing systems. (Use additional pages if necessary)

The proposed changes in the ODCM are as follows: (1) Table 5.0-1(c) delete sample location CL-18 in the E sector and add CL-117, (2) Revise figure 5.0-1 to reflect the addition of CL-117, (3) revise figure 5.0-2 to reflect the deletion of CL-18. The proposed ODCM revision will not affect any of the questions listed in a - g. No cow milk sample location will be listed in the ODCM because the cow is located outside the 5 kilometer radius specified in the ODCM and garden vegetables are collected in the same sector at 1.4 kilometers from the main plant ventilation stack exhaust.

If any statement in this block was answered YES, the action described in the evaluated document involves an Unreviewed Safety Question.

SAFETY EVALUATION FORM (Con't)

BLOCK E - SUMMARY

Check the applicable boxes:

[X] The evaluated document does not involve a change to the Technical Specifications, Operating License, or an Unreviewed Safety Question. Proceed with implementation.

[ ] The evaluated document involves a change to the Technical Specifications or the Operating License. NRC approval is required before implementation.

[ ] The evaluated document involves Unreviewed Safety Question. NRC approval is required before implementation.

	Print Name	Signature/Date
ORIGINATOR	Owens P. Carter	Owens P Carter 2/2/88
DEPT. HEAD (OK phw)	O W Hiller	E W Hiller 2-9-88
MANAGER NSED	E.W.Kant J.M.Emmert	J.M.Emmert for 2-10-88 (E.W.K. 2-15-88)
MANAGER L&S	Peter E. Walberg PEW	Peter E Walberg 2/15/88
FRG	James R. Strawstreet	James R Strawstreet 2/11/88
NRAG		N/A PEW 2/15/88

2.3.2 Plant Service Water Effluent PRM Setpoints

Plant service water effluent continuously releases to the Seal Well where it mixes with circulating water effluent (if present) prior to entering Lake Clinton via the 3.4 mile discharge flume. The plant service water effluent is not considered a radioactive discharge pathway unless liquid radwaste discharges are in progress or any service water cooling load heat exchanger has been detected as failed. To ensure that Plant Service Water intersystem leakage has not occurred, weekly Service Water effluent grab samples will be obtained (when in service) and analyzed to determine the identity and quantity of principal gamma-emitting radionuclides. In addition, a quarterly composite of positive grab samples will be analyzed to determine the quantity of H-3, Sr-89, Sr-90, Fe-55 and gross alpha species released. The analytical Lower Limit of Detection (LLD) for these analyses are specified in CPS-RETS Table 4.11.1-1.A.

If the weekly grab sample analysis indicates the absence of contamination above background, the Plant Service Water effluent PRM setpoint should be established as close to background as practical to prevent spurious alarms, and yet assure an alarm should an inadvertent release occur.

If the weekly grab sample analysis indicates the presence of contamination above background, PRM setpoints will be established following section 2.3.1 methodology as follows:

2.3.2.1 Perform section 2.3.1.2, solving equation (3) for DF using the appropriate values in the concentration term from the grab sample analysis.

2.3.2.2 A modified dilution factor, DF_m, must be determined so that available dilution flows may be apportioned among simultaneous discharge pathways. The modified dilution factor is defined as:

$$DF_m = \frac{DF}{F_A} \qquad (6)$$

where F_A is an administrative allocation factor which may be assigned any value between 0 and 1 under the condition that

TABLE 3.4-3

ANNUAL DOSES IN UNRESTRICTED AREAS

Location	Distance (mile/meter)	Sector	Occupancy (hrs/yr)	Total Body Dose Rate (mrem/yr)	Skin Dose Rate (mrem/yr)	Organ Dose Rate* (mrem/yr)
Road	0.3/495	SE	243(1)	0.04	0.08	0.02
Agricultural Acreage (2)	0.9/1372	SSW	964(3)	0.02	0.05	0.01
Clinton Lake	0.2/335	NW	2208(4)	1.0	2.1	0.51
Department of Conservation Recreation Area	0.8/1287	ESE	2208(5)	0.1	0.2	0.05
Residence	0.8/1219	SW	8760	0.5	1.0	0.24
Residence	1.5/2414	WSW	8760	0.18	0.41	0.10
Residence	1.7/2736	SSE	8760	0.17	0.37	0.09

(1) Assumes travel on road for forty minutes per day.

(2) Maximum farm acreage (2/6) within site boundary.

(3) Assumes 3.5 hours in field per acre farmed.

(4) Assumes continuous occupation on Clinton Lake for the months of June, July, and August.

(5) Assumes continuous occupation on Department of Conservation camping areas for the months of June, July, and August.

* Child inhalation

Table 5.0-1 (continued)

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
c. 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	0.9
N	CL-117	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

FIGURE 5.0-1

REMP LOCATIONS WITHIN 1.5 MILES OF CPS

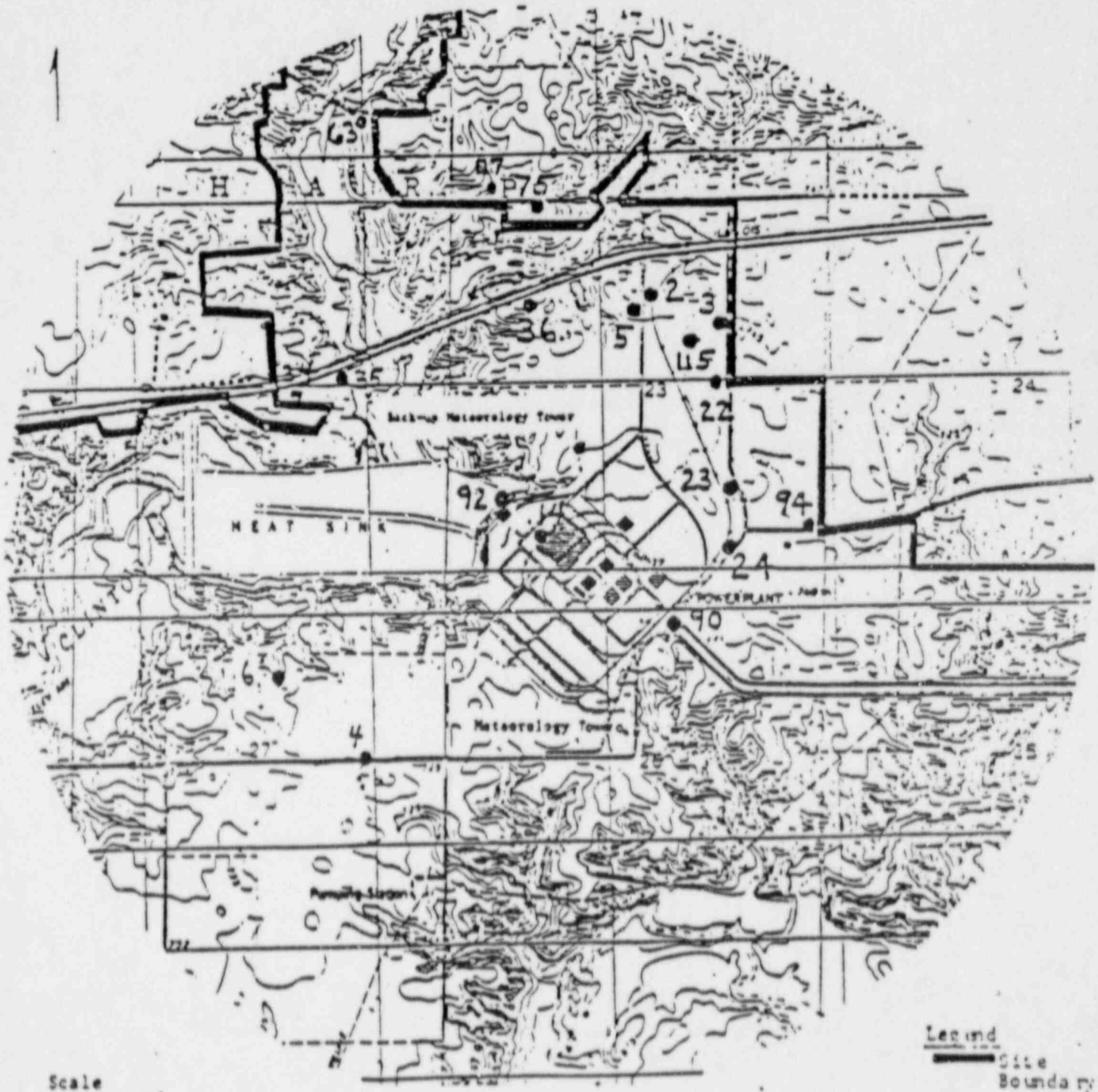

FIGURE 5.0-2

REMP LOCATIONS WITHIN 6 MILES OF CPS

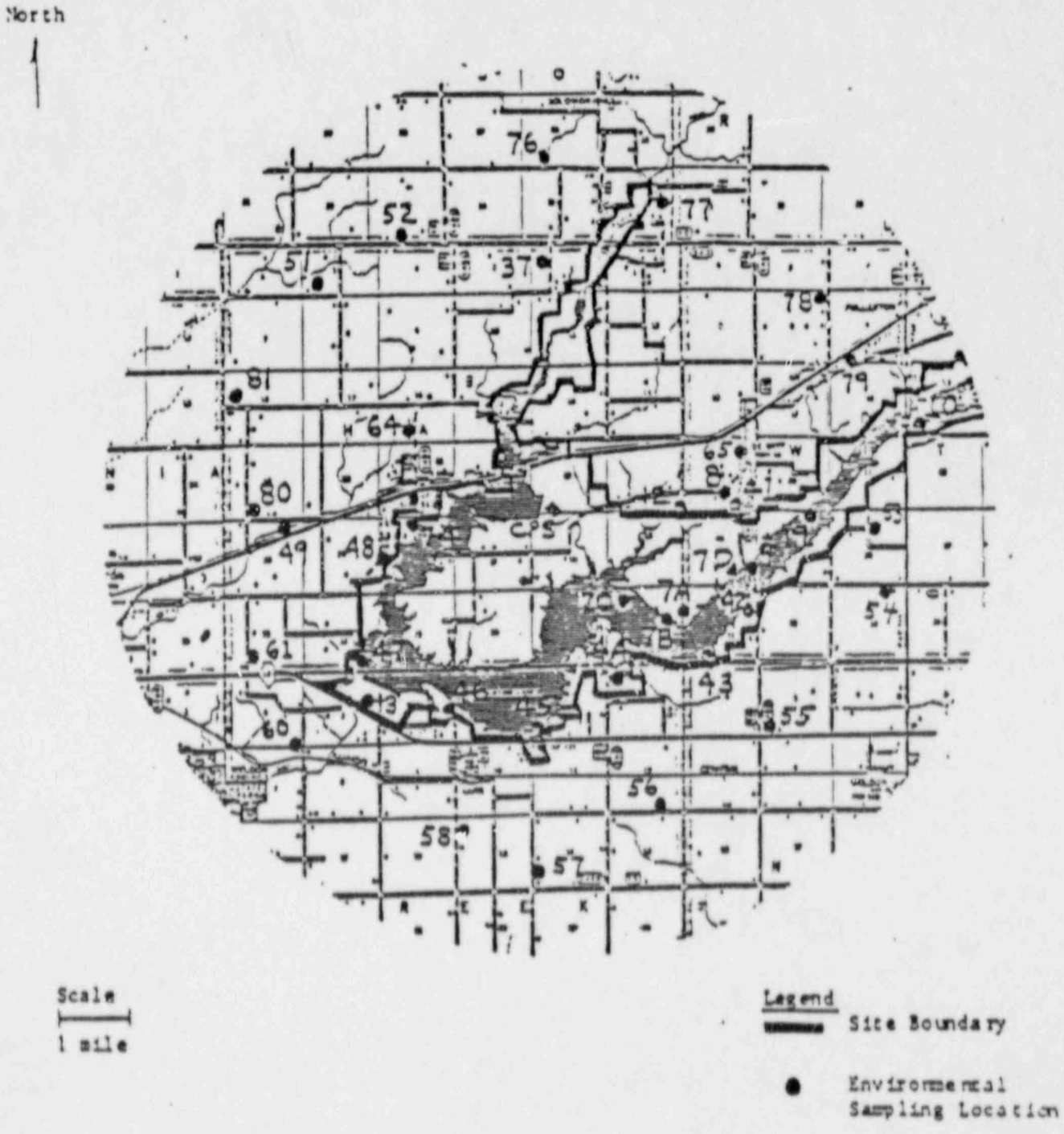

TABLE 7.2-5

SITE BOUNDARY DISPERSION AND DEPOSITION PARAMETERS

Sector	Distance (mile/meter)	Release Point $\overline{X/Q}$ (sec/m³)		Release Point $\overline{D/Q}$ (m^{-2})	
		HVAC Stack	SGTS Stack	HVAC Stack	SGTS Stack
N	0.9/1402	9.537E-7	9.537E-7	6.224E-9	6.224E-9
NNE	0.8/1341	7.543E-7	7.543E-7	5.548E-9	5.548E-9
NE	0.7/1097	8.750E-7	8.750E-7	6.616E-9	6.616E-9
ENE	0.8/1219	4.679E-7	4.679E-7	3.443E-9	3.443E-9
E	0.8/1219	5.127E-7	5.127E-7	4.040E-9	4.040E-9
ESE	3.0/4816	6.970E-8	6.970E-8	4.695E-10	4.695E-10
SE	2.4/3841	8.696E-8	8.696E-8	5.589E-10	5.589E-10
SSE	1.7/2736	1.140E-7	1.140E-7	8.177E-10	8.177E-10
S	2.1/3353	8.565E-8	8.565E-8	3.911E-10	3.911E-10
SSW	2.9/4633	4.976E-8	4.976E-8	2.318E-10	2.318E-10
SW	3.2/5121	7.591E-8	7.591E-8	2.722E-10	2.722E-10
WSW	1.5/2414	2.006E-7	2.006E-7	6.926E-10	6.926E-10
W	1.4/2256	2.045E-7	2.045E-7	7.755E-10	7.755E-10
WNW	0.7/1097	4.414E-7	4.414E-7	2.356E-9	2.356E-9
NW	0.9/1463	3.871E-7	3.871E-7	1.578E-9	1.578E-9
NNW	1.0/1585	5.089E-7	5.089E-7	2.640E-9	2.640E-9

CPS RETS	Pathway	Controlling Sector	Comments
3.11.2.1	Immersion	N	Considers occupancy factors for other sectors
3.11.2.1	Inhalation	N	Considers occupancy factors for other sectors
3.11.2.2	Air Dose	N	Considers occupancy factors for other sectors
3.11.2.3	Inhalation	N	Considers occupancy factors for other sectors
3.11.2.3	Ground Plane	N	Considers occupancy factors for other sectors
3.11.2.3	Cow Milk	N	Nearest milk cow is at 3.2 miles in NE sector (2)
3.11.2.3	Goat Milk	N	No milking goats within 5 mile radius of CPS (3)
3.11.2.3	Cow Meat	N	No meat animals identified in annual census (4)
3.11.2.3	Vegetation	N	

Notes

(1) Controlling locations and sectors are based on 1987 Land Use Census.

(2) Nearest milk cow is at 3.2 miles in NE sector. Milk sample is not available, alternate vegetation samples are collected in N and NE sectors. At distance 3.2 miles, D/Q in N sector is 1.295 x D/Q in NE sector.

(3) Assumes a milking animal resides at a distance of 4.5 miles from CPS in the worst case sector as stated on page 30 of NUREG-0133.

(4) Assumes a cow meat animal is located at a distance of 4.5 miles from CPS in the worst case sector.

CLINTON POWER STATION
SEMIANNUAL RADIOACTIVE
EFFLUENT RELEASE REPORT

January 1, 1988 - June 30, 1988

ATTACHMENT B

SOLIDIFICATION VENDOR PROCEDURE/DOCUMENT APPROVAL
COVER SHEET

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. 5

MAINTENANCE DEPARTMENT	N/A Signature	/ Date
CHEMISTRY GROUP.....	Signature	12/22/88 Date
TECHNICAL DEPARTMENT	N/A Signature	/ Date
NUCLEAR STATION ENGINEERING DEPARTMENT.....	Signature	12-22-88 Date
RADIATION PROTECTION DEPARTMENT .	N/A Signature	/ Date
QUALITY ASSURANCE DEPARTMENT	Signature	12-19-88 Date
RADWASTE GROUP.....	Signature	12-19-88 Date
FACILITY REVIEW GROUP.....	Signature	12-23-88 Date

U- 601253
L30-88(08-29)-LP
1A.120

ILLINOIS POWER COMPANY

CLINTON POWER STATION, P.O. BOX 678, CLINTON, ILLINOIS 61727

August 29, 1988

Docket No. 50-461

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

Subject: Clinton Power Station
Semiannual Radioactive Effluent Release Report

Dear Sir:

Attached is the Semiannual Radioactive Effluent Release Report for Clinton Power Station (CPS) for the period of January 1, 1988 - July 31, 1988. This submittal is provided in accordance with the requirements of section 6.9.1.7 of the CPS Technical Specifications.

If you have any questions, please contact me.

Sincerely yours,

D. L. Holtzscher

D. L. Holtzscher
Acting Manager - Licensing and
Safety

DWW/ckc

Attachments

cc: NRC Clinton Licensing Project Manager
NRC Resident Office
Regional Administrator, Region III, USNRC
Illinois Department of Nuclear Safety

IE48
1/1

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